

Collecting the Field: A Methodological
Reassessment of Greek and Roman Battlefield
Archaeology.

Thesis submitted in accordance with the requirements of the
University of Liverpool for the degree of Doctor in Philosophy

by

Joanne Elizabeth Ball

February 2016

Collecting the Field: A Methodological Reassessment of Greek and Roman Battlefield Archaeology.

Joanne Elizabeth Ball.

Abstract.

The study of Greek and Roman battles has been an area of academic interest for centuries, but understanding of the archaeological potential of battlefields from classical antiquity has remained severely limited. The field has stagnated partly through over-deference to unsuitable ancient literary accounts, compounded by a lack of exploration of the site formation processes on such battlefields. This has resulted in an unjustified pessimism among some ancient historians and battlefield archaeologists that any significant information can be extracted from the exploration of such sites. Several ancient battlefields, and numerous smaller-scale conflict sites, have been identified and excavated in the previous three decades. In spite of these projects, there has been a general absence of integration of the evidence from these sites into a wider understanding of the archaeology of ancient battlefields, and consequently, a failure to use the evidence to identify and locate new sites.

Drawing evidence from a number of excavated conflict sites from the classical world, particularly the Roman battlefields at Baecula, Kalkriese, and Harzhorn, this thesis presents an argument for a more archaeologically-dominated approach to exploring Greek and Roman battlefields, despite the pragmatic challenges in doing so. While the ancient literary sources have been the primary base for much of the last two centuries, they contain little reliable or accurate evidence with regards to geographic or topographic location of specific battlefields or the post-battle processing of battle-deposited material. This research has explored the site formation processes on ancient battlefields, working from excavated examples including those at Baecula, Kalkriese, and the Harzhorn, as well as other smaller-scale conflict sites and battle-related graves. This research has considered the issue of site formation on ancient battlefields with a particular focus on the impact of post-battle processes, looting and the disposal of the dead, on the archaeological assemblages. It concludes that while such processes had a significant impact on the assemblage deposited by battle, a significant number of artefacts were left behind. The 'signature' of ancient battle is composed of these artefacts – small projectiles, fragments of military kit, *caligae* nails, and coins – which when found in spatial conjunction, identify battlefield sites. This thesis suggests that archaeological methodologies developed for exploration of modern (C19th and later) battlefields can be modified for use on sites from antiquity, contributing to the identification of battlefield locations and reconstruction of battle-narratives.

Acknowledgements

It would not have been possible to even start writing this thesis, let alone finish it, without the support of so many people. Thanks go out to my comrades in research, including Peta Bulmer, Sam Cook, Shirley Curtis-Summers, Pablo Fernández, Joey Gaynor, Sally Hoare, Pete Norris, Kevin Stover, and Jonty Trigg. Overall, I think we have learned more in the AJ from each other than the time we have lost! Appreciation is also given to academic staff from the department, particularly Matthew Ponting, my second supervisor, and Michael Sommer, my initial second supervisor.

Achim Rost and Susanne Wilbers-Rost deserve particular thanks for their kindness in sharing their insights from Kalkriese, and for their work in both exploring and publicising the site. Credit must go to Lawrence Babits for many conversations and emails on the American Civil War, and for letting me fire a Brown Bess musket without seriously endangering the life of anyone. For assistance at various stages of research, thanks also to Juan Bellón Ruiz, Jon Coulston, Thomas Fischer, Michael Meyer, Gordon Noble, and Steve Smith. I would also like to thank everyone I have met at the Fields of Conflict Conferences. Thanks are also due to Rachel Plummer for her support and sympathy, chocolate, and for letting me drag her to Towton battlefield to look at not very much at all...

My family and work colleagues have provided much support over the last five years and I am unending grateful to them. Particular gratitude and love to my parents for their support, and to Lee who, from necessity, has become more informed about the archaeology of ancient battle - and the Varus disaster - than he ever thought possible.

Lastly, I would like to thank my supervisor, Phil Freeman, for all his support in writing this thesis, going back almost a decade to a scared undergraduate thinking about writing a dissertation on the Varus Disaster. This research really could not have been finished without the guidance, critique, and effort which Phil has given it in the last 5 years, and I am immensely grateful to him for everything he has done, and continues to do.

Contents

Abstract	ii
Acknowledgments	iii
Contents	iv
List of Figures	x
List of Tables	xii
List of abbreviations	xiii
Table summarising the principle battle sites noted in the text	xiv

Chapter One: Introduction and context

1.1: Question and aims.....	1
1.2: Thesis structure and organisation.....	3
1.3: Battlefield Archaeology.....	6
1.3.1: Development of the discipline.....	11
1.3.2: Ancient battlefields in archaeology.....	14
1.3.3: A brief historiography of ancient battlefield studies.....	18
1.4: Why ancient battlefields?.....	26
1.4.1: “Battle” in battlefield archaeology.....	29
1.4.2: “Battle” in antiquity.....	31
1.5: Excavated conflict sites from antiquity.....	36
1.6: Conclusion.....	41

Chapter Two: The Literary Record

2.1: Introduction.....	42
2.2: Battlefields in the ancient literary record.....	45
2.2.1: Battlefields in ancient historical texts and commentaries.....	47
2.2.2: Battlefields in ancient military treatises.....	50
2.2.3: Battlefields in ancient biography.....	51
2.2.4: The authors of battlefield texts.....	52
2.3: Battle narratives in ancient historical literature.....	54
2.4: The sources of evidence for ancient battlefield narratives.....	57
2.4.1: Participant and eyewitness testimony.....	57
2.4.2: The accuracy of participant and eyewitness testimony.....	59
2.4.3: Campaign journals and military documentation.....	63
2.4.4: Earlier histories and epigraphy.....	65
2.5: The reliability of the ancient literature on battle-narrative.....	67
2.5.1: Deliberate simplification, alteration, and literary <i>topoi</i>	69
2.6: The geography of battlefield location in antiquity.....	71
2.6.1: Battlefield toponyms.....	73
2.6.2: Etymology and toponymic-landscape reconciliation.....	75
2.6.3: Geographic location without toponyms.....	79
2.7: Battlefield topography in the ancient literary record.....	84
2.7.1: Battlefield terrain descriptions.....	85
2.7.2: The terrain of 'lost' battlefields.....	90
2.7.3: The sources for ancient battlefield topographies.....	92
2.7.4: Literary <i>topoi</i> in battlefield topography.....	93
2.8: Conclusion.....	95

Chapter Three: Landscape approaches to ancient battlefield location

3.1: Introduction.....	97
3.2: Locating modern battlefields.....	99
3.2.1: Late medieval and (early) modern sites.....	100
3.2.2: Early medieval “lost” sites.....	103
3.3: Terrain in ancient battle.....	105
3.3.1: Historic terrain reconstruction.....	106
3.3.2: Hoplites, legionaries, and terrain.....	108
3.3.3: The “selection” of ancient battlefields.....	110
3.3.4: A valid approach in antiquity?.....	113
3.3.5: Inherent military probability, KOCOA, and METT-T.....	115
3.4: Ancient battlefields and conflict landscape analysis.....	117
3.5: Campaign route reconstruction.....	119
3.5.1: Temporary camps.....	121
3.5.2: Greek battle(field) camps.....	126
3.5.3: Roman battle(field) camps.....	128
3.6: Battle-related assemblages and features in the wider conflict landscape.....	132
3.6.1: Hoards and battlefield booty.....	133
3.6.2: Identifying battle-related material outside a battlefield context.....	136
3.6.3: Battle-related monuments: victory monuments.....	138
3.6.4: Battle-related mortuary monuments.....	144
3.7: Battlefields and historical context.....	146
3.8: Conclusion.....	148

Chapter Four: Artefact assemblages and battlefield looting

4.1: Introduction.....	150
4.2: The archaeology of ancient battle.....	152
4.2.1: Depositional processes.....	153

4.2.2: Recognising ancient battlefield archaeology.....	158
4.3: Battlefield looting in historical context.....	161
4.3.1: The purpose of battlefield looting.....	163
4.4: Battlefield looting in antiquity.....	165
4.4.1: Textual descriptions of campaign looting.....	166
4.4.2: Textual descriptions of battlefield looting.....	168
4.4.3: Ritual dedication of battlefield booty.....	171
4.4.4: Recycling battlefield booty.....	173
4.4.5: Abandonment of metal resources.....	176
4.5: Ancient battlefield assemblages: the archaeological evidence.....	178
4.5.1: Greek battlefield assemblages.....	179
4.5.2: Roman battlefield assemblages.....	180
4.6: Site formation and assemblage survival.....	197
4.6.1: Phases of looting.....	198
4.6.2: Natural obscuration.....	199
4.6.3: Later looting and relic-hunting.....	201
4.7: Theorising Greek battlefield archaeology.....	204
4.8: Conclusion.....	207

Chapter Five: Battlefield graves

5. 1: Introduction.....	209
5.2: Disposal of the battle-dead in historical context.....	211
5.2.1: Mass graves and the battle-dead.....	213
5.3: Disposal of the battle-dead in antiquity.....	216
5.3.1: Repatriation.....	217
5.3.2: The Greek battle-dead in the ancient literary record.....	222
5.3.3: The Roman battle-dead in the ancient literary record.....	224
5.4: Logistic and pragmatic considerations.....	227
5.4.1: Casualty rates.....	227

5.4.2: Physical decomposition.....	229
5.5: Excavated battlefield graves from antiquity.....	232
5.5.1: Greek battlefield graves.....	232
5.5.2: Roman battle graves.....	235
5.5.3: Surface cremation or abandonment: the pragmatic reality?.....	240
5.5.4: The impact of battlefield disposal on the artefact assemblage.....	243
5.6: Conclusion.....	244

Chapter Six: Survey and excavation methodology

6.1: Introduction.....	246
6.2: Legislative and funding concerns.....	247
6.2.1: Legislation.....	247
6.2.2: Funding.....	249
6.2.3: Ethics.....	251
6.3: Physical survival of battlefield graves.....	254
6.4: Artefact survey.....	255
6.4.1: Metal detection and artefacts on modern battlefields.....	256
6.4.2: Metal detection on ancient battlefields.....	262
6.4.3: The use of transects and/or sampling.....	267
6.4.4: Ferrous and non-ferrous survey.....	268
6.4.5: Metal detection and mass graves.....	273
6.4.6: Metal detection and ancient battlefield graves.....	275
6.5: Geophysical survey.....	277
6.5.1: Geophysics and detecting mass graves.....	278
6.5.2: Geophysics and ancient battlefield graves.....	279
6.6: The research value of battlefield graves.....	281
6.7: Conclusion.....	283

Chapter Seven: Conclusion

7.1: Introduction.....	285
7.2: Addressing the research aims.....	288
7.3: Avenues for future research.....	291
7.3.1: Mons Graupius.....	294
7.4: Final conclusion.....	298
Bibliography.....	299

List of figures

Figure 1:	Kromayer's reconstruction of Baecula (Kromayer & Veith 1922-1929ii: pl. 8).....	43
Figure 2:	Regional locations for battlefields in Britannia based on the literary sources.....	82
Figure 3:	Cynoscephalae from Hammond (H), Kromayer (K) and Pritchett (P) (from Hammond 1988a: 64)	88
Figure 4:	The 8 locations proposed for the location of Cannae based on the literary description (from Daly 2002: 33).....	89
Figure 5:	Aerial view of Marathon plain (image from Google Earth). The probable area of the battle is indicated within the red-dashed square.....	98
Figure 6:	Hammond's Roman camp feature identified on Google Earth March 2015.....	129
Figure 7:	Modern conflict landscapes and theatres of war (from Schofield 2005: 19).....	139
Figure 8:	Tropaeum on Trajan's Column. Plate 78, scenes 204-206 (from www.trajanscolumn.org).....	141
Figure 9:	Distribution of Roman finds in the Kalkriese conflict landscape (from Rost & Wilbers-Rost 2010: 118).....	154
Figure 10:	Distribution of Roman finds at Harzhorn (from Berger <i>et al.</i> 2010/13: 321).....	154
Figure 11:	Transect survey of the core battlefield at Baecula (from Bellón Ruiz <i>et al.</i> 2012).....	155
Figure 12:	Arrowheads from Thermopylae in the National Museum of Archaeology, Athens (author's own)	180
Figure 13:	Projectile point from Harzhorn (author's own).....	182
Figure 14:	Distribution of lead <i>glandes</i> at Baecula (after Bellón Ruiz <i>et al.</i> 2012: 367).....	185
Figure 15:	Unidentified fragments from the Oberesch (author's own).....	188

Figure 16:	Inscribed <i>dolabra</i> from Harzhorn (from Geschwinde & Lönne 2013: 279)	199
Figure 17:	Himera skeleton with embedded projectile (after Lee 2011: 40).....	220
Figure 18:	Bone-pit 5 from the Oberesch, Kalkriese, containing disarticulated remains including visible human skull (Rost & Wilbers-Rost 2010: 122)...	236
Figure 19:	Skull from Alken Enge (http://www.museumskanderborg.dk/Press_Releases-1085.aspx).....	242
Figure 20:	Metal detection survey at the Little Bighorn (1984) with artefact hits marked with plastic pin-flags (from http://www.friendslittlebighorn.com/Dig-of-1984.htm).....	257
Figure 21:	Difference in artefact recovery on 10m and 2.5m transect survey at Edgehill (Foard & Morris 2012: 123).....	261
Figure 22:	Excavation at the Oberesch with excavated artefact finds marked with pins (red arrows; author's own).....	264
Figure 23:	Surface vegetation at Harzhorn (October 2011; author's own).....	266
Figure 24:	Suggested locations for Mons Graupius from published papers and internet sources (www.roman-britain.org).....	296
Figure 25:	Dunning temporary camp and landscape (www.canmore.org.uk).....	296

List of tables

Table 1:	Topographic descriptions of ‘located’ ancient battlefields.....	87
Table 2:	Topographic descriptions of non-toponymic (provincial) Roman battlefields.....	91
Table 3:	Military artefacts at the Oberesch based on individual find numbers (Figures from Harnecker & Franzius 2008, Harnecker & Mylo 2011)...	191
Table 4:	Military artefacts at the Oberesch based on total fragment quantities (figures from Harnecker & Franzius 2008; Harnecker & Mylo 2011)	192
Table 5:	Artefact proportions at Harzhorn (from figures in Berger <i>et al.</i> 2010/13: 334- 335).....	195
Table 6:	Literary description of inhumation/cremation of the Roman battle-dead 220-31BC.....	226
Table 7:	Inhumation/cremation of the battle-dead 31BC-AD70.....	226
Table 8:	Metals used for weapons, armour and military kit from the Oberesch (data from Harnecker & Franzius 2008; Harnecker & Mylo 2011).....	270

List of abbreviations

GIS	Geographic Information System
GPR	Ground Penetrating Radar
KOCSA	Key terrain, Observation & fields of fire, Cover & concealment, Obstacles, Avenues of approach
METT-T	Mission, Enemy, Troops available, Terrain, Time
PTSD	Post Traumatic Stress Disorder

Table summarising the principle battle sites noted in the text

Greek (C5th BC– C3rd BC).

Marathon	490BC	Attica, Greece
Himera	480BC	Palermo, Sicily
Thermopylae	480BC	Lamia, Greece
Plataea	480BC	Boeotia, Greece
Pylos	425BC	Messenia, Greece
Sphacteria	425BC	Messenia, Greece
Delium	424BC	Boeotia, Greece
Amphipolis	422BC	Serres, Greece
Delphi	369BC	Phocis, Greece
Cynoscephalae	364BC	Thessaly, Greece
Olynthus	348BC	Chalcidice, Greece
Chaeronea	338BC	Boeotia, Greece
Granicus	334BC	Çanakkale, Turkey
Issus	333BC	Hatay, Turkey
Gaugamela	331BC	Iraq
Hydaspes	326BC	Punjab

Roman Republic (C3rd BC – C1st BC).

Allia	390BC	Rome, Italy
Egadi Islands (naval)	241BC	Aegadian Islands, Sicily
Trebia	218BC	Piacenza, Italy
Trasimene	217BC	Umbria, Italy
Cannae	216BC	Apulia, Italy
Munda	214BC	Andalucía, Spain

Numistro	210BC	Basilicata, Italy
Baecula	208BC	Andalucía, Spain
Ilipa	206BC	Andalucía, Spain
Zama	202BC	Tunisia
Cynoscephalae	197BC	Thessaly, Greece
Aquae Sextiae	102BC	Provence-Alpes-Côte d'Azur, France
Chaeronea	86BC	Boeotia, Greece
Bibracte	58BC	Burgundy, France
Vosges	58BC	Alsace, France
Carrhae	53BC	Harran, Turkey
Alésia	52BC	Côte-d'Or, France
Zela	47BC	Tokat, Turkey
Munda	45BC	Andalucía, Spain

Roman Empire (C1st AD – C 4th AD).

Lollian Disaster	16BC	Germany
Teutoburg Forest	AD9	Lower Saxony, Germany
Idistavisus	AD16	North Rhine-Westphalia, Germany
Flevum	AD28	North Holland, Netherlands
Invasion of Britain (2)	AD43	England
Caratacus	AD50	England/Wales
Boudican Revolt	AD60/61	England
Beth-Horon	AD66	Israel
Gamla	AD67	Israeli-occupied Golan Heights
Yodefat	AD67	Galilee, Israel
Bedriacum	AD69	Lombardy, Italy
Mons Graupius	AD83/84	Scotland
Harzhorn	C3rd AD	Lower Saxony, Germany
Abritus	AD251	Razgrad, Bulgaria

Dura-Europos	AD253	Deir ez-Zor, Syria
--------------	-------	--------------------

Medieval (C5th-C15th).

Brunanburh	937	United Kingdom
Maldon	991	Essex, England
Fulford	1066	East Riding of Yorkshire, England
Hastings	1066	East Sussex, England
Battle of the Standard	1138	North Yorkshire, England
Stirling	1297	Stirling & Falkirk, Scotland
Bannockburn	1314	Stirling & Falkirk, Scotland
Crécy	1346	Picardy, France
Visby	1361	Gotland, Sweden
Aljubarrota	1385	Centro, Portugal
Shrewsbury	1403	Shropshire, England
Grünwald-Tannenberg	1410	Ostróda, Poland
Agincourt	1415	Pas-de-Calais, France
Towton	1461	North Yorkshire, England
Barnet	1471	Greater London, England
Bosworth	1485	Leicestershire, England

Early Modern (C16th-C18th).

Lützen	1632	Saxony, Germany
Wittstock	1636	Brandenburg, Germany
Edgehill	1642	Warwickshire, England
Marston Moor	1644	North Yorkshire, England
Lostwithiel	1644	Cornwall, England
Tywardreath	1644	Cornwall, England
Naseby	1645	Northamptonshire, England

Talamanca	1714	Catalonia, Spain
Culloden	1746	Inverness-shire, Scotland
Kunersdorf	1759	Brandenburg, Germany
Camden	1780	South Carolina, United States
Cowpens	1781	South Carolina, United States
Fort Watson	1781	South Carolina, United States
Fallen Timbers	1784	Ohio, United States

Modern (C19th-C20th).

Aspern	1809	Vienna, Austria
Waterloo	1815	Wallonia, Belgium
San Jacinto	1836	Texas, United States
Palo Alto	1846	Texas, United States
Resaca de la Palma	1846	Texas, United States
Balaclava	1854	Sevastopol, Crimea
First Manassas	1861	Virginia, United States
Gettysburg	1863	Pennsylvania, United States
Sand Creek Massacre	1864	Colorado, United States
Nashville	1864	Tennessee, United States
Little Bighorn	1876	Montana, United States
Big Hole	1877	Montana, United States
Fromelles	1916	Nord, France

Chapter One: Introduction and context

1.1: Question and aims

This thesis is concerned with reassessing the methodologies used to locate and study Greek and Roman battlefields, addressing both the inherent and practical challenges of exploring these sites. It is a thesis on battlefield archaeology which happens to focus on classical antiquity as well as a work on classical antique archaeology which centres on battlefields. Much of the research is a hybrid between the disciplines of battlefield and Greco-Roman archaeology, exploring how methodologies used by both can be combined to explore battlefields from antiquity. One of the central considerations throughout this research has been the issue of whether the archaeological study of classical battlefields differs from that of their later (C19th onward) counterparts, and if so, what adaptations are required to effectively investigate them as sites. This thesis therefore places much of the evidence from antiquity, both archaeological and historical, in the context of wider battlefield archaeology, as well as within its contemporaneous context. It reviews the validity of text-based approaches as tools for battlefield location, and explores how archaeological methodology developed for the study of later-period battlefields can be adapted to study sites from antiquity. As will be shown, Greek and Roman battlefields have, in a number of ways, been poorly studied in the past, and archaeology is still not a common methodology used to resolve problems, or indeed simply explore, individual instances of battle from Classical antiquity. There is, in many quarters, a perception that the archaeology of battle from this period does not survive, certainly not in any useful form, in the archaeological record, despite the (albeit relatively recent) identification and excavation of a number of conflict sites. Historians, and indeed many archaeologists, continue to rely on topographic reconciliation methods based almost exclusively on a corpus of literary texts which are not suited to the purpose. The ancient literary record remains disproportionately influential in ancient battlefield studies, while battlefield archaeologists unfamiliar with the military and material culture of antiquity have struggled to effectively assess how methodologies from their discipline can be adapted to this earlier period. However, the

archaeological characteristics of ancient battlefields require adaptations to the methodology developed for studying lead-munitions-based C19th battle-related assemblages. In particular, the weaponry in use, the deployment of soldiers, subsequent longer-term activity on the site, and the limited historical documentation of the engagement have all proved problematic factors in the archaeological study of Greek and Roman battle.

This research considers why classical antiquity has been so marginalised by battlefield archaeology, and why battlefield archaeology has been largely rejected by ancient historians. The thesis focuses almost exclusively on the Greek and Roman periods, although much of the theoretical basis could be applied, with period-specific revisions, to many other ancient and earlier Medieval contexts. Contemporaneous and earlier conflict, such as that from Egypt, has been excluded due to lack of availability of evidence as well as issues of scale in terms of the material covered by the thesis. The latter reason is also behind the omission of significant discussion of prehistoric warfare contemporaneous with the Greek and (particularly) Roman worlds. The lack of any historical records was a factor given the discussion in this thesis of how to work within a reduced historical record, rather than in the absence of one. This thesis does however discuss the conceptual framework of battlefield archaeology, the historiography of ancient battlefield studies, and provides an evaluation of the ancient literary record with regard to ancient battle. In particular, there is an in-depth assessment of the archaeology of ancient battle, addressing what is actually meant by the term, and the impact of post-battle activity. There are significant methodological challenges in adapting a methodology developed to study post-Blackpowder warfare (particularly the C19th) to study sites from classical antiquity, both inherent (the archaeological and historical evidence) and practical (the ability to effectively identify it). The underlying theoretical assumption is that Greek and Roman battle deposited an assemblage of material which, in some circumstances, survives in the archaeological record. This much can be demonstrated by the survival of substantial assemblages, of artefacts and/or human remains, on multiple battlefields from the period. In some cases, assemblages may not survive on sites, or it may not be possible to identify them conclusively on the basis of the available evidence. Archaeological exploration in these cases may, however, be able to suggest whether the non-survival of the assemblages is the result

of natural processes, by scientific analysis of the find context, or whether it reflects a spectrum of effectiveness in post-battle site clearance.

Ancient warfare in practice is not the primary focus of this research, although it is hoped that exploration of Greek and Roman battlefields will provide new evidence for the process of ancient battle. The operation of ancient armies as field units is considered to a degree, particularly in the context of post-battle activity. However, there will not be direct comment on the field operation of the army - for example, in considering the unit dispositional pattern of Roman battle, the varying uses of projectiles and archery by different unit types, or the physical distance between soldiers in battle-array will not be discussed. This is in part due to the invisibility of certain unit-types in the archaeological record of classical battlefields. Issues of unit identification are not limited to the Greek and Roman world. In most cases, battlefield archaeology is only able to confirm the presence of particular unit or unit-types through the presence of artefacts individually associated with them, typically equipment or insignia. Such artefacts, however, are rare. The absence of this material from the battlefield, or a particular area of it, cannot alone confirm the absence of the respective troops from the area. The research in this thesis into the material assemblages deposited on Classical battlefields (predominantly presented in Chapter Four) suggests that there may be issues identifying the presence of cavalry, some forms of hand-to-hand fighting, and forces which did not have a significant metal-based kit. Consequently, assemblages may be weighted towards armies, and engagements, with heavy use of metal projectiles and kit. However, in the longer term, ancient battlefield archaeology does have the potential to contribute a significant amount to the study of ancient battle, by documenting individual and group behaviours on the battlefield, the use of weaponry, and the impact of both battle and conflict on the landscape.

1.2: Thesis structure and organisation

In this introductory chapter, this research is put into context by examining the development of both classical battlefield studies and battlefield archaeology, and

addressing why Greek and Roman battlefields have been largely marginalised by both disciplines. It is argued that battlefields from classical antiquity can be studied archaeologically, but to do so requires a methodological adjustment which takes into account the characteristics of ancient battle. The previous failure to do so, rather than an absence of archaeological material, has held the field of ancient battlefield archaeology back. In particular, reliance on the ancient literary record for evidence regarding ancient battlefields has proved a particular issue, as the sources are, in almost all cases, completely unsuited to locating sites within the landscape. The ancient literary record and its relationship to battlefield studies is discussed in Chapter Two, which considers the use of the sources in ancient battlefield studies and the problems this has caused, followed by an examination of the texts for what evidence they actually give about battlefields, and how reliable and/or useful this actually is. Although it is clear that the ancient literary record should not be marginalised entirely, it may reveal supplementary details at best about battlefield locations, particularly the 'lost' sites of the Roman provinces.

The remaining chapters (Three to Six) consider a more practical, archaeological approach to locating ancient battlefields and studying the archaeology of ancient battle. Chapter Three discusses the identification of ancient battlefields through application of techniques adapted from landscape archaeology, particularly the identification of battle-related military installations, monuments, and other constructed features. While this approach alone is unlikely to be sufficient to identify an actual battlefield, it does allow a limited ground-area to be shortlisted as a potential battlefield, on which survey can then be conducted to look for archaeological evidence of battle. The exact nature of this evidence is discussed in Chapters Four and Five, particularly in the context of site formation processes and their impact on the extant assemblages, discussing in detail what is the "archaeology of ancient battle". Both chapters argue that, although post-battle activity, particularly looting and disposal of the dead, had a substantial impact on the battle-related assemblages left behind on battlefields, the processes as a whole did not serve to strip the site of its entire archaeological assemblage.

The hypothesis that looting was a process which would have removed every metal artefact - thus, every artefact of diagnostic value - from an ancient battlefield is considered

in Chapter Four. It suggests that a substantial assemblage of small, low-value artefacts was left behind on sites primarily through a process of natural obscuration. As such, although the artefact record from ancient battlefields is not overwhelmingly martial in nature, and may be difficult to recognise outside a prior-identified military context, it can be substantial, and contains enough metal projectiles to be associated with conflict. The disposal of the dead is addressed in Chapter Five. It is almost certain that in the majority of cases, the battle-dead were disposed of in some way on the battlefield itself, whether through cremation, inhumation, or abandonment on the site. However, the archaeological evidence from a number of conflict-related sites and cemeteries in antiquity suggest that the concept of a uniform and organised process of battlefield disposal may be an oversimplification, as is the assumption that *something* was done with the dead beyond leaving them to rot. The creation of battlefield graves, by whatever method, was an important factor in site-formation, as would be the failure to do so.

The archaeology of ancient battlefields consists of a mixed assemblage of ferrous and non-ferrous metal artefacts, and in some cases potentially also mass graves. Although almost certainly indicating military presence/activity, the artefact categories individually are not necessarily diagnostically indicative of ancient battle. Rather, it is the occurrence of multiple battle-relevant artefacts within a limited spatial area that indicates a conflict site. This archaeological manifestation requires methodological adaptations in archaeological survey comparative to later battlefields. Chapter Six discusses the most effective methodology for surveying ancient battlefield sites to make the most of the extant assemblages, and the alterations which need to be made to general battlefield archaeology approaches to make them suitable for sites from the Classical world. It also addresses some of the practical issues regarding the exploration of these sites, particularly funding and access to sites. Chapter Seven concludes the thesis with a discussion of the evidence, drawing back to the original research issues regarding the nature and study of ancient battlefield archaeology. The chapter finishes with a discussion of how this research can be used in future ancient battlefield projects, both in the identification and study of individual sites, and in new avenues of research including the impact of battle on the surrounding landscape and its civilian communities, and a more holistic approach to ancient battle as an event.

1.3: Battlefield Archaeology

In the last three decades, battlefield archaeology has become a recognised and accepted discipline within military studies. There is a conference series dedicated to the subject (*Fields of Conflict*), although it has a patchy record in publishing its proceedings (cf. Freeman & Pollard 2001; Scott *et al.* 2009). A 9th meeting is currently set for Dublin in 2016, and postgraduate counterparts have been held at the universities of Glasgow (2011), Liverpool (2013), Birmingham (2014) and Oxford (2015). The *Journal of Conflict Archaeology* has published many research articles on battlefields, although thematic and period journals are also beginning to feature battlefield archaeology. That said, there has still to appear a satisfactory text-book type analysis of the methods and techniques of 'battlefield archaeology'. Foard and Morris' *The Archaeology of English Battlefields: Conflict in the pre-Industrial Landscape* (2012) is a start but its usefulness is limited by the fact that it concentrates on battle in England from the C16th onwards. Their discussion of Roman and early medieval warfare is limited to less than 20 pages and repeats many of the misconceptions which are discussed in this thesis. A similar situation is found in Scott and McFeaters' (2011) article on the development of conflict archaeology, where only 10 lines are dedicated to antiquity in an article of almost 30 pages.

There is a more extensive literature on the subject of 'battlefield archaeology' from the USA but understandably it tends to focus on US examples and/or case studies elsewhere from the C17th onwards (e.g. Geier *et al.* 2011, 2013; Babits & Gandulla 2013 etc) or are otherwise simplified or generalised (e.g. Cooksey & Lynch 2007; Starbuck 2011). On the continent in Germany at least the subject is beginning to be recognised as a legitimate branch of archaeological research, typified by Brock and Homann's *Schlachtfeld-archäologie* (2011), where it has a multi-period, European perspective, including some pre-Medieval examples (see also Eickhoff & Schopper 2014). If the discipline 'battlefield archaeology' has the beginnings of a footing in 'academic archaeology', it has become a subject of widespread public interest, with the likes of television series such as *Two Men in a Trench* (Pollard & Oliver 2002, 2003), *Battlefield Detectives* (Wason 2003), and *Battlefield Britain* (Snow & Snow 2004) as well as numerous one-off documentaries and, increasingly, online

content.¹ Such broadcasts have in turn created their own 'books to accompany the series', which given the target audience are understandably of variable quality. Moving further afield, archaeological research on battlefields has also been used by heritage management organisations, including the US National Parks Service, Historic England,² and Historic Scotland, to register and protect sites, and to satisfy public interest by displaying battle-related finds in local museums and, increasingly, dedicated battlefield visitor centres. This development has in turn generated its own literature relating to how battlefields might be preserved and presented, although surprisingly little, at least in the European context, on how their research agenda might be advanced. Yet again, as will be argued elsewhere, such literature has little relevance to the study of 'ancient' battlefields.

The term "battlefield archaeology" may no longer fully address the research of the discipline, a problem not helped by it becoming increasingly synonymous with "conflict archaeology". The latter discipline covers a much wider range of sites, from siege works to detainment and concentration camps, aircraft and nautical wrecks, weapon 'biographies', and war art. The methodological approach to "conflict" more widely threatens to undermine the unique characteristics of battlefields even while they remain recognised as a distinctive site-type (Pollard & Banks 2010: 415; Scott & McFeaters 2011: 105). Foard (2009) has raised concerns that the term "battlefield archaeology" suggests that it is the battlefield itself - or rather, its terrain - which is the subject of interest, rather than the physical remains left by battle. He suggests "archaeology of battle" or "battle archaeology" as more suitable terminology for the discipline, marking a clearer division between the terrain-analysis approach taken in the past by military historians, and the archaeological investigation of the physical debris of battle. While a useful distinction, a focus on the debris of battle independently of the physical landscape risks marginalising the battlefield terrain, although spatial analysis of artefact distribution overlaid onto a topographic map may alleviate some of these potential problems.

¹ In particular, the website www.lloydianaspects.co.uk provides a wealth of articles, blogs and videos addressing issues relating to Classical warfare, including equipment reconstruction and experimentation and unit organisation.

² English Heritage divided into two organisational bodies in April 2015, Historic England and the English Heritage Trust. Until this date, the English Battlefields Register was managed by English Heritage, but now falls under the jurisdiction of Historic England.

One of the most important factors in the development of battlefield archaeology was the recognition that individual periods or instances of conflict left distinctive conflict remains which could be associated with a relatively narrow temporal window (Scott & McFeaters 2011: 107). Thanks to the historical documentation available on munitions, archaeologists are often aware of what type of artefacts will be found on a battlefield site from a known period, allowing survey and excavation to be targeted more specifically. Munitions and projectiles have become the "signature artefacts" of medieval and modern battle-related assemblages, and the key diagnostic find for identifying particular areas of a battlefield, and its boundary. Lead munitions are by far the most common diagnostic find on battlefields from the C17th to C19th. Prior to this, other projectiles, such as iron arrowheads, are more common and serve the same diagnostic purpose as lead munitions. Although other artefact categories are recovered from medieval and modern battlefields, in many cases it can be difficult to associate them with the battle as opposed to contemporaneous civilian deposition or military activity unrelated to the battle.

As a result, at some sites the physical location or boundary of the battlefield cannot be verified from the non-weapon assemblage, only from the munitions distribution (see Pratt 2009; Foard 2012: 36). Exceptions may be made when an element of the non-weapon assemblage can be firmly associated with the contemporary military, particularly insignia, such as the silver boar recovered from an area of Bosworth battlefield previously unrecognised (Foard & Curry 2013: 124-126). On later sites, military insignia, particularly regimentally-marked, provide firm evidence both for identifying an area of battle-related and locating a particular unit within the area. However, although the non-weapons assemblage may not be used in identifying or verifying the boundaries of a battlefield, they play a key role in interpreting the wider narrative of the battle, providing a human-interest element to the assemblage which is of increasing public interest (e.g. Scott *et al.* 1989: 191-223; *cf.* Pollard 2003). Mass graves may also be used to identify battlefields, although their distribution is unlikely to determine the physical extent of the site. Although there may be ethical issues associated with the disturbance of war graves (see 6.2.3), battlefield graves from the medieval and early modern world can be an incredibly useful resource for understanding the anthropological impact of battle, as at Visby (Thordeman 1939), Towton (Fiorato *et al.* 2000), Aspern (Binder *et al.* 2014), the Little Bighorn (Scott *et al.* 1998), and

the WWI Western Front (Fraser & Brown 2007). However, on some battlefields, particularly more modern or those of significant national importance, graves may be deliberately avoided for nationalist, as at Culloden where there has been strong opposition to excavation of the Jacobite mounds, although no similar protests have been raised over exploration for the burials of the Government battle-dead (Pollard 2009a). If they are uncovered unintentionally or as part of a rescue project, the human remains may be reburied without study, as at Camden where the disturbed material has been placed at a significant depth as to discourage further disturbance, incidental or otherwise (Smith *et al.* 2009).³

The archaeological evidence recovered from battlefields is almost always intended to be used alongside an extant historical record, variously validating, elucidating, or arbitrating on the extant battle narratives (Foard & Morris 2012; *cf.* Freeman 2010: 149). Some projects have succeeded in confirming the historical record, as at Talamanca where the entire archaeological project was conducted to test the veracity of a single source (Rubio Campillo 2008). In others, archaeology has highlighted omissions and faults in the written sources, as at Balaclava (Freeman 2010). The range of historical sources grows substantially from the Early Modern period onward. For the C19th, potential sources include official campaign reports, journals, maps, military despatches, and more personal testimonies such as letters and diaries, and later, memoirs and oral testimonies as well as more formal historical chronicles (Fox 1993; Rubio Campillo 2008; Freeman 2010). From the C16th historical publications increasingly featured maps of the battle aimed at narrative interpretation (Pollard 2009c) although these were not always free from error even when produced soon after the battle, as at Agincourt (Sutherland 2015). Until the C19th, the historical record preserves very overt little participant testimony, although it is possible that individual experiences influenced the narratives in historical chronicles (e.g. Foard & Curry 2013: 45). The muster lists of individual soldiers which survive as early as the mid-C14th,⁴ and from later conflicts wills and pension lists, provide a record, if not testimonies, of individual service.

³ The archaeological report on the graves at Camden has not been widely distributed to protect the location of the graves due to continued concern regarding the threat from relic hunters (Steven Smith *pers.comm.* 27th August 2014).

⁴ A database of muster lists from the C14th-15th is available online at www.medievalsoldier.org, while later service records are available from the National Archives.

Archaeological evidence from a battlefield can be used alongside the extant historical record, ideally producing an independent narrative which is a synchronisation of the best elements of both (*cf.* Fox 1993: 7-9). However, methodological problems can be encountered when the historical record is inaccurate, leading to incorrect identification of the main narrative issues for a battle and as Freeman (2010: 164) notes, one of the consequences of battlefield archaeology has been to demonstrate how poorly documented many battles were. Narrative errors may be masked by omissions or by internal inconsistency with other inaccuracies. The problematic narratives and transmission of participant accounts from the Little Bighorn illustrates some of the issues. Many of the testimonies were taken from US cavalrymen during Major Reno's 1879 court martial, from soldiers who had deployed with Reno, rather than following Custer into the ambush. They had therefore avoided the battle, only arriving at the battlefield several days later whereupon they hurriedly buried the dead. Their narratives are highly likely to have been altered to exculpate their involvement, and that of Reno, in the conflict (Scott *et al.* 1989: 15; Fox 1993: 232).

A significant difference is obvious between the court testimonies and private retellings of the battle, evidenced through letters and diaries (Scott *et al.* 1989: 11). Other testimonies, both US and Indian, were taken over 30 years after the battle, by which time it had become a culturally significant event, leading to further altered testimonies on the part of the US cavalrymen (Hammer 1976). Fox (1993: 228) noted that several Indian witnesses contradicted their own testimonies when re-questioned years later, in particular painting a more positive picture of the American soldiers. Issues were also raised by the testimony when it was demonstrated that some, but not all, Indian participants had transposed the compass points 90° clockwise and were unclear about the directions of movement throughout their narratives (Fox 1993: 150-151). The record therefore raised many issues, almost all of which have been subsequently answered by the archaeology, particularly the circumstances which led to the soldiers reaching Last Stand Hill (Scott *et al.* 1989). In other cases, battlefield projects have addressed issues regarding the location of particular units on the battlefield (e.g. Balaclava, Freeman 2010), of particular phases of activity (e.g. Culloden, Pollard 2009b), and the physical extent of the battlefield (e.g. Towton, Sutherland 2012; Bosworth, Foard & Curry 2013; Edgehill, Foard 2012). The application of battlefield

archaeology has provided accurate locations for battlefields which had for centuries been placed in the wrong position, including Towton, Barnet, Bosworth, Marston Moor, Naseby and Culloden in the UK alone (Foard & Morris 2012: 91-95). Where conflicting accounts of a battle exist, archaeology may indicate which more closely approximates the truth, as at Palo Alto where the assemblage indicated that the American sources - often accused of inaccuracy by historians on the basis of "the winner writes the history" - were better representative of the engagement than the Mexican narratives (Haecker 2001).

1.3.1: Development of the discipline

Battlefield archaeology is a relatively new development, and the discipline, in focusing on sites from the C19th, was originally developed to study engagements from the recent past. Until the mid-C20th, excavation on battlefields was limited to a brief period of antiquarian interest in locating mass graves, as at Agincourt in 1818 (Sutherland 2015), Crécy in the 1820s (Preston 2005: 117-118) and Naseby in the 1840s (Foard 1995: 354-358).⁵ The re-emergence of interest in battlefield archaeology in the second half of the C20th saw a new focus on the artefact assemblage rather than the features constructed on the site. Field-walking survey and archaeological projects at a number of battlefields and conflict sites began to explore the potential for reconstructing the narrative of an individual engagement from the artefact assemblage, at sites such as Fort Watson (Ferguson 1977), Marston Moor (Newman 1981; *cf.* Foard 2009), and the Little Bighorn (Scott 2013: 7). However, it was the introduction of metal detection which proved a particularly valuable innovation. Pioneered in the United States, metal detection was used in archaeological explorations on the battlefields at San Jacinto, Palo Alto, the Little Bighorn, and the Big Hole, and the fort at Valley Forge where the American Continental Army wintered in 1777-1778 (Connor & Scott 1998). The methodology came to maturity with the often-cited excavations at the Little Bighorn in the 1980s, which in its discoveries and the way it set the standard for battlefield archaeology has been largely followed by projects ever since (see Scott *et al.*

⁵ The formal archaeological excavations on the graves at Marathon, Thermopylae and Chaeronea in the later Nineteenth and early Twentieth Centuries, conducted to professional contemporary standards, frequently go unmentioned in overviews of the development of battlefield archaeology.

1989; Scott 2013). In 1983 a grass fire stripped the site of its surface vegetation, allowing for a more detailed surface survey from field-walking and, most importantly, a metal detection survey (Scott 2013: 6-7). The developed methodology prioritised the recovery of lead munitions as clues to the narrative development of the battle, first detecting their location through survey, then conducting a series of excavations to identify the artefacts, plotting their exact find-position with the Global Positioning System (hereafter GPS; see Scott *et al.* 1989; Scott 2013: 72-76). Spatial analysis of the munitions created new insights into the geographic course of the battle, various phases of skirmishing, and combat disintegration at Last Stand Hill, while the non-munitions evidence, such as military kit and cavalry equipment, shed light into both the life and death of the American casualties (Fox 1993). The archaeology was later used by Scott (2001) to reconstruct more generally the battlefield behaviour of US soldiers during the American-Indian Wars. The Little Bighorn project remains the benchmark for battlefield archaeology, both in terms of the methodology used to investigate a site, and the interpretive use of the evidence, particularly narrative reconstruction of the individual engagement in conjunction with the historical record.

Since the 1980s, battlefield archaeology has grown to encompass a vast range of sites temporally, geographically, and thematically (see Scott & McFeaters 2011; Carman 2013 for recent summaries). Battlefields from across the world, from prehistory to the Second World War (and beyond) are studied using variations on the methodology developed between the 1950s and 1980s, refining it to the requirements of differing areas and historical periods. Topographic reconciliation is no longer accepted by the vast majority as a methodology able to settle the location of a disputed battlefield, and explanations are required when archaeological material is not recovered from proposed sites. Although the discipline was originally conceived as a methodology to study battlefields in the United States from the 1860s onwards (Fox 1993), the parameters have been gradually pushed increasingly backwards. Sites from the Jacobean War (e.g. Pollard 2009b), the English Civil War (e.g. Foard 2012), the Thirty Years War (e.g. Eickhoff 2014), and the Wars of the Roses (e.g. Fiorato *et al.* 2000; Foard & Curry 2013) have all been successfully identified and excavated. Archaeological evidence associated with sites from earlier periods, particularly the Viking world (Raffield 2013), has proved difficult thus far to identify. In part this is due to issues over the exact location of sites comparable with those faced for the Classical period,

as well as problems identifying a uniquely 'military' assemblage (Raffield 2013: 128-133). There is optimism, however, that the archaeology of earlier Medieval-period battle will soon be as recognisable as that of its later-period counterpart.

However, despite the temporal extension of battlefield archaeology into the more distant past, the methodology has remained focused on identifying the spatial distribution of metal, usually non-ferrous, munitions and projectiles, which may not be suited to all periods and engagements. Although adjustments can and have been made, such as at Towton where the project was able to target iron arrowheads after identifying their magnetic signature (Sutherland & Richardson 2009), battlefield projects focusing on sites pre-dating the use of gunpowder weapons are still rare. There are concerns that earlier battlefields will have insufficient historical evidence (Foard 2009) and battle-related assemblages (Foard & Morris 2012: 37-61) to enable the sites to be accurately identified, let alone the actual engagement reconstructed. The reality may however, be more complex, particularly where the location of a site is of equal research priority as the narrative analysis. Portable metal working hearths, although with no artefacts, have been identified at the site of Fulford, suggesting that the archaeology of earlier medieval battle may be complex but not completely absent (C. Jones 2011).

While it may not be possible to base an entire narrative reconstruction on the remains from earlier sites, any assemblages which can be securely identified with a battle will provide evidence for the location of the engagement, which is rarely secure for sites pre-dating the early modern period. At Fulford, the hearths have provided evidence for why the assemblage may have been so limited, as material was evidently being reprocessed on the battlefield in the immediate aftermath of the conflict, while C. Jones (2011) has associated their abandonment on the site with the wider conflict narrative of the Norse invasion. Identification of battlefield sites above narrative reconstruction currently also dominates the relatively new sub-discipline of prehistoric battlefield/conflict archaeology. From a riverbank in the Tollense Valley, Germany, human remains and weapons associated with a Bronze Age battle have been identified, evidently transported from a conflict site slightly upstream (Jantzen *et al.* 2011). Although the actual battle cannot be reconstructed from the archaeology, the assemblage has nonetheless identified that conflict occurred in

this area of Germany during the Bronze Age which extended beyond the so-called “warrior-elite”, and recreated the anthropological impact of the conflict on the human body. Although the research parameters are not the same for pre-blackpowder battlefields, the potential for research on earlier sites, and for aims other than narrative reconstruction relative to an historical record, are gradually being accepted by battlefield archaeology (e.g. Scott & McFeaters 2011: 119-121). However, exploration of prehistoric conflict remains perhaps overly reliant on the identification of human remains with signs of skeletal trauma; James (2007: 162) rightly suggests that much of the pathological evidence from conflict in the Early Iron Age, for example, has been lost due to mortuary practice in the period. The prevalence of conflict in these periods, and its location, may be severely underestimated as a result (see 1.3.3).

1.3.2: Ancient battlefields in archaeology

Although a number of conflict sites from antiquity have been successfully identified and excavated, Greek and Roman battlefields do not have a particularly prominent profile in battlefield archaeology. This is all the more surprising when it is considered that limited archaeological work has been carried out on ancient battlefields since at least the 1860s, pre-dating all but the most cursory antiquarian work on medieval and early modern battlefields. Between 1861 and 1865 Napoleon III funded substantial excavations at Alise-Sainte-Reine in the hopes of proving the site to be Vercingetorix’s Alésia. Headed by Eugène Stoffel, a career soldier and military theorist who also excavated at Gergovia, the excavations recovered artefacts and features which were used to declare the site to be Alésia. Although the evidence not necessarily sufficient to identify the site as Caesar’s Alésia rather than that of another (undocumented) Late Iron Age conflict, the substantial fortifications, weapons, and human remains recovered in both the 1860s and later excavations in the 1990s suggests that the initial identification was correct (see von Schnurbein 2008; Sievers 2008). Several early antiquarians and archaeologists had conducted excavations on the grave-mounds of Marathon, Thermopylae and Chaeronea, funded particularly by German archaeological authorities, locating human remains which

were rapidly associated with the respective battles (Schliemann 1884; Stais 1893; Sotiriadis 1903; *cf.* Traill 1995: 227-235). Yet these approaches were never developed further, either into a more archaeologically-driven discipline of ancient battlefield studies, or even a discipline which required verification of the literary and topographic conclusions drawn on these sites. Following the Second World War, archaeological work on the Greek battlefields stopped, which may be associated with the complete decline of ancient military studies in Germany (see 1.3.3). While some studies into the archaeology of Roman conflict continued, this research in many cases focused on siege, rather than open-field, warfare (see Coulston 2001).

To date, there is remarkably little evident interest in ancient battlefield archaeology among the majority of ancient historians. Some have proved dismissive, even hostile, of the discipline. The underlying theme behind the attitudes appears to be the question of the physical survival of ancient battlefield assemblages, in particular that any substantial remains would have been left on the field after looting (*cf.* Webster 1993: 100). The most notable critic-historian is Philip Sabin, who described the archaeology as "the least significant for our particular enquiry", going on to say:

"Pitched battles in the open field are by their very nature evanescent phenomena, and leave little lasting archaeological record. Hence, we cannot hope to find anything like the same degree of surviving physical evidence as for sieges... for more recent open field engagements such as Towton or Naseby, battlefield archaeology may reveal actual remnants such as grave pits or musket shot, which can throw significant light on the course of the fighting, but ancient battles were so much longer ago that even the temporary camps of the two sides are usually impossible to trace" (Sabin 2009: 4-5).

Sabin's main concern appears to be in the survival of the assemblage through the post-battle looting process, presenting it, with no particular evidence, as a process of field-stripping that was more effective than it was in any period of subsequent conflict. Sabin (2007: 399-400) is also critical of topographic analyses of ancient battlefields, and seemingly unappreciative of the potential that archaeology as a wider discipline has for reconstructing

past environments, including terrain. Foard has been active in demonstrating the use of historic terrain regression through archaeological analysis on battlefield sites, providing accurate reconstructions of the landscape at the time of the battle. At Marston Moor, the spatial distribution of the archaeological evidence made little sense until it was contextualised within the contemporary field-boundary system (Foard 2012; Foard & Morris 2012). Similar terrain regression at Talamanca has also shed new light on the artefact distribution from the battle (Rubio Campillo 2008). The Lion Monument, constructed soon after the Battle of Waterloo, has significantly impacted subsequent interpretation of the battle, particularly regarding the use of the ridge. Terrain regression has attempted to reconstruct the actual appearance of the ridge during the battle by redistributing the volume of earth removed to construct the mound, providing a more accurate narrative of the French attack and British defence (Wason 2003). At Kalkriese, environmental analysis and pollen sampling have reconstructed the landscape and terrain at the time of the Varus battle, indicating that, far from the unpopulated and forested landscape expected from the literary record, the area was partially cultivated and featured a number of native settlements (Tolksdorf-Lienemann 2004).

Although Sabin is correct to express concern about substantial terrain changes at many ancient battlefield sites, rendering the already insufficient literary accounts completely useless, his complete disbelief in the archaeology of ancient battle leads him to reject the idea that physical artefacts can provide the exact location that the literary record does not. Sabin's revolutionary methodology is instead to take an inherent military probability approach, combined with gaming theory, within which the physical terrain of the battlefield, and therefore its exact location, is marginalised as unimportant (Sabin 2009). This approach led him to multiple new conclusions on many ancient battles, although each one was only verified by the internal logic of his own project, with no attempts at verification. Similar doubts regarding the survival of battlefield assemblages and landscape change have been expressed by Whitby (2007: 75-77), although he did concede that assemblages could survive in exceptional circumstances, citing Kalkriese and Alésia as examples. Coulston, although in many ways an active proponent of ancient conflict archaeology, nevertheless expressed similar doubt that battlefield assemblages would

survive in any identifiable form on the majority of ancient battlefields, excluding perhaps sites of Roman defeat on a scale comparable to Kalkriese (Coulston 2001, 2005).

In Greek warfare studies there has been little discussion of battlefield archaeology, although the failure of major authors such as Victor Davis Hanson (1989, 1998, 2001) or Hans van Wees (2004) to discuss the subject may betray their opinions on the discipline's potential in their period of interest. Once again, this view is conditioned by an expectation that assemblages are unlikely to have survived the looting process. This perspective, however, gives too much credit to ancient battlefield looting as a site clearing-process, and, as will be demonstrated in Chapter Four, vastly underestimates the scale of artefact deposition directly resulting from ancient battle. Nevertheless, battlefield archaeology has still to be accepted as a viable methodology for studying ancient battle, and historians remain, for the most part, reliant on an ancient literary record that is almost entirely unsuited to the reconstruction of individual conflicts.

These prejudices in part link with another issue regarding archaeological work on Greek and Roman battlefields: the practicalities of doing so (see 6.2). While many of these issues are common to archaeological projects - money, manpower, time, permissions - the scepticism detailed leads many experts to suggest that the results will not be worth the effort expended, if any emerge. This can prove a significant challenge to securing project funding. There is growing interest among Greek and Roman military archaeologists in the potential of battlefield archaeology, but prominent funding, and consequently manpower and crucial site permissions, can be hard to come by for projects in what is still a relatively new field of research.

Attempts by more modern battlefield archaeologists to extend their methodology into antiquity have also proved problematic. To a degree, this lack of effectiveness results from a failure to contextualise the issue under consideration, particularly with regard to site formation in the form of artefact deposition and post-battle activity, and the specifics of ancient warfare. For example, Carman and Carman's (2005) attempt to apply their phenomenological Bloody Meadows Project methodology to ancient Greek battlefields made multiple inaccurate assertions resulting from misunderstandings over the terrain of

Greece, the nature of Greek warfare, and incorrect identification of battlefield features. This attempt is, however, one of very few from battlefield archaeology attempting to draw Classical antiquity into the mainstream of the discipline. More widely, there appears to be little optimism from battlefield archaeologists that comparable archaeology can be found on sites from the ancient world (e.g. Foard & Morris 2012: 37-61).

1.3.3: A brief historiography of ancient battlefield studies

The study of ancient battlefields goes back at least as far as Charlemagne, who took an interest in how the tactics and strategies used in ancient warfare could be effectively applied to contemporary conflict and commissioned scholars to find sites from Caesar's Gallic Wars, particularly Alésia (Sguaitamatti 2006: 467). The 'modern' era of ancient battlefield studies began roughly in the mid-C18th, developing out of both antiquarian interest and modern military concerns.⁶ In 1747, in the aftermath of the Jacobite Rebellion, William Roy was commissioned to produce a comprehensive topographic survey of Scotland, identifying key terrain positions for ambush, skirmish, and open battle, which he later used to reconstruct Roman conflict in Scotland, particularly the strategic location of Mons Graupius which he placed at Dalginross (see Sweet 2004: 181-182). Roy's Greek counterpart was William Martin Leake, a military surveyor in the British Army. Leake travelled widely through Greece between 1802 and 1810, later publishing a series of topographic observations (Wagstaff 2008: 169-172). His principle role in the country was, like Roy, to produce an accurate contemporary survey of the landscape, in this case in advance of an anticipated Napoleonic invasion through Greece, although ancient battlefields were evidently also of personal interest (Wagstaff 2008: 174). Leake's publications contain records of 13 battlefield visits across mainland Greece. Leake was interested in sites used for multiple conflict, including Thermopylae, Chaeronea, and Mantinea, although at the latter he found no topographic explanation for the five conflicts at the site, noting only generic flat terrain (Leake 1830iii: 57). Although Leake's military commission suggests that the battlefields would have been tactically evaluated, this is not

⁶ The prominence of the contemporary military in Roman battlefield antiquarianism drew strong criticism from William Stukeley, without effect (Sweet 2004: 181).

evident in the published works. Instead, they present a series of topographic reconciliations between the contemporary landscape and the ancient literary record. There is no record of his topographic observations being used by the contemporary military authorities, although as the Napoleonic conflict was over, and Leake long retired, by the time his publications emerged, it is unsurprising that there is no reference to such use.

A close relationship with the contemporary military was also evident in the German *Schlachtfeldstudien*, a series of ancient battlefield studies in the later C19th and early C20th characterised by the work of Johannes Kromayer, Georg Veith and Hans Delbrück.⁷ *Schlachtfeldstudien* developed from separate developments in both German classical scholarship and German military theory. One of the defining characteristics of *Schlachtfeldstudien* was a more critical approach to the ancient literary record, ranging from questioning of the more speculative elements by Kromayer, to complete rejection by Delbrück.⁸ German classicism as a discipline had grown increasingly critical of the Classical literary sources and the unquestioning use of them within academia. Dyson (1993: 195) identified this development as a rejection of speculation and adherence to unreliable ancient sources in favour of a “systematic collection of facts as a precursor to any real knowledge”.

At the same time, the Germano-Prussian military was becoming more interested in military theory, particularly the study of historic battles and campaigns for the use of contemporary strategy and tactics, and the consequent development of soldier-intellectuals. The Prussian military was central to the development of the ‘staff ride’, an intensive method of military training which involved detailed study of a campaign both in the classroom and through extensive terrain analysis visits to the battlefields themselves. The ultimate aim of the exercise was to improve tactical theory in military personnel, by placing the battlefield itself at the centre of study (Robertson 1987). The Germano-Prussian Army was particularly fond of this sort of instruction, with Alfred Graf von Schlieffen (1833-

⁷ Kromayer and Delbrück frequently disagreed with the conclusions of one another, engaging in an extended feud in print (see Ferguson 1905: 844-45), which Whatley (1964: 120) observed descended at times into an exchange of “personal abuse”.

⁸ Kromayer did however, gain a reputation for using the ancient literary record when it supported his conclusions and rejecting it when not, which was noted and criticised on multiple occasions by Delbrück (1975i: 170-171, 242-251, 332-333) as part of their on-going disagreement.

1913, Chief of the German General Staff 1891-1906) conducting two a year (June and October), lasting up to two weeks, within or on the borders of German territory (Foley 2003: 6). The intention was that a thorough grounding in topographic analysis and familiarity with terrain-based operational decisions would assist military officers when engaged in real conflict.⁹ Antiquity, despite its temporal distance and the growing discrepancy regarding weaponry, was considered to have practical relevance to contemporary warfare, and was therefore studied as a military, rather than a purely theoretical, exercise. Schlieffen developed a particular interest in Cannae after reading the work of Hans Delbrück on the battle (Delbrück 1975i) which he thought could have direct and practical implications for modern warfare. From 1909, von Schlieffen published a series of 'Cannae Studies' in *Vierteljahrsheft für Truppenführung und Heereskunde*, the journal of the General Staff, in which he explored the historical use of flanking manoeuvres on the battlefield to defeat a numerically-superior enemy (von Schlieffen 1931).¹⁰

Although many of the *Schlachtfeldstudien* scholars were not serving members of the military, they were often closely involved with the contemporary armed forces. Delbrück presented himself as a military theorist, although he did gain some personal experience of warfare during a short period of service in the Franco-Prussian War (Delbrück 1975i: 13-14). His battlefield surveys were published in a series of narrative works and articles, most notably the four-volume *History of the Art of War within the Framework of Political History* (1975; originally published 1900-1908), of which the first volume was dedicated to antiquity. This publication attempted to explore the common elements of military history from ancient Greece to the modern day, serving as a reaction to the current state of the discipline which Delbrück (1975i: 19) found to be excessively speculative. Delbrück (1975i: 20) was highly critical of the ancient literary record, viewing the veracity of most texts with scepticism. Instead, he focused on terrain analysis, military theory, and battlefield behaviour to inform his analyses of ancient battle.

⁹ Foley (2003: 13) noted that a staff ride in 1894 led to tactical decisions which were almost identical to those deployed in reality in the 1914 Battle of Tannenberg.

¹⁰ This became the basis for the German 'plan' of conflict prior to the First World War, later dubbed the 'Schlieffen Plan', although von Schlieffen had retired in 1905, before the publication of his studies. The plan may have been a retrospective creation to allow the German failure in the war to be blamed on not following it (Foley 2003: xvi-xviii).

The defining work of the *Schlachtfeldstudien* was produced by Johannes Kromayer and Georg Veith. Kromayer had no direct experience in the military, and was usually accompanied in field-survey military personnel, first by Captain Göppel, then by Colonel Janke of the German General Staff (Kromayer 1903: vi), and later by Georg Veith, a Colonel in the Austrian army and director of the Military Archive in Vienna. Kromayer's early research was funded by the German General Staff, and was personally supported by von Schlieffen (Kromayer 1903: v-vii). Kromayer's Greek battlefield surveys were published in the four-volume *Antike Schlachtfelder in Griechenland* (Kromayer & Veith 1903-1931), accompanied by the five-volume *Schlachten-Atlas zur antiken Kriegsgeschichte* (Kromayer & Veith 1922-1929). Although accurate locations for battlefields were recognised as important by *Schlachtfeldstudien* scholars, without which their reconstructions would be compromised, the overriding priority was that the studies, alongside staff rides, would use examples from the past to teach the modern military how to win battles in certain types of terrain. Although Kromayer (1903: 2-3) in particular argued that narrative reconstruction of ancient battles was pointless if it was not placed in the correct topographic setting, little effort was made beyond terrain analysis to check that this was the case in any individual instance. "Verification" that scholars had identified the correct battlefield came from the ability to place the reconstructed battle, with the correct outcome, into the physical terrain, and there was no search for archaeological material.

In British scholarship, the study of classical battle remained dominated by reference to the literary sources, and a methodology of reconciliation between ancient text and contemporary landscape. A significant proponent of this approach was G.B. Grundy, who used his personal topographic surveys of many ancient battlefields to inform his analyses of the Persian and Peloponnesian Wars (Grundy 1901, 1948). The ancient literary record was placed at the heart of his studies, and topographic survey used almost exclusively to verify the texts, rather than explore them (e.g. Grundy 1901: 187-194; 296-300). Whatley (1964: 123-124) expressed doubts whether this was an effective methodology, instead recommending a combination of source critique, topographic survey, military theory, and logic (*Sachkritik*) in reconstructing ancient battles. The contemporary British military had minimal involvement in ancient battle studies. Unlike the German General Staff, examples from antiquity were not used in officer training. J.F.C. Fuller observed that when he became

a tutor at Camberley Staff College in 1923, his teaching on Alexander the Great was the first use of case studies from antiquity in modern British officer training, with other tutors focusing on the campaigns of Stonewall Jackson or the First World War (Fuller 1958: 5-7).¹¹ Fuller's discussions of ancient battlefields focus on the reconstruction of individual battles, the use of different troop types and military combinations, and the way that terrain impacted the operational effectiveness of various units and the exploitation of these factors by commanders in antiquity. There was no attempt, however, to verify the locations or topographies in which he placed his battle reconstructions. Instead, he followed the contemporary academic consensus. Neither ancient academics nor military theorists seem to have desired independent or archaeological verification of battlefield locations, or of the events which they placed within these topographies.

Following the Second World War, ancient battlefield studies lost much of the impetus which had driven the discipline in the late C19th and early C20th. In particular, German ancient battlefield studies went into complete decline and *Schlachtfeldstudien* fell almost completely out of use, a reaction to the aftermath of the war. This is perhaps the point where ancient battlefield studies began to stagnate, even regress, seen particularly in the failure to adopt many of the theoretical archaeological advances being developed in other areas of antique study. This move backwards is best illustrated by the work of N.G.L. Hammond and W.K. Pritchett, the two most prominent ancient battlefield scholars of the post-War period. Both produced a series of well-argued reappraisals of ancient battlefields and their location, but adhered almost exclusively to a methodology which remained characterised by reconciliation between the ancient literary record and contemporary topography.

Hammond and Pritchett covered a range of sites across Greece, including Classical, Hellenistic and Roman-period battlefields, while Hammond also considered sites associated with Alexander the Great in Asia Minor. Hammond published many of his battlefield observations as part of larger monograph works, particularly Persian and Peloponnesian War battlefields in *A History of Greece to 322 B.C.* (1986) and those of the Macedonian

¹¹ Fuller (1958: 5) had decided that antiquity had a relevance to modern military studies after observing that British tanks in 1917 deployed in a manner reminiscent of Alexander the Great's cavalry.

campaigns in *The Genius of Alexander the Great* (1997), and a number of journal articles detailing individual battlefield studies. Pritchett published his battlefield observations in two multi-volume works, *Studies in Ancient Greek Topography* (8 volumes, 1965-1992) and *The Greek State at War* (5 volumes, 1974-1991), with an earlier monograph on the battlefield of Marathon (1960). The long careers and multiple battlefield visits of both scholars meant that they were able to engage with the sites over time and develop their thinking, particularly at Marathon, on which both Hammond (1968: 18-19; 1988c: 513) and Pritchett (1960; 1965-1992i, ii) changed their opinions of over time.

Both Hammond and Pritchett were meticulous in personally surveying the battlefields which they discussed in their work. Hammond had served in Greece during the Second World War, posted on multiple occasions as a liaison officer with the Greek Resistance due to his knowledge of Greek (Hammond 1982), and often surveyed ancient battlefields at the same time of year as the battle had been fought. Pritchett, by contrast, involved academic colleagues from other fields, such as hydrologists and geologists, to survey battlefields with him and provide insights into the terrain regression which he used to inform his conclusions (e.g. Pritchett 1960: 157). Hammond and Pritchett both attempted to identify “topographic checkpoints” mentioned by the ancient literary record in the contemporary landscape, particularly constructed features such as settlements, monuments, and camps. Hammond, for example, noted the presence of a [Roman] camp at Cynoscephalae, but did not follow up, failing even to check that the feature was actually a Roman camp, and if so, of what date (Hammond 1988a: 69-71, 76-77). Both were clearly familiar with earlier reports of archaeological material recovered from sites and would cite the evidence when it supported their hypotheses, although never commissioned any excavations themselves. No attempts were made to verify that their battlefield locations were correct, beyond assessing that the reconstructed narratives would fit the site terrain and wider landscape.

Pritchett, in particular, marked a move towards exploring the social, religious, and economic context of ancient warfare, although he, unlike many contemporary classicists, did not ignore the phenomenon of actual fighting. Very little has changed however in ancient battlefield studies since the era of Hammond and Pritchett. Despite the obviously

unsatisfactory nature of text-and-terrain reconciliation, as evidenced by the fact that the method has not yet produced one single uncontested and verified battlefield location, 'reinterpretations' of ancient battles remain dominated by analysis of the literary record and topographic assessment of the proposed battlefield. The ancient historian Richard Evans (2013) proposed to "retrace" individual battles and sieges from antiquity through a reassessment of exactly the same literary record which has proved inconclusive thus far, alongside, as so often, reassessment of the topographic and geographic context of the engagement. His methodology differs from that of the *Schlachtfeldstudien* only in the contextual factors in the narratives which are emphasised at the expense of others, primarily it would seem, on the basis of inherent military probability.

As the 'old breed' of military historians died out, the study of ancient warfare was, in the aftermath of the Second World War, overtaken by scholars who worked almost exclusively in a classical context, and showed little interest in continuing research into the reconstruction of ancient battles (Hanson 2007: 10). Hanson suggests that this theme in academia reflected a wider societal aversion to issues of violence and warfare following the First, and more particularly the Second, World Wars (Hanson 2007: 11). A similar phenomenon is seen in the so-called "Pacification of the Past" theory espoused by Keeley (1996). He observed that following the Second World War, scholars of prehistory employed an almost wilful disregard of both archaeological and anthropological evidence to suggest that their period of interest had been one free from warfare, violence, or conflict under all but the most extreme circumstances. James (2002) followed Keeley's analysis with a more detailed study on the Early Iron Age in Britain, which he argued had also been impacted by this "Pacification" process despite substantial archaeological evidence for widespread conflict in this period.

The Greek and Roman worlds were never themselves fully "Pacified" in this way; the great concern of many ancient writers with issues of warfare meant that classical scholarship was never able to deny the occurrence of warfare, nor to marginalise its societal impact. In fact, some modern battlefield archaeologists felt that during the academic post-War aversion to warfare studies archaeologists working on the Roman military were exempt from this backlash (Pollard & Banks 2010: 416). However, even within the study of Greek

and Roman warfare, newer research avenues were followed which reflected emerging trends in archaeology – gender, identity, or post-colonialism, to name but a few – but which served to minimise the academic focus on fighting itself. Rather, a new emphasis was placed on issues such as commemoration of both wars and the battle-dead, religious and ritual aspects of war, the role of non-combatants (particularly women), and the army as a community (see also Hanson 2007: 11-13). However, it is notable that the subject of ancient battle has been at least partially rehabilitated following the publication of John Keegan's *The Face of Battle* (1976), which allowed individual battles to be studied from the perspective of combatants. Subsequently, direct attempts have been made to apply this analysis to classical antiquity (see Hanson 1989; Sabin 2000, 2007; Daly 2002: 155-200; Kagan 2006: 7-95), and the psychology of soldiers is now a new research avenue (e.g. Crowley 2012).¹²

Although undeniably interesting, in many ways these studies are at best a slightly updated version of the methodologies originally used by Delbrück and Whatley.¹³ Others have worked on the practical use of weapons in battle, reconstructing tactical approaches and narratives from the physical capability of the weapons in use at the time, alongside, in many cases, consideration of the experience of soldiers on the field (see e.g. Coulston 2007; James 2010; Krentz 2013). The ultimate weakness of these studies is that the experience of ancient battle is generalised, producing a composite conclusion drawn from the ancient literary record, the archaeology of weapons and armour, and psychology, which may be broadly representative overall, but reveals nothing about individual battles. Despite the growing number of excavated sites, the potential contribution of ancient battlefield archaeology to illuminate individual conflicts by supplementing the inadequate literary record, to provide verified locations for battlefields, remains vastly underestimated and underused. The development of the discipline has not helped, being dominated for so long by scholars who wanted to preserve the integrity of the ancient literary record, and by the need to draw immediately useful military applications from the study of sites.

¹² Although see Melchior (2011) for a discussion of how accurate “face of battle” psychological investigations can be in the context of antiquity.

¹³ Keegan (1976: 32-33) acknowledged this his methodology owed much to the earlier work of Delbrück on historic battlefields.

1.4: Why ancient battlefields?

A valid question is why battlefields from the Greek and Roman worlds should be considered of distinctive interest or individual approach, and indeed, why are they any different to battlefields from any other period of history? In part, it is a reaction to the way that the archaeological element of ancient battlefield studies has been so comprehensively marginalised by historians without any convincing argument for why this should be the case. Although the conclusions drawn by battlefield archaeology in later periods have on occasion been taken as controversial by some (e.g. Fox 2006: 171), in general the reception has been welcoming, with some historians even recognising that "...the process of artefact recovery has revolutionised the study of battle" (Newman & Roberts 2003: 152). Yet this entire potential is dismissed in the context of antiquity on the basis of sweeping statements, based on no actual evidence, that ancient battlefields were stripped of their potential archaeology by post-battle activity. This preconception is one of the main themes to be addressed in this thesis. It is not acceptable that a discipline such as ancient battle studies accepts reconstructions of conflict based on iconographic depictions on vases (e.g. Schwartz 2009: 20-21, 86-92) and epic poetry (e.g. Pritchett 1974-1991iv: 33-43) ahead of archaeological evidence from battlefields.

This research proposes that the study of Greek and Roman battlefields will provide evidence for Classical warfare which other archaeological and historical sources have found difficult to illuminate. Foremost, it is hoped that battlefield behaviour and tactical manoeuvring can be reconstructed from the distributional patterns of material across conflict sites, whilst allowing for the fact that not all units or activity will have left (surviving) archaeological traces. The composition of surviving assemblages, and the differences between sites, can illuminate post-battle activity, a process which can already be seen to have varied significantly in the Roman world dependent on the victorious army (see Chapter Four). A firmer basis for recognising battle-related assemblages from Classical antiquity may aid the recognition of conflict sites which emerge in the incidental archaeological record, as the battlefield at Harzhorn did. Beyond the battlefield, simply being able to locate sites on a map will assist in understanding the geographic range of military operation, particularly in

the Roman world. These locations may provide a firmer basis for reconstructing the social and economic impact of warfare on states, military institutions, and civilian populations, particularly if it emerges that certain types of landscapes were more commonly fought over.¹⁴ Military equipment recovered from battlefields may assist in providing more accurate dates for the introduction of new forms of weapons and armour, the earliest surviving examples of which are commonly associated with 'active' contexts. The discovery of *lorica* elements at Kalkriese, for example, indicated that segmented armour was in use much earlier than imagined (see Bishop 2002: 23-30).¹⁵

The temporal period covered by this thesis broadly starts from when ancient battles began to be documented by the historical record onwards, from about the C5th BC in Greece. As discussed in the introduction (1.1.1), this is a largely arbitrary point in terms of the archaeological evidence, imposed largely through necessities of scale. For the same reason, the geographic focus is on the Mediterranean and northern European world. The point at which this thesis stops is a more difficult question. In some respects, the limit is impacted by the continued availability of historical evidence relevant to battle and conflict. Due to the discussion of historical literature with respect to the methodology, Ammianus Marcellinus and Procopius provide the temporal limits in the Western and Eastern Empires, taking the potential period of study through to the late C4th and C6th AD respectively. The latest archaeological evidence in the text comes from three sites dating to the mid-C3rd AD, at Harzhorn, Abritus, and Dura-Europos.

Linking the temporal framework of this thesis, and of ancient battlefield archaeology more widely, to the existence of an historical record will not come as a particular surprise to later battlefield archaeologists. However, within this period there is significant inconsistency in regards to the nature, quality, and amount of historical evidence, requiring a certain level of methodological adaptation. The study of Classical battle has always occupied an uneasy

¹⁴ Hanson's *Warfare and Agriculture in Classical Greece* (1998) demonstrated the value of a wider approach by linking the practice of war to its wider social and economic impact. Although based almost exclusively on literary evidence the work demonstrated the value of linking warfare to a wider context, which can only be assisted by more definite locations for individual instances of conflict.

¹⁵ Previously the examples in the Corbridge hoard (Allason-Jones & Bishop 1988) had been thought to represent early use of this armour type. Further early-Augustan pieces have been identified from Germany and Gaul based on the Kalkriese type, suggesting that segmented armour was in use by at least 9BC (Bishop 2002: 23).

position between the prehistoric and historical periods. The ancient world in general does have a historical record, which preserved a written account of many of the battles and conflicts which are the focus of ancient battlefield studies. Very few battles are narrated in any detail by the extant ancient literary record, with most are described cursorily as happening, with no details, while others are omitted almost entirely from the record, referred to only in a vague reference to regional conflict. To all functional purposes, most ancient battles are arguably proto-historic, even in some cases prehistoric, relying on details about general conflict in the period to reconstruct the probable narrative. Unsurprisingly, there is often very little indication of the geographic location of these sites, making it difficult, even impossible, to place them within a landscape. It is possible to interpret the Roman-period battlefield at Harzhorn in Germany, an undocumented event, in reference to contextual knowledge about the contemporary world extrapolated from the written record, but the event itself remains non-historic.

Although the overall historical record of the period is too substantial to realistically say that certain areas of antiquity can be considered 'prehistoric', in the functional context of ancient battlefield archaeology, they can be as good as. Any methodology developed for ancient battlefield archaeology will require a secure reassessment of the ancient literary record, and an appreciation that it is likely to play a lesser role than it does in the later discipline. That said, any ancient battlefield discovered, regardless of its historical documentation, can be subjected to a certain degree of narrative reconstruction, as enough is known about the wider context of ancient warfare to provide an interpretational foundation regardless of whether the individual battle was described or not. If the assemblage is of sufficient quality to facilitate recognition and interpretation, there is no methodological reason why battlefields which fall into this prehistoric lacuna cannot be studied by battlefield archaeology.

1.4.1: “Battle” in battlefield archaeology

The state of the historical record is not the only problematic contrast between ancient and more modern battlefield archaeology. There is a degree of standardisation in the type of military engagements which are studied by battlefield archaeology, certainly in the medieval and modern world. The battles chosen share certain characteristics, in part reflecting the methodology of the discipline, and in other cases, the research aims. Typically, battlefield archaeology focuses on engagements which meet conventional conceptions of “battle” in the context of western warfare: organised military forces,¹⁶ operating under formal command and/or in battle-array, with prior military training, with a mutual agreement to fight, operating in the open field. These engagements are usually the ones best documented by the historical record from the medieval period onwards (Foard & Morris 2012: 8-9), providing a range of narrative sources with which to locate the battlefield and synthesise the archaeology with narrative activity. Similar defining characteristics are shared by military historians (e.g. Keegan 1976; Kagan 2006: 7-22) and heritage management organisations (Civil War Sites Advisory Commission 1993; Historic Scotland 2011; English Heritage 2012).

Archaeological research was initially focused on the central areas of fighting, as suggested by the historical record, although skirmishing following the collapse of one battle-line is often also archaeologically visible in the area which is often characterised as the “immediate landscape context” (Foard 2008: 4). This area can extend for a significant distance beyond the area of concentrated fighting at the centre of the battlefield. As well as illustrating that artefact deposition extended beyond the area of arrayed fighting, battlefield archaeology has also demonstrated that several battles were not the straightforward, battle-arrayed engagements which historians have believed, but rather a series of semi-independent or semi-connected events bearing very little resemblance to contemporary tactical conventions. The Little Bighorn archaeology (Scott *et al.* 1989; Fox 1993) illustrated a series of skirmishes and half-adopted battle-lines running across a wider landscape, and the battles of Balaclava (Freeman 2010) and First Manassas (Reeves 2010) also indicate a

¹⁶ Usually registered as armies although the classification has been relaxed in the US to groups which were recognised by their own society as warriors, to incorporate Native American forces.

sequence of small-unit skirmishing rather than battle-arrayed fighting. The archaeology of any skirmishes, regardless of military context, does not appear to have differed in great detail from more formal battles where it involved comparable military forces and weapons, and created substantial assemblages (e.g. Tywardreath, in Ferguson 2013: 164-182). However, the focus on formal "battles" has remained. This appears to be a result of the relationship between the historical record and battlefield archaeology, in that the latter requires a substantial extant narrative against which the archaeological evidence can be compared. Typically, battles have been more likely to be documented in detail by the historical record than any other type of field engagement (Foard & Morris 2012: 7-10).

However, it is not only the level of historical documentation of the individual event that is important, but also the wider understanding of training and combat/battlefield behaviour in a given period. The assemblages from battlefields are not just interpreted in reference to the narratives of that single event, but also compared with a series of documented military training methods, to see whether the hypothetical battlefield behaviours and manoeuvres were followed in reality.¹⁷ This is important in the context of modern research into the importance of "muscle memory" in combat, and the degree to which pre-battle training had reconditioned the instinctive physical mechanisms into effective fighting responses. Under extreme conditions, the field of vision becomes limited, auditory intake becomes limited, and motor co-ordination will appear reduced.

Training can mitigate these effects to a certain degree, but it is down to archaeology to assess how effective the methods were. It has been suggested that the Spartan predominance in antiquity was down to their high levels of training, not just because the weapon skills became higher, but because the muscle memory which resulted allowed them to perform more consistently under combat conditions (Molloy & Grossman 2007: 195). Therefore, it has become perhaps disproportionately important to focus on military engagements where the proscribed combat behaviours are well-known from the historical record, and skirmishes, ambushes, and raids, at least in historical understanding, often lack

¹⁷ At the First Manassas (Reeves 2010) and the Little Bighorn (Fox 1993) it was demonstrated clearly that at certain phases of the battle troops abandoned their training, bunching together in a process of "combat disintegration", particularly notable at the former where soldiers in the last phase appear to have stopped defending themselves and were killed at close range without fighting back.

this characteristic. However, as the discipline of battlefield archaeology develops, the parameters of what constitutes a "battle" are increasingly widening beyond what had previously been accepted as such by military history. An argument can be made that any armed confrontation between recognisable armed bodies, including civilian militias, which took place in the open-field could be considered, in archaeological terms, to have been a battle.

1.4.2: "Battle" in antiquity

This thesis is not intended as a discussion of what constituted a 'battle' in antiquity in a military, social, or religious context. There is little evidence to suggest that anyone in antiquity considered such issues (see Hanson 2007: 4-5), nor that there was a common definition of what did and did not constitute a 'battle'. The categorisation and prioritisation of particular field engagements is very much a modern concern. There is no intention in this research to prioritise traditional 'battle' above other forms of conflict in the classical world, as it is probable that a significant proportion, even majority, of violence in this period took place away from what is defined in conventional terms as the 'battlefield'. There is a strong argument, as for battlefield archaeology in later periods, that the definition of 'battle' in archaeological terms should be far more inclusive than it has previously been, incorporating skirmishes, ambushes, and attacks on military installations alongside more formal field engagements. If a strict definition consistent with military history had been adopted, for example, neither Kalkriese nor Harzhorn would be valid subjects for discussion as both look to be ambushes and/or running skirmishes with elements of arrayed fighting.

'Battle', in terms of this thesis therefore, refers to any armed engagements which took place in the open field, during a relatively short period of time (days or even hours), and between two armed (military) forces,¹⁸ regardless of the military context of this fighting. Long-running sieges have been excluded due to the difference in unit deployment,

¹⁸ Although in the case of particularly tribal opponents in the Roman world, there would be sense in the adoption of a classification similar to that of the United States in accepting warrior forces recognised as armies by their own societies, as the soldier/civilian distinction in these cases is often far from obvious.

use of entrenchments, and weaponry. The firm association of many of these engagements with a known or surviving toponym also makes much of the discussion regarding locating sites (Chapters Two and Three) irrelevant to sieges. Further, the known association of a site with a historically-documented siege from antiquity makes it far easier to associated military-related equipment with the conflict. While this is in fact incredibly useful for conflict archaeology as a whole in antiquity, as it may be possible to extrapolated the composition of battle-related assemblages from those of sieges, the differing nature of the fighting, and potentially also the post-battle activity, this area will need further research beyond this thesis.¹⁹ It is recognised that in some cases a battle was fought outside a position under long-term siege which could be studied using comparable methodology to field engagements.²⁰ The many shared characteristics of siege and field warfare certain make this a viable hypothesis, although the question is not followed up in this thesis due to issues of both scale and the aforementioned difference in the issues regarding location of sites. However, assaults on military installations, such as the assault on Velsen (Bosman 1999), have been included where spatial analysis of the finds has been consistent with the requirements of battlefield archaeology. It is not proposed that any significant distinction need be drawn between these conflicts and those in the open field, certainly not to the degree that engagements with characteristics of ambush or skirmish over pitched battle should be excluded from archaeological study.

The concept of a 'pitched battle', while extant in antiquity, reflects modern military history far more than it does antique reality. Polybius (13.3.3) argued that in earlier antiquity pitched battle was viewed as the most honourable method of fighting, in contrast to the deception-based tactics used by contemporaries, in particular Philip V of Macedon.²¹ It was clearly not, therefore, the only way of fighting. For most ancient historians, however, there have been few problems in characterising the phenomena of ancient battle as the same in essence as its modern counterpart, but for differences in technology, scale, organisation, and purpose (e.g. Pritchett 1974-1991iv: 1-93; Hanson 1989: 9-18;

¹⁹ Not least as much 'post-battle' activity, particularly looting and disposal of the dead, is likely to have taken place during as well as after a siege.

²⁰ Particularly in Simon James' recent observations at Dura-Europos (James 2015).

²¹ Van Wees (2004: 134) rightly pointed out that this is undoubtedly a largely romanticised view of the organisation of battles, arguing that any battle would seem pre-arranged in a Greek context, where large bodies of men moved to a location which had been under attack from an invading army.

Goldsworthy 1996; van Wees 2004: 134-138; Gilliver 2007: 125-141; Wheeler 2007: 202-213). The subsequent narrative accounts frequently reduce the conflict to the movements of units – the hoplite phalanx, the Roman legion – around the field of conflict, in a manner which may not only be inaccurate due to its generalisation, but an anachronistic perspective resulting from historical descriptions of medieval and modern battles (*cf.* Keegan 1976: 62-73). As van Wees (2004: 188) concedes, the Greek literary record, for all the (often formulaic) description of the pre- and post-battle periods, actually documents very little of the battles themselves.

“Battle” seems to have been defined as the period during which the two battle-arrays physically met in hand-to-hand fighting. Ancient battle historians typically characterise the 'battle' as the period of fighting, treating prior activity (mustering, speeches) as pre-battle, and later activity (looting, burial of the dead) as post-battle (e.g. Ash 2007: 437). The actual fighting phase of battle is suggested by Vegetius (*Epitome* 3.9) to have been relatively brief, a matter of only a few hours, although Pritchett (1974-1991iv: 46-51) noted that very few battle-narratives from the Greek world give any indication of the battle's duration (*cf.* van Wees (2004: 134-138) who noted that there is little consistency in the length of battles).²² Vegetius (*Epitome* 3.9, 3.11) suggested that the hope of any pitched battle was to achieve a decisive victory against the enemy, even if for a relatively short period of time, although he advised that in some cases it might be better to attempt to avoid battle and hope that the enemy withdrew through lack of resources, internal discontent or desertion (*cf.* Roth 1999). Battle might only be risked for a substantial prize (e.g. App. *Bell. Ib.* 14.87). In the literary record, Greek, Hellenistic (Pritchett 1974-1991iv: 51-54; Wheeler 2007: 203-204) and Roman (Goldsworthy 1996: 183-190; Gilliver 2007: 130-132) battles frequently began with a period of skirmishing and missile exchange from a distance.²³ Following the exchange, the armies clashed in hand-to-hand fighting before one line collapsed following the breach or outflanking of their formation or the death of the leader(s), and fled the field. Van Wees (2004: 191) argued that Greek armies rarely rallied

²² The duration of battles does not necessarily have any bearing on the site's archaeological potential. The substantial assemblages left at Cowpens (Buchanan 1997: 326; Babits 1998) or the Little Bighorn (Miller 1985: 158; Scott *et al.* 1989) were deposited by engagements lasting no more than an hour.

²³ Arrian (*Ectaxis* 13.1) stated that this period of skirmishing was tactically intentional, aimed at testing the terrain before full deployment and/or assessing the strength of the enemy.

once their lines were broken, and in Roman warfare the literary record suggests that the defeated army fled the field as quickly as possible, also without any significant additional resistance (Gilliver 2007: 138-139). None of these scenarios preclude smaller incidents of skirmishing on the periphery of the battlefield. Roman sources advised caution in the aftermath of conflict in case of further fighting, following the rallying of defeated armies. An example of this is the way archaeological work at Kalkriese and Abritus indicates that the activity following the break of a Roman army in defeat was far more substantial than the literary record would indicate.

However, multiple histories, treatises and military manuals from antiquity emphasise the benefits of unconventional fighting, including ambush, subterfuge, ruse, decoys, suggesting that the concept of “battle” in antiquity is likely to have been more complicated than historians have suggested. The literary record suggests that in many contexts, warfare was not dominated by pitched battle, but by a guerrilla-style campaign of skirmishes, ambushes, and raids, particularly characteristic of the northern and African Roman provinces but identified elsewhere in the ancient world, including Classical and Hellenistic Greece (e.g. Sheldon 2012). These battles may only have been documented in local military records (e.g. *Tab. Vindol.* 164). Such low-intensity warfare is often characterised in the sources as the most effective measure of provincial resistance against the Roman army, whose objective it was to force the native force into pitched battle (Bellino 2011). Low-intensity warfare and skirmishing evidently proved particularly effective against heavily-armed Greek hoplites and Roman legionaries (e.g. Thuc. 3.97-98), although Tacitus (*Ann.* 2.14) had Germanicus state that Roman legionaries were equally suited to fighting in such conditions.

While such engagements were recognised as differing in nature from pitched battle, there is rarely any moral condemnation for use of such tactics (e.g. Thuc. 5.10-11). Vegetius (*Epitome* 3.22, 3.26) in fact suggested that pitched battle should be avoided whenever there was a viable alternative, in favour of raiding, skirmishing, and denial of resources (for guerrilla-type tactics see also Polyb. 1.40.6). Tactical treatises addressed the problems of being ambushed on the march, suggesting reasonable precautions which could be taken to avoid them (e.g. Onas. *The General* 6.7; Veget. *Epitome* 3.6, 3.9, 3.13). In the Roman

provinces in particular, tribal armies relied on avoiding pitched battle in favour of low-intensity attacks, ambushes, and skirmishing (Caes. *Bell. Gall.* 5.26-38; Tac. *Ann.* 1.10, 1.65, 14.32; Dio 56.18-22; *cf.* Bellino 2011).²⁴ The engagement at Kalkriese, conventionally described as the “Varus Battle” or “Battle of the Teutoburg”, shares many archaeological characteristics with the semi-connected series of events at Balaclava, First Manassas and the Little Bighorn, suggesting that it too may be more accurately interpreted as a running skirmish rather than a pitched battle – and yet, this does not necessarily mean that it was not viewed by contemporaries as a “battle” in its own right.

There is no methodological reason, however, why engagements from antiquity other than pitched battle cannot be studied archaeologically. In all the important methodological ways, they satisfy the same characteristics as their more formal counterparts, as demonstrated by the comprehensive assemblages resulting from the ambush/skirmish engagements at Kalkriese and Harzhorn. The main issue is with their geographic location, which is poorly documented in almost all literary accounts. However, the location of many pitched battles is rarely much better described. In almost all cases for antiquity, identification of conflict in the open field (i.e. not an attack on the fortifications of a military installation or city) will rely on recognition of the battle-related assemblage. As the weaponry, armour, and military kit used in skirmishing, often by the same military units, is unlikely to differ from that used in pitched battle, the resulting assemblages are likely to share many similarities. In fact, as the most substantial weaponry types surviving on conflict sites are projectiles, particularly lead slingshot, skirmish sites may be equally visible as pitched battle, if not even more so, depending on the relative length and intensity of missile-deployment between the two.

On sites of pitched battle as well as less formal field engagements, periods of skirmishing prior to the main fighting, including the adoption of battle-array, and following the collapse of one army, can also be included in the period of ‘battle’, as they are likely to be archaeologically visible. In this thesis, therefore, the term ‘battle’ does not just refer to pitched engagements fought in the open-field, but is extended to instances of skirmishing,

²⁴ See also informal records such as the unit report on the 1st Cohort of Tungrians from Vindolanda, which documented six wounded soldiers (*Tab. Vindol.* 154).

ambush, and assault on military installations including defended settlements. This is not intended as an attempt to marginalise the differences between the varying natures of these engagement types, although there is no direct evidence to suggest that they were not all viewed as different forms of “battle” in antiquity, but is recognition of the fact that lower-intensity conflict is equally visible in the archaeological record.

Of the various ancient battlefield and open-field conflict sites which have received at least partial archaeological exploration and spatial analysis, only Baecula can be defined as a pitched battle by conventional military terms. But it cannot be said that the assemblages from Kalkriese or Harzhorn, or indeed those of the other sites in Britain, Spain, and the Netherlands, are in any way unsuitable for analysis. Nor, in the context of ancient battle, is it reasonable to limit the temporal definition of ‘battle’ to the period of hand-to-hand fighting. While no doubt this phase may have produced significant assemblages and casualties, the exchange of projectiles immediately preceding, and the skirmishing after the collapse of one line, would also have led to substantial deposition over a much more extensive area.²⁵ Both the periods of skirmishing around pitched battles, and engagements which did not satisfy the criteria of ‘pitched battle’ should be incorporated into ancient battlefield archaeology; the assemblages from Kalkriese and Harzhorn illustrate how beneficial this may be.

1.5: Excavated conflict sites from antiquity

The reluctance of ancient historians to embrace ancient battlefield archaeology becomes increasingly confusing as more field sites are discovered. The substantial archaeological remains from ancient conflict sites in general - sieges and attacks on military installations and settlements - clearly indicate that there is an archaeology of ancient fighting, as it were, and it is unclear why the protestations that it simply cannot survive in a field context are so fervent. The lack of archaeological work on ancient battlefields is made all the more difficult to understand by the substantial, and highly effective, use of archaeology in other sub-disciplines of ancient warfare studies, such as military equipment

²⁵ Even in later periods, hand-to-hand skirmishing led to distinctive archaeological deposition, particularly of military kit fragments, which can be distinguished against the main areas of formation fighting.

(e.g. Bishop & Coulston 2006; Rihll 2009; James 2011a; Saliola & Casprini 2012). If a number of conflict sites from the pre-Classical and Classical periods around the Mediterranean basin have been subject to various degrees of field survey, almost every battle (or conflict) site which has been excavated to date comes from the Roman period.

Three Roman battlefields have been excavated with GPS recording of the individual artefacts and their find locations. The sites cover a wide temporal range and correspond to a variety of military situations. The earliest, the Second Punic War battlefield at Baecula in southern Spain, was identified in 2002 as part of a project locating a number of military positions from that conflict (Bellón *et al.* 2009: 257), and has produced a range of over 6000 metal artefacts from the time of the battle (Bellón Ruiz *et al.* 2012). The early imperial period battlefield at Kalkriese, northern Germany, is the best known Roman battlefield, and probably marks the site of the engagement variously known as the Varus Battle, the Battle of the Teutoburg, and the Varus Disaster (*clades Variana*). The site was discovered through metal detection in 1987 (Clunn 2005), following which it has been extensively excavated, producing an assemblage of over 5000 metal artefacts from a landscape area in excess of 30km² (see Harnecker & Franzius 2007; Harnecker & Mylo 2011). A third battlefield was identified at Harzhorn, northern Germany, in 2009, although the first archaeological evidence had been recovered in 2001 by metal detectors looking for material from the Second World War. The site has been dated to the second quarter of the C3rd AD by the coins, and tentatively linked with the campaigns of Maximinus Thrax into Germania c.AD235 (Berger *et al.* 2013).²⁶ Excavation at the site has produced an assemblage of over 2000 battle-related metal artefacts (Berger *et al.* 2010/2013).

A number of other sites have been identified by archaeological detritus if they have not been explored by excavation. Lead slingshot from La Lantejuela in southern Spain has been used to associate it with the battlefield of Munda, the site of a battle in both the Second Punic War and the Caesarian-Pompeian Civil War, because of the incidental recovery of both Carthaginian and late Republican shot from the same site (Grünwald & Richter

²⁶ The campaign was documented by Herodian (7.2.1-9) and the *Historia Augusta* (Duo Max. 12.1-5) although the narratives suggest it was fought much closer to the frontier; Johnes (2006: 262-263) suggested that the original text placed the conflict in advance of the frontier but was later altered by a copyist.

2006). In southern Italy, early stages of exploratory work have been carried out on the battlefield of Numistro, an inconclusive battle from the Second Punic War, although no excavation has yet been conducted (Bellón Ruiz 2012). Finally, although the battlefield itself has not been excavated, Roman weapons, armour, military kit, and high-denomination coins have been recovered from Roman military installations and native settlements running at least 22km north-west of the battlefield of Abritus following the apparent route of Roman retreat following their defeat (Radoslavova *et al.* 2011: 28-31). Many artefacts are unbroken or partially functional, and the excavators have suggested that their deposition in these different locations was deliberate, although whether by fleeing Romans, victorious Scythians, looting local civilians, or a combination, is unknown.

The archaeology of siege and attack on military installations and cities in a Roman context was discussed in detail by Coulston's (2001: 31-42) article on the archaeology of Roman conflict. He documented multiple examples where in-situ deposits of projectiles, weapons and armour have been recovered from siege sites, including Numantia, Perugia, Alésia, Velsen, Maiden Castle, Hod Hill, Cremona, Jotapata, Gamla, Jerusalem, Masada, Dura and Cremna. In some of Coulston's cases, the conflict concerned went on for an extended period, making identification of an individual phase of activity difficult, although it is possible to do so for single-context conflicts. At the Roman fort at Velsen (Roman *Flevum*), the distribution of the 517 lead slingshots recovered from the site permitted reconstructed of five waves of attack on the fort, each evidently rapidly following the previous, as evidenced by the use of five distinctive types of lead slingshot (Bosman 1995, 1999).

Since Coulston's article, two further Roman-period assaults on military fortifications have been identified in Spain. A Roman fortification at El Pedrosillo (Casas de Reina, Badajoz), appears to have been attacked during the Lusitanian War (155-139BC), representing an event undocumented in the literary record (Cerdán *et al.* 2011). Excavations in 2006 and 2007 recovered tent-pegs, lead *glandes*, Punic coins, and a *pilum*, and identified several constructed features forming a Roman military complex, including two stone-built polygonal marching camps, circular fortlets, and a system of parallel *tituli* on the low- and mid-level sections of the high ground. Staying with Spain, a Caesarian-period battle-site around the fortified high-ground of Puigciutat has been identified, with excavations

producing lead *glandes* and *caligae* nails, and possible other weapon fragments (Ble *et al.* 2012). Both El Pedrosillo and Puigciutat appear to represent small-scale assaults on fortified positions. Recent excavation at the siege site of Yodefath in Israel has not only revealed a large quantity of projectiles, clustered around the northern wall, where a siege-ramp was constructed, but also found the same in the civilian residential areas in the town (Aviam 2006). *Caligae* nails were also found around the ramp and in the town. From a Greek context, the Macedonian assault on Olynthus has been reconstructed from the spatial distribution of the lead shot complimented by the arrow heads recovered when the city was excavated in the 1930s (see Lee 2001). More recently, conflict archaeology has moved into the field of naval conflict, with the underwater excavation of a Romano-Punic battlefield off the Egadi Islands (Tusa & Royal 2012). This project has indicated the probable location of the naval battle, and explored the resulting underwater assemblage distribution, as well as providing new insights into the construction of bronze rams and ships during the First Punic War.

To date, few battlefields from the Greek world have been excavated, and there are as yet no substantial assemblages have been identified. As a result, understanding of the archaeology of Greek battle is more limited. Incidental finds of weapons, particularly projectiles, have been reported from a number of sites including Marathon, Thermopylae and Chaeronea, but often without a secure context, making the evidence highly problematic. In Greece, archaeological evidence from battlefields is almost exclusively associated with the mass graves excavated in the last decades of the C19th and the first of the C20th at the same three aforementioned battles. The graves were targeted because of their above-surface monuments. Very little archaeological work into the graves, or battlefields more generally, was conducted in Greece following the decline in interest following the Second World War. Many of the collections of human remains have been lost, although there has been a recent study of part of the Theban collection from Chaeronea (Ma 2008). In 2009, a battle-related grave was discovered in the necropolis at Himera, marking the first major excavation of battle-related archaeology in Greece in over half a century (Lee 2011; Atwood 2014). The battle-graves at Himera, unlike those excavated earlier, were not marked in any distinctive way, but were discovered during the course of rescue archaeology anticipating the extension of a railway line through the cemetery. The

nature of the burials was identified due to the unusual demographics, commonly associated with the battle-dead,²⁷ and the projectiles embedded in some of the skeletons.

The relative proliferation of battle-dead from the Greek world stands in contrast to the Roman, where physical human remains have only been identified in a battlefield context at Kalkriese in a series of at least nine ambiguous bone-pits of uncertain origin (Großkopf 2007, 2012; Uerpmann & Uerpmann 2007), although some of the burials in the military cemetery attached to the fort at Krefeld-Gellep almost certainly reflect casualties from the AD69 attack on the installation (Reichmann 1999). Casualties of conflict have been recovered from a number of other sites. A quantity of human bone was recovered from the ditch of the north-west contravallation at Alésia, which contained Roman and Gallic military equipment. Coulston (2001: 35) suggested that these might represent a burial of the battle-dead, albeit a slightly unusual one in which the valuable weapons and armour had not been fully removed. At Velsen, two bodies and a quantity of disarticulated bone were recovered from a well, one casualty with a military dagger and belt (Bosman 1999: 92), as well as in the silted-up harbour area. The skeletal remains found in the south-west gateway at South Cadbury are likely to represent the victims of a Roman-native fight (Barrett *et al.* 2000). Numerous collections of human bone were found at Yodefat, almost certainly representing military or civilian casualties of the siege and conquest of the settlement (Aviam 2006), while the 20 Roman soldiers (and one Sasanian) found in a countermine at Dura-Europos certainly died in the destruction of the city (James 2013).

The archaeological record relevant to ancient conflict makes it clear that a substantial amount of material does survive, from a range of sites. It also suggests that the "signature" of ancient battle is likely to be dominated more by projectiles and, to a lesser degree, *caligae* nails. The main point, however, is recognition that ancient battle led to deposition of material at least comparable to modern battle in both rate and nature, and it cannot be written off with vague comments about post-battle processes - processes which apparently failed to touch siege sites and military installations to the same degree. Assemblages from ancient battlefields may still be less common than those from their more

²⁷ Communal clustered burials of males aged 18-35, evidence of skeletal trauma, particularly to the cranium; see Redfern (2011: 118-133).

geographically-fixed counterparts, but the evidence is beginning to suggest that this is only the case because fewer excavations have been conducted on them.

1.6: Conclusion

Battlefield archaeology methodology as it was developed to study sites from the C19th United States cannot be applied without alteration to antiquity. Many of the fundamental characteristics of modern battlefields are simply not found in the same form on Greek and Roman sites. The archaeology manifests differently in nature, material, spatial distribution, and overall site formation processes, while the relationship between the site and the historical record is beset by far more problems than the substantial, albeit often biased, accounts of later conflicts. Concepts even of 'battle' and the artefact range of the assemblage significantly differ from later periods as a result. However, none of these differences should be viewed as a particular problem. There are adjustments which can be made to adapt the archaeological methodology to the characteristics of ancient battlefields, which require an understanding of both the disciplines of battlefield archaeology and the ancient world. What is clear, just from the excavated conflict sites thus far, is that battlefield archaeology methodology has great potential on ancient sites. That the approach has not been fully exploited by battlefield archaeologists on Classical sites is perhaps understandable, as the necessary contextual knowledge of the ancient world is a reasonably significant stumbling block, although all indications are that enthusiasm, if not always the belief, is certainly growing.

Chapter Two: The Literary Record

2.1: Introduction

The historical record is central to the methodology of modern battlefield archaeology, indicating what conflicts happened, between which armies, where and why they happened, and, in many cases, provide a broad overview of the narrative. Archaeologists may therefore know, or suspect, a great deal about a battle before they ever come to explore the site itself. Written sources have been similarly vital in the historical study of Greek and Roman battle, but it has proved far from straightforward to do so. Many historians and topographers have accepted that the Greek and Roman literary records are not without fault in the context of battlefield studies. Evidence regarding battlefields has been taken from texts from a number of literary genres, not just military or political works, in some cases works which had little concern with accurately describing an actual battle (such as Pausanias' descriptions of a number of sites including Marathon and Thermopylae).

Some sources are, unsurprisingly, better than others, and the most detailed certainly can make a contribution to battlefield archaeology in the classical world. The battlefield and conflict landscape of Baecula, for example, matches the description of the site by Polybius (10.38-40) and Livy (27.18-20), and the silver-mines documented by Polybius (10.38.7) were of particular use in drawing up a shortlist of potential sites. However, as well as matching the site at San Tomé where the battle was later identified, the description also applied to multiple other sites in southern Spain. Combined with etymological association developed by the C19th Spanish historian Joaquín Ruiz Giménez, for over a century the battle was thought to have been fought at Bailén, c.70km west of the actual battlefield (Bellón *et al* 2004: 12-14). Kromayer, for instance, followed contemporary consensus and placed Baecula at Bailén, reconstructing the narrative around the topography of the battlefield (Fig. 1). Subsequent archaeological work at the site has indicated that the orientation of the battle-lines and manoeuvring around the battlefield was somewhat different.

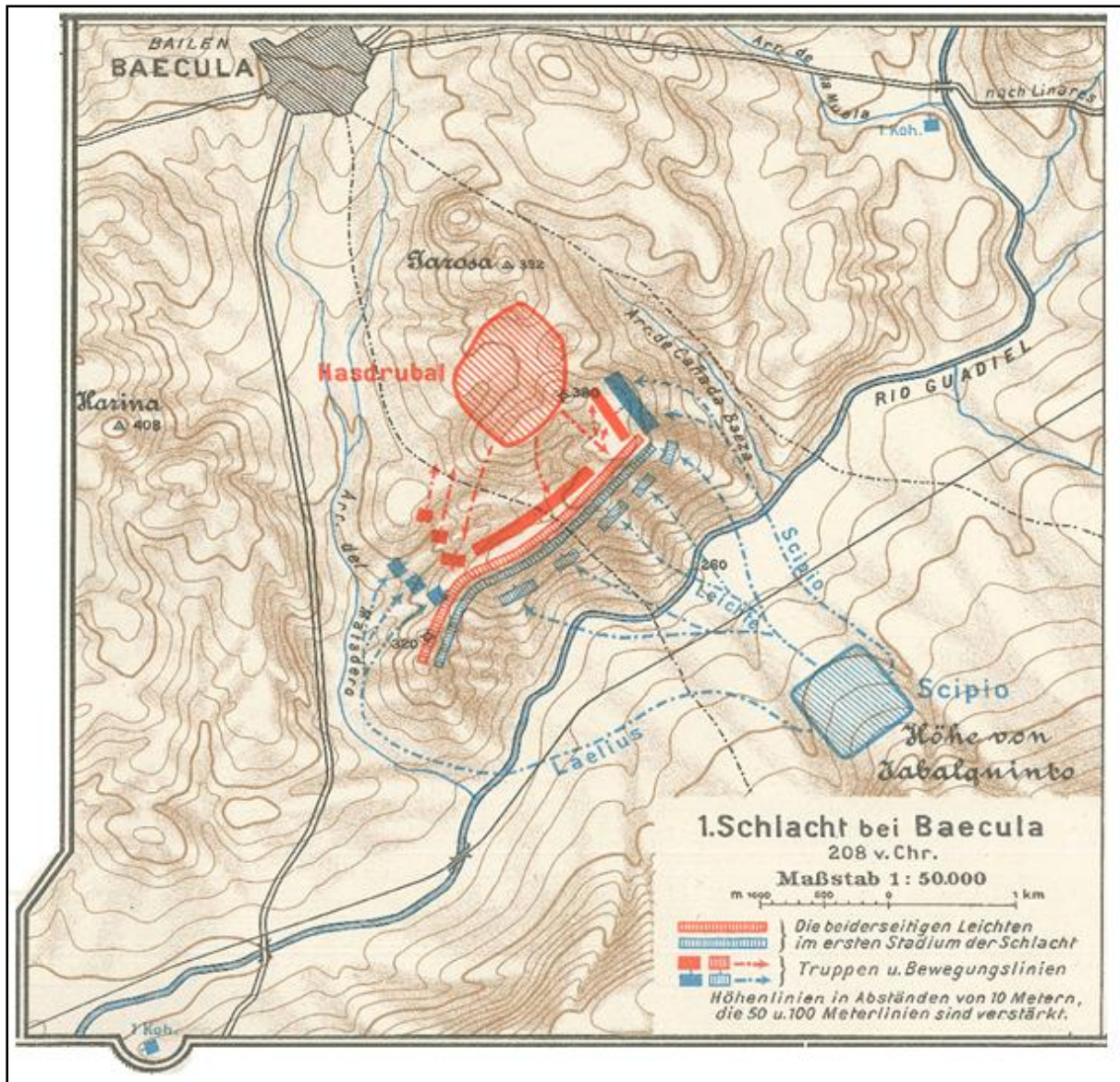


Figure 3: Kromayer's reconstruction of Baecula (Kromayer & Veith 1922-1929ii: plate 8).

An ancient battlefield's location and topography may be documented as a description of the site, its position, and the terrain, often in the form of a digression preceding the main fighting narrative. Alternatively, details about the location and topography may only be recorded incidentally as part of the wider narrative, and in these cases often the first that the reader knows of a topographic feature on the battlefield is when it impacted on manoeuvring during the battle. In neither case are the details necessarily extensive or detailed and they serve, in most cases, a purely narrative function, and evidently were therefore frequently omitted when judged to serve no such purpose. It

is particularly in comparison to the written testimony relating to battles from later historical periods, particularly from the Early Modern onwards, that the dearth of evidence from antiquity becomes obvious. This is not an innate shortcoming of the sources themselves, or their authors, but a reflection of the changing needs of archaeological research into ancient battle.

There has not been a significant reflexive review of the methodological assumption that the literary record should be central to any methodology of ancient battlefield study. Individual sources were critiqued by Kromayer, Hammond and Pritchett (*et al.*) as part of battlefield case-studies, and for each engagement the relative merit of the evidence assessed. However, there is little open consideration of the suitability of the ancient written record as a whole as a source of evidence for ancient battlefield studies. Both the narrative and geographic information in the ancient literary record is highly questionable, generalised, vague, and laden with rhetoric and stylised language. The information that they contained may have been sufficient to satisfy an ancient audience, and it is not any innate problem with the literary texts themselves that they no longer provide the evidence required by archaeologists and historians. Nevertheless, the issues with the literary dimension make it difficult either to trust battle-narratives, or the geographic and topographic descriptions of battlefields. As a result, it is difficult, if not impossible, to incorporate the literary record into archaeological studies of ancient battlefields in a comparable manner to projects focusing on modern sites. In particular, there needs to be far higher levels of critical assessment when working with the sources, including examination of the literary and social context of each text and of the chain of transmission. This chapter explores the problems associated with battle-narratives and battlefield locations in the ancient literary record.

It is important to assess how accurate the battlefield narratives from antiquity were to assess how representative of reality the geographic and topographic descriptions of the sites are. If the narrative of a battle was inaccurate due to problematic evidence and testimony, or was altered for literary effect, there may have been a consequent impact on the battlefield geography and topography, particularly where the information has been recovered from incidental mention in the narrative, rather than a descriptive digression. Simply, if the battle itself was misunderstood, changed, or partially fictionalised, then it is

also possible that the physical setting in which it took place was also altered or simplified to accommodate the alternative narrative. Given that the narrative and outcome of many battles was closely associated with the battlefield terrain and the use of it by military forces, any interpretation or alteration of the narrative may have had a significant impact on the description of the topography. This chapter therefore evaluates the ancient literary record relevant to battlefield studies. The first sections consider the literary context of battlefield narratives, including the genres from which the accounts come, the background of the authors, and the source of evidence, discussing the overall reliability of the written record from antiquity in regards to battlefields. The later part of the chapter assesses in-depth the actual geographic and topographic evidence in the literary sources, suggesting that they are, in almost all cases, insufficient to locate the battlefield, while noting that this was never part of their purpose.

2.2: Battlefields in the ancient literary record

When discussing battles, the Greek and Roman historical record may provide evidence for the location of the battlefield, its terrain, and a basis for the reconstruction of the narrative, particularly where it is possible to cross-reference one narrative against account of comparable battles. The methodological approach has almost always followed a pattern of identifying important terrain features and topographic checkpoints from the ancient literary record, whether mentioned openly or inferred from the narrative, and attempting to locate them within the contemporary landscape. Although Pritchett (1965-1992v: 209) claimed that his topographic analyses were intended as a “control over the accounts in classical historians over battlefields and the movement of armies”, he, like most other battlefield historians, failed to recognise the underlying restrictions of the literary record for battlefield study. The accuracy of the ancient literary record on battlefields has in some cases been defended beyond the degree to which the content deserves, and major topographic errors have rarely led to questioning of the veracity of the overall account. Neither Leake (1835ii: 51-53) nor Grundy (1901: 306-310) felt that Herodotus' (7.176) error in placing the pass at Thermopylae north-south instead of east-west undermined his

reliability, although both observed the orientation correctly in the field.²⁸ Both Pritchett (1965-1992ii: 119) and Hammond (1988a: 76) noted major errors in the ancient descriptions of the battlefield of Cynoscephalae, but consistently explained these errors as transcriptional mistakes or misunderstandings, and they were never evidently viewed as undermining the overall reliability of the narratives.

Hammond (1968: 13-14) was highly critical of any methodology which marginalised the ancient sources, citing Delbrück as a particular offender. He was equally dismissive of interpretations of the literary record which differed from his own, as at Marathon where all reconstructions which placed the centre away from the *Soros* were rejected, based not on the historical record or topographic analysis, but his own interpretation of Greek battlefield burial (Hammond 1968: 18). Pritchett (1965-1992ii: 68-70) also defended the veracity of the ancient record, and like Hammond was critical of its marginalisation. Pritchett's response to the Doris-Phokis Expedition project at Thermopylae is highly illustrative, criticising the geological team for its treatment of the written sources (see Szemler *et al.* 1996: 2, n.6 for full details of Pritchett's complaints in print). Topographic reconciliation, alongside new methods of interpreting the ancient literary record, remains a constant in ancient battlefield studies.

In the last century the Classical sources have been increasingly subjected to critique of their accuracy, but the perceived lack of an alternative in the context of battlefield studies means that they have continued to be central in the field. Only some *Schlachtfeldstudien* scholars have attempted to work independently of the historical sources. Even then, Delbrück rightly noted in the context of Kromayer that many of his contemporaries in battlefield scholarship treated the historical record inconsistently, citing them when they supported an interpretation and rejecting them for a contradiction, based on nothing but personal judgement (Delbrück 1975i: 170-171, 242-251, 332-333). However, what critique there has been of the ancient literary record has rarely been based on its applicability to battlefields in particular, but rather, is reflective of the individual scholar's

²⁸ Leake produced the first map accurately showing the pass running east-west. Earlier maps of the pass by Stuart, Foucherot and Bocage had all ignored the topography and made it run north-south consistent with Herodotus (Macgregor Morris 2007: 245-250).

attitude to the ancient sources more widely. It is not necessarily just the overall reliability of the ancient written sources that needs to be examined, but the specific treatment of battlefields by individual authors, and the wider literary conventions that ran throughout and between different textual genres. This section also considers the sources of evidence for ancient authors on battlefields, particularly those writing some period after the events they were describing.

2.2.1: Battlefields in ancient historical texts and commentaries

The written record relevant to ancient battle is drawn from a number of genres, and texts were created within a context of literary convention which governed both the content and form of narrative documentation. It is predominantly historical, biographical and tactical works which describe battle narratives and/or geographies relevant to future study. Historical works can be further broken down into two main categories, into those concerning (near) contemporary events, and (re)documented events from the more distant past. Authors did not necessarily stay within the boundaries of one category consistently across their works, and adapted their writing style to the literary conventions of each genre (Ogilvie & Richmond 1967: 21). Polybius wrote near-contemporary history (*The Histories*), including a lost work on the Numantine War which he was directly involved in, as well as a lost treatise on military tactics (Walbank 1957). Pliny the Elder, predominantly a writer on natural history, composed an extensive, lost work on the Germanic conflicts of the early Roman Imperial period, while Tacitus, although largely concerned with the history of the same period, also wrote the biographical *Agricola*, and the ethnographic work *Germania* in addition to his historical *Annales* and *Histories*.

Some of the most detailed discussions of battles and battlefields come from historical works discussing near-contemporary events, written within a few decades of the conflict they were describing. Many of the best regarded writers from antiquity, such as Thucydides, Polybius and Tacitus, were primarily known for writing contemporary history, and these authors remain among the most appreciated (Momigliano 1972: 280). However,

documentation of recent events, particularly if the author had been involved in them personally, could evidently lead to biases entering the historical record. Polybius (1.14.1-3) suggested that the histories of the Punic Wars by Philinus and Q. Fabius Pictor were both compromised by their personal biases, Philinus towards the Carthaginians, and Fabius towards the Romans. Velleius Paterculus has been accused of similar biases, particularly of such a positive portrayal of the emperor Tiberius that others, particularly Varus (Vell. Pat. 2.117-118), were unfairly portrayed. The corollary to this discrimination is that Velleius' accounts of events involving the pair are likely to be inaccurately described (see Goodyear 1982: 639-641). Recognition of bias was not necessarily always retrospective. Tacitus (*Hist.* 1.1) recognised that his career progression under the Flavians might lead to accusations of bias in his narrative account of the AD69 Civil War, defending himself against this in the introduction to the work.

Other ancient historians chose to document the more distant past by (re)writing histories of these periods. Some entire works might concern much earlier periods entirely (Arrian's *Anabasis of Alexander*), others might document more distant events as background to later chapters discussing events within their own lifetime, for which the above-discussed factors of near-contemporary history would be relevant (Polybius, Livy, Cassius Dio, Ammianus Marcellinus). In the C2nd AD Appian wrote a series of war narratives going back to the pre-Republican period, in which he drew on many sources for the conflicts which are no longer extant. Roman historical writing appears to have fallen into decline towards later antiquity, and one of the few late works to contain battlefield narratives is Ammianus Marcellinus, also one of the only extant extensive accounts of contemporary events (Mellor 1999: 110-114). Although his history went back to the accession of Nerva in AD96, immediately following Tacitus' *Histories*, the surviving part of the work covers the period AD353-378, finishing with the Battle of Adrianople.

A sub-category of historical works are the personal accounts of participants from an individual campaign, often 'published' decades after the notes were taken in the field. Unsurprisingly, these are exclusively associated with the elite, although there is archaeological evidence that less formal records were kept by the Roman military, such as the Vindolanda Tablets (Bowman & Thomas 1984) and the military papyri from Egypt (Fink

1971). Some elite participants appear to have kept personal records on campaign, which could either serve as aide-memoirs (*hypomnemata/ commentarii*) for later histories, written by themselves or by others. Notable examples include the accounts published by Ptolemy, Nearchus, Onesicritus and Aristobulus on Alexander's campaigns (all now lost), Xenophon's *Anabasis*, and the *Commentarii* of Caesar. The campaign records themselves would have preserved, potentially, an objective and complete record of the conflict, although this may not be true of any subsequent works. Whether the campaign records were composed to provide field-notes for personal memoirs, or future histories written by someone else, is uncertain. Caesar's published works were evidently viewed by Cicero (*Brut.* 262) as being notes rather than a finished work, although Riggsby (2006: 139-148) has suggested that Caesar's work represented a new style of literature halfway between field-notes and annalistic history (*cf.* Cleary 1985).

In both near-contemporary and distant past histories, the purpose appears to have been predominantly instructive - militarily, practically, and morally - through illustration by examples of correct behaviour in the past. Individual incidents might be included for their educational value, such as Polybius' (2.35.5-6) narration of the 225BC Gallic invasion of Italy for the stated purpose of informing future generations of what to do when such an incursion happened, and to illustrate how quickly it could be repelled. It is therefore unsurprising that most historical narratives focus on military and political issues throughout. Polybius (1.1.2-3; *cf.* 2.56.12) believed that history provided the best education for a life in politics, explaining that the arguments for why this was the case have been argued in such depth elsewhere that he did not need to address them. However, Lucian (*How to Write History* 9) noted that while the purpose of history was to provide useful information, many historians did not. However, any military knowledge to be gained from ancient historical works was evidently inferred rather than directly instructed. Rather, it was military treatises which offered what appears to be, alongside a certain amount of entertainment value, a practical guideline for military operation in the field.

2.2.2: Battlefields in ancient military treatises

In addition to formal literary histories, facts relevant to battle and battlefields were also documented in strategic and tactical treatises, particularly the works of Onasander (mid-C1st AD), Frontinus (late C1st/early C2nd AD), Polynaenus (mid-late C2nd AD), and Vegetius (late C4th AD), many of which used historical-based generalisations to illustrate points made in the text.²⁹ These texts were often collections of observations made in other works, histories or treatises, and both Onasander (*The General praef.* 9) and Vegetius (*Epitome* 1.28) acknowledged that they had not made their tactical observations first-hand, although Frontinus had some military experience from serving in Britain which may have informed his work (Campbell 1987: 14-15). The treatises are not directly concerned with the documentation of historical narrative, and very few battles are named. Rather, the texts discuss ruse and stratagem more widely, drawing on past historical examples to illustrate the correct way to react to military circumstance. Onasander (*The General praef.* 7) made a point of stating that his work was entirely based on real events from Roman history, although he does not cite individual events by name. In contrast to traditional historical texts, which documented the narratives of individual and particular engagements, they describe what might be thought of as composite descriptions of military and battlefield behaviour.³⁰ Perhaps surprisingly, they do not only document instances of pitched battle, but also emphasise how ambush, night-attacks, and skirmishing can be both defended against and effectively used.

Many other treatises were written which have not survived, although elements of their work appear to survive in the texts of later writers, particularly in Vegetius (*Epitome* 1.8, 2.3) who cited several authors, including Cato, Celsus and Paternus, indicating a focus on Roman, authors (Milner 1993: xvi-xxvi). Whether the treatises would have proved of any

²⁹ More specific technical manuals were also written, including Xenophon on cavalry, Arrian on cavalry and infantry formation (mid-C1st AD), and Aelianus Tacticus on sieges (early C2nd AD), but they do not frequently draw on historical examples to illustrate their text. Vegetius (*Epitome* 1.8) also referred to military treatises written by the Spartans, Athenians and other Greeks, although few examples have survived). Cf. Onasander (*The General praef.* 3) that his work might be seen by contemporary readers as one among many similar texts.

³⁰ Thus, treatises also discuss, among many other subjects, the "moral" character of a general (Onas. *The General* 1.1-2.5), principles of march and encampment, and treatment of soldiers on campaign and after battle.

practical use in the field is debatable. Campbell (1987) observed that many of the (extant) treatises are generalised, state the obvious, and, in some cases, contain anachronistic information, and there is no significant evidence of the stratagems described in the historical narratives of real battles. Nevertheless, he argued that the continued production of these sorts of works suggests that they were viewed as being of value, and suggested that they would have been of particular use to a society where, due to the political structure, high-ranking military positions were taken by members of the civilian elite who did not necessarily have any actual experience or prior knowledge. Despite the evident anachronism of some of these works, they evidently remained in use not just in antiquity, but through to the medieval and even the early modern world, where their tactical principles continued to inform military theory (see Campbell 1987; Milner 1993: xiii-xiv; Sguaitamatti 2006). The focus on military scenarios other than pitched battle certainly would have made these manuals useful in the field, and they provide historians today with a greater insight into the nature of Greek and Roman conflict than might otherwise be possible from the more formal historical record alone.

2.2.3: Battlefields in ancient biography

The final major genre of source relevant to battle narrative and battlefield description is what might be best characterised as biographic works, such as Tacitus' *Agricola*, Suetonius' *Twelve Caesars*, the *Parallel Lives* of Plutarch and the so-called *Scriptores Historia Augusta*. These works mention individual/specific battles, not through the course of a traditional historical narrative, but as key events in the lives of their subjects, the majority of whom were involved in military affairs, often as part of their wider political career.³¹ The detail of the battle-narratives varies, projecting an impression of how important those, or indeed any, battles were to the biographic characterisation which the author was attempting to create. The narratives of the engagements themselves, however, were less important than simply noting the fact that they happened, and there are common

³¹ For example, every one of Plutarch's *Lives* sees the subject described as fighting in at least one battle/campaign. Military activity is also associated with the majority of Suetonius' biographies, with the exception of Nero, although his description of Caligula's single campaign is not documented in particularly glowing terms (Suet. *Gaius*. 43-48).

references to a campaign in which a number of battles were fought, with no further details of what they were, or where (e.g. Tac. *Agric.* 17, 24; Suet. *Vesp.* 4.1; SHA *Duo Max.* 13.1).

It is uncertain whether the battle narrative in the biographies have any real accuracy, or whether they were literary constructs aimed at supporting the biographical characterisation of the individual. For example, Ogilvie and Richmond (1967: 19-20) observed that Agricola may not have undertaken all the military actions ascribed to him by Tacitus in his Caledonian campaigns, as the function of the text was not to annalistically document a period of time, but to characterise an individual. In scouting campaigning routes, and personally choosing camp locations (Tac. *Agric.* 22, 26), Ogilvie and Richmond (1967: 20) suggest “it could safely be claimed that he had done so because that is what good generals are supposed to do” , regardless of whether it had actually happened. In Plutarch, the underlying 'goodness' of Marius and his relationship with his men (*cf.* Plut. *Marius* 7.2-4, 14.2-5, 22.3,) is underlined by their allocation of all the spoils from Aquae Sextiae to him (Plut. *Marius* 21.2), in comparison to his reception in civilian life which characterised him as cruel, harsh, and unpopular with the political elite (Plut. *Marius* 2.1-3, 9.2, 10.5, 28.4).

2.2.4: The authors of battlefield texts

Polybius (12.25g.1-3) suggested that personal experience of battle was vital to writing 'good' military history, whatever the period being discussed. His views, he claimed, came less from literary snobbery, and more from a feeling that anyone without such experience would be unable to identify the important elements of a battle and therefore, would not be able to construct an accurate and informative narrative. Many of the ancient historians discussed above had some military experience, although associating them with specific events is dependent on references within their own work. Few extant, and a small number of the lost, works were direct descriptions of campaigns the author had personally been involved in. Thucydides served as a *strategos* and trireme commander during the Peloponnesian War (Thuc. 4.104.4; 4.106.3), Xenophon's *Anabasis* recorded his service as a mercenary soldier in Asia Minor, and Caesar's *Commentarii* documented his experiences in

Gaul and during the Civil War. Although the text has not survived, Polybius served in and later wrote a history of the Numantine War, a conflict he served in. Velleius refers to his service in Thrace and Macedon (2.101.3), Germania (2.106.1) and during the Pannonian Revolt (2.111.3) alongside Tiberius (see also Turner 2015: 261-262). Frontinus had a relatively high level of direct military experience, including leading a campaign against the Silures while governor of Britain from AD74-77 (Campbell 1987: 14). Arrian documented a defeat of the Alans c.134-135 in the *Ectaxis contra Alanos*, with which he was directly involved, and may have served in Trajan's Dacian Wars, a conflict documented in the lost *Parthica*.³² A late example comes from Ammianus Marcellinus (31.16.9), who served in Persia and Gaul in the army of Constantius II in the mid-4th AD. Although his history originally went as far back as AD96, the events described in the later books of the work, covering the conflicts of the 4th AD, directly concerned the period during which he was a serving member of the Roman army and presumably, therefore, involved in.

The experience of other writers is more questionable. There is no evidence that Livy served in the military, despite living through a period where Italy was wracked by civil war. There is also no reason to suggest that Plutarch or Suetonius, two of the more prominent biographers, had any real involvement in the military, with their careers largely confined to the administration in Rome and the provinces.³³ Cassius Dio may also have lacked personal experience of battle. Although Dio evidently served as proconsul in both Africa and Pannonia, there is with no evidence that he was directly involved in conflict during these postings (Millar 1964: 17-24). There is limited evidence for the military experience of authors of the extant tactical treatises, particularly Onasander, who was known predominantly as a philosopher, not a soldier. That said, Onasander (*The General praef.* 9-10) openly acknowledged his lack of experience at the start of his treatise, stating that the examples used to inform his work were the actions of others but not, he argued, any less informative for it. Nor had Polynaenus any significant military experience, another treatise author whose background was in rhetoric; Campbell (1987: 16, n.14) noted that the majority of real-world examples in his work were drawn directly from Appian and Suetonius.

³² Arrian did serve on the Danube, but it is not possible to say whether this coincided with the war, nor what was covered in the work (Bosworth 1988: 17-22).

³³ Pliny the Younger (*Ep.* 3.8) records that he had arranged a military tribunate for Suetonius, which he turned down, and it was instead given to a relative,

However, military experience alone does not seem to have qualified ancient authors as competent military writers in all cases, with several criticised and, in some cases, subsequently defended, for their lack of ability in accurately documenting conflict.

There have been attempts to defend the military reputation of several prominent ancient historians, arguing that their failure to document contemporary battles to the standard which would be required by modern history should not reflect on their reputation. Reassessments of the work of Herodotus (Kiesling 2003), Thucydides (Funke & Haake 2006), Polybius (Walbank 1972), Tacitus (Wellesley 1969) and Dio (Millar 1964) have consistently emphasised that their subjects were better military historians than they are given credit for by modern academia, explaining the absence of certain evidence as a result of literary convention rather than incompetence. This is a fair argument. However, recognising that the shortcomings in evidence from the ancient authors results from the textual context does nothing to alter the fact that these shortcomings exist, and does not change the fact that concessions remain necessary.

2.3: Battle narratives in ancient historical literature

Detailed narratives only survive – and perhaps were only produced - for a minority of the battles which were fought, and in most cases are associated with the formal pitched battles which, although characteristic in the scholarship of ancient warfare, were only one component of conflict in antiquity (see 1.4.2). Those which are known are generic characterisations of battle, rather than complex reconstructions of activity before, during, and after the fighting. Lucian (*How to Write History* 49) recorded the typical formula for a battle-narrative, suggesting that it should focus first on the generals, their speeches, tactics, and troop deployment, followed by a description of the fighting as a general impression, not focusing on any individual part of the field, including the period of flight and pursuit.³⁴ The accounts of the actual fighting are in many cases highly episodic, following a narrative which moves from one set-piece action to another with no clear distinction of the time and

³⁴ For typical narratives, see App. *Bell. Civ.* 2.70.-2.74; Tac. *Agric.* 29-35. See also Pritchett 1974-1991iv: 44-93.

space.³⁵ Typically, lines will collide and then one line will eventually break, without detailed description of what happened in the intervening period (e.g. Polyb. 3.115.1-11; Livy 5.38: cf. Plut. *Cam.* 18.6-7). Actions of individuals in battles, aside from the commander, are almost entirely absent. Lucian (*How to Write History* 49) advised that battle-narratives should not concentrate on the activities or actions of individual soldiers or units, although exceptions were evidently made for members of the elite, particularly where they went on to a prominent political future (e.g. Dio 60.20.3). Caesar's (*Bell. Gall.* 5.44) account of two ordinary centurions in his army, mentioned by name, and their personal rivalry in battle is largely unique in ancient sources. Ammianus Marcellinus has been put forward as one of the few ancient historians to write from a "face of battle" perspective (Kagan 2006: 23-95). Kagan suggests that his battle-narratives documented certain engagements in a way that does suggest the experience of ordinary combatants, although again, there is no mention of individual soldiers.

Many conflicts were summarised in a few sentences, and battles did not have an narrative. Dio, for example, documented two wars in AD41 with a spectacular lack of detail. The first, in Germany, only describes the conquest of the Chauci and Chatti and the recovery of the last lost Varian eagle (Dio 60.8.7), while the second, in Africa, describes in passing two un-narrated engagements (it is not clear if they are battles), while a potentially disastrous march into the desert afterwards is described in greater detail (Dio 60.9.1-5). During the Roman invasion of Britain, Dio referred to an uncertain number of battles, probably four, in the early phase, of which only two are narrated (Dio 60.20.1-60.22.2),³⁶ and a series of undocumented victories after Claudius' arrival (Dio 60.21.4). Later, Suetonius (*Vesp.* 4.1) recorded the conquest of south-west England by reference to 30 battles fought by the future emperor Vespasian, along with the conquest of two tribes and the capture of more than 20 towns as well as the Isle of Wight, with no further details as to their narrative. The *Historia Augusta* (*Duo Max.* 13.1) noted numerous wars and battles in the reign of Maximinus Thrax in addition to his Germanic campaign, but provides no details as to where

³⁵ Keegan (1976: 62-73) argued that an episodic narrative tradition existed throughout military history, focusing on changes in movement, uniformity of behaviour, homogenisation of troops and simplified motivation, rather than documenting actual events which happened; his *Face of Battle* was an attempt to elaborate on and humanise these standardised descriptions.

³⁶ Although Hind (2007) argued that the riverside battles are the same engagements as those against the named tribal leaders and therefore *are* narrated in detail.

or what they were. James (2013: 102-105) pointed out that the paucity of evidence for individual periods of conflict in traditional historical sources has left scholars looking for supplementary information in other genres, citing the British conflicts in the governorship of Vettius Bolanus (AD69-71) for which the only extant literary references come from poetry addressed to his son (James 2013: 102).

However, even these vague references seem detailed when compared with other sweeping, non-contextual references to periodic conflict. There were clearly many engagements, even formal battles, which were not documented by the literary record. Britain appears to have suffered significant military upheaval through the C2nd to C4th AD, which is only covered by the literary record in a vague reference to problems under Hadrian (SHA *Had.* 5.2) and Commodus (SHA *Comm.* 6.2; 13.6; Dio 73.8.1-6), the latter documenting a northern army crossing the frontier and attacking the provincial interior or Britannia. Neither are presented as a military problem comparable to earlier problems such as Boudica (*cf.* Dio 62.1.1-62.12.6), and the references do not describe, or even mention, individual battles. Aside from a brief mention of the conflict occurring (Dio 77.11.1-13.4; Herodian 14.1) the events of Septimius Severus' campaign in to north-east Scotland are almost totally anonymous but for the evidence of the line of advance and retreat supposedly reflected in the distribution of campaign camps. Ammianus Marcellinus (27.8.1-10; 28.3.1-2) documented later problems in Britannia in AD367 at the start of the 'Great Conspiracy', again referring to an army crossing the frontier from Caledonia and attacking the province. Very little detail is provided by any of these authors.

By contrast, the archaeological record suggests that both periods were significant phases of military activity. There is evidence of destruction at forts on frontier installations in Britain during the C2nd AD, although recent examination has shown that many 'destruction levels' originally associated with conflict in this period are actually the result of other factors (Breeze 2005). A tombstone, RIB 3364, from Vindolanda documented the death of a Roman auxiliary in battle, most likely dating to the Hadrianic period (Birley 1998), while another tombstone (RIB 3218) commemorated the death of a Roman soldier in an

attack on the fort at Galleva (Ambleside).³⁷ The British conflict under Commodus was evidently significant enough to warrant the issue of coins in the mid-180s, as well as his adoption of the title *Britannicus* (SHA *Comm.* 8.4), but the narrative or extent of the conflict is unknown.

2.4: The sources of evidence for ancient battlefield narratives

The provenance of the evidence used for ancient battlefield narratives determined the accuracy of both the events and their geographic setting. Like all histories and other literary works, authors appear to have consulted a range of evidence, from talking with campaign participants (if they were writing contemporary history) or accounts produced by those who had done so previously, public records. Historians looking at ancient battlefields today have slipped into a pattern of assuming that any errors or deliberate alterations in the narratives from antiquity came in at the composition stage, rather than the informant, but this may not be the whole story. Understanding the chain of transmission, particularly from oral eyewitness testimony to written documentation and thereby use by later historians, is particularly necessary to establishing the overall accuracy of battlefield narratives, and the geographic and topographic evidence within them.

2.4.1: Participant and eyewitness testimony

Polybius (4.2.2) expressly stated that the ability to consult participants directly was the predominant reason why he wrote about recent history. It is difficult to know how far eyewitness testimony collected directly by authors influenced the eventual narratives, however, as it is only occasionally that writers directed referenced their use of them. Even when they did however, it is uncertain in some cases how accurate/feasible this would actually have been. Polybius (3.48.12) claimed to have consulted survivors of Hannibal's crossing of the Alps to establish the accuracy of the route. However, this may be

³⁷ It is rare for cause of death to be recorded on Roman tombstones, or for battle-casualties to be buried in a cemetery context, although in these instances, particularly RIB 3218, the soldier may have died in the camp.

questionable. Polybius would have been present in the Alpine area around 151BC, nearly 70 years after Hannibal's crossing in 218BC. Given the probability that the minimum age of combatant participants would have been 16 years old, any surviving eyewitnesses would have been in their late 80s or early 90s by the time Polybius could have consulted them. Although it is not impossible that some participants had survived to this age, the quality and reliability of their testimony is not discussed by Polybius, who does not note the advanced age of his informants.³⁸ Momigliano (1972: 281-286) suggested that the importance of consulting eyewitnesses has perhaps been overestimated by later historians, and that it was rather the documentation of momentous societal events which guided the documentation of recent history; certainly, as he observed, many historians appear to have viewed their own times as key epochs in human history.

Even the most devastating military defeats would have had some survivors, who made their way home to, potentially, narrate their experiences of the battle. Livy (22.7.9-13) described a few survivors of Trasimene arriving back in Rome, surprising (fatally, in some cases) relatives who thought they were dead, while other survivors were scattered throughout Etruria, or taken prisoner. Roman soldiers who escaped the *clades Variano* rejoined the army and led Germanicus to the battlefield (Tac. *Ann.* 1.61; cf. 2.15), others had been taken into slavery and were evidently released in AD50 during a campaign against the Chatti (Tac. *Ann.* 12.27).³⁹ However, in many cases consultation of eye-witnesses is to some degree assumed by historians, based on the detail (and evidently authenticity) of the narrative, such as Hornblower's (2000: 77) conclusion that Thucydides had consulted oral testimony for several events during the Sicilian expedition despite no mention of him doing so. Public discussion of the war, by participants and generals, has also been cited as a major source for Thucydides' narrative (e.g. Hunt 2006: 390), with little substantiation beyond that it would have made sense for him to have done so. However, whether the testimony that they received from eyewitnesses to battles would have been of any accuracy themselves is a different issue.

³⁸ Demographic analysis produced by Parkin (1992: 92-110) suggests that only c.7% of the Roman population would have reached their 60s, and as few as 0.03-0.06% would have reached their 90s.

³⁹ Dio (56.22.4) adds the capture and familial ransom of Roman soldiers in Germania soon after the *bello Variano* during a subsequent attack on a Rhine fort, presumably Aliso, adding that these soldiers were forbidden to enter Italy.

2.4.2: The accuracy of participant and eyewitness testimony

Where ancient historians are questioned on the accuracy of their narratives, it is almost always a question of their own impartiality or ignorance, rather than the accuracy of the testimony that they themselves had been given. Ancient writers were aware that the accounts given by battle-participants might not be entirely accurate. Thucydides noted that on a battlefield combatants were often only aware of what had happened in their immediate vicinity (Thuc. 7.44.1), and that participants in the same battle could give contradictory accounts of what happened (Thuc. 1.22.3). Caesar (*Bell. Gall.* 1.22) noted that the accuracy of a scout report had been reduced by his fright on discovering a position unexpectedly occupied by the Gauls, leading to reports of things which he had not actually seen. More widely, Pliny the Elder (*NH* 7.24) observed that any traumatic or frightening event could cause partial or complete memory failure. Aristotle (*Parva Naturalia* 1.450b.15-25) argued that the imperfections of memory could lead eyewitnesses to believe they had seen events that they had not, which may not have even happened, by incorporating the recollections of others, and dreams, into their memory. What has been under-considered in the context of battle-narratives in particular, is how the process of faulty eyewitness/participant recollection may have impacted the accuracy of documented/literary accounts.

The psychological processes behind the memory process in battle have been extrapolated from studies in artificial high-risk simulations, but they raise concerns about the human ability to perceive events, form memories, and later recollect accurate details about a battle. In stressful situations, perception becomes highly selective, focused only on threats to the individual in the immediate periphery, with events elsewhere on the field failing to register (Baddeley 1972).⁴⁰ The process will be exacerbated in the presence of lethal weapons, producing a “weapon focus” which will become the sole perception at the expense of all other external stimuli (Fruzetti *et al.* 1992).⁴¹ By contrast, in non-dangerous

⁴⁰ Baddeley (1972: 538-542) observed that to a certain point stress will enhance performance, but beyond a maximum tolerance level performance will dramatically decrease, citing Gettysburg and the Korean War as two conflict-specific occasions where this can be observed.

⁴¹ Fruzetti *et al.* (1992: 21-24) observed that the weapon focus is conducive to performance and survival in dangerous/conflict-type situations, and can overrule prior training.

situations individuals are more likely to be aware of the overall narrative rather than specific details (Cohen 1996: 89). However, the accuracy of any memories formed under this psychological stress will be severely compromised (Clifford & Scott 1978). Baddeley (1972: 544-545) observed that experienced participants might learn to reduce their stress levels under conflict, potentially producing more accurate recollections of events. It would prove difficult to supplement the problematic and incomplete narratives of participants with those from more distant observers, such as military commanders or civilian non-combatants, with the former lacking the neutrality/disengagement necessary to reproduce an accurate narrative of an observed event, while the latter, in most cases, lacks the detailed contextual knowledge which is also a prerequisite of reliable eyewitness testimony (Vansina 1985: 4).

It is not only the reliability of the observed narratives that are problematic, but also the nature of their transmission into the historical or literary record. Inaccuracies can enter recollections long after the actual event took place. In some cases, these are intentional, most commonly the phenomenon of the “Bullfrog Effect” observed by Keegan (1976: 33), where soldiers claim increasingly implausible acts of bravery on the battlefield. Keegan suggested that this was a deliberate process of alteration to enhance individual prestige, but psychological studies suggest that over time, falsified recollections can become engrained into the memory, becoming indistinguishable from ‘real’ events. Further, as illustrated in the psychological studies discussed above, participant’s testimony would exclusively pertain to their own personal experiences in the battle rather than providing an overview of the entire conflict. Memories of specific events may change over time, in some cases as a result of changing personal and cultural perceptions of the event (Vansina 1961: 23-25) or new information introduced by others after the event (Fruzzetti *et al.* 1992: 25-28), which will over time be implanted into the personal narrative of an individual participant. In other cases, memory will undergo a process of neurological re-encoding which ‘rewrites’ the original (often incomplete) recollection, increasing with repeated access (Cubitt 2007: 81-81).

The contemporary mythologizing of certain battles, such as Marathon, would have made surviving participant testimony particularly vulnerable to inaccuracy. As such, combatants from a battlefield, having already experienced a period of narrowed and

compromised memory formation, may incorporate into their 'memory' of the battle events which never happened, or which were not experienced by them directly. As a result, they may make narrative claims of events which never actually happened, and yet their recollection would not be an act of deliberate deception on the part of the combatant. The process of inaccurate memory recollection can be exacerbated by the manner of questioning under which it took place. Recalled narratives of any kind are subject to alteration as a direct result of the manner of questioning (Fruzetti *et al.* 1992: 35), and the desire of the informant to meet, or contradict, the expectations of the questioner (Vansina 1961: 23).⁴²

Whatley (1964) discussed the issue of reliable participant testimony in the context of Marathon, drawing on the flawed narratives given by many of his contemporaries on engagements in which they had fought during the First World War.⁴³ It could be argued, of course, that the mental stress of ancient battle may have impacted on combatants in a different way, undermining the application of modern psychology to the process of memory formation. Tritle (2004) has argued that soldiers in antiquity, from the *Iliad* onwards, could have suffered from Post-Traumatic Stress Disorder (PTSD) as a result of their experiences in battle. Melchior (2011) makes a rather more convincing argument against PTSD in antiquity, suggesting that the lack of explosives on the battlefield would have led to a different, if not necessarily less traumatic, experience of battle. Certainly, there does appear to have been a certain degree of what is now defined as "combat shock", evident in Epizelus' spontaneous blindness at Marathon (Hdt. 6.117), and the casting aside of weaponry by the troops of Varus at the end of the battle in the Teutoburg (Dio 56.22.1).

Even accepting the concept of PTSD in antiquity, these examples suggest that soldiers in antiquity may have suffered some mental trauma as a result of their conflict experiences. Further, the psychological studies cited, and hundreds of others, rely on the presence of a weapon and the threat of mortality, regardless of its nature or context,

⁴² Although Cohen (1996: 86) argued that while leading questions may lead to inaccurate individual testimony, it is unlikely to be enough to completely supplant the original memory, unlike the processes of natural re-encoding referred to above.

⁴³ Including disagreements over the level of light during an engagement (one man recollecting a bright moon, the other pitch-black), and the number of shots fired during a patrol, which were exaggerated by up to seven times the actual release (Whatley 1964: 121).

suggesting that the conclusions can be applied to antiquity. Indeed, evidence does come from the ancient literary sources themselves which show an awareness of the problems of accurate recollection of battlefield experiences, and the adaption of memory over time, albeit with no evident acknowledgement that this would question the accuracy of their work. The ultimate result of these factors, unfortunately, is to add a significant element of doubt to battle narratives from any period, including antiquity. Even if a participant recounted the story of the battle exactly as they remembered it, and the historian in question documented it exactly as told, there is no guarantee that an accurate narrative would emerge. Even judgement over a majority recollection would be problematic, as it would be difficult to be certain that the generalised consensus of opinion had not resulted *after* the battle as a result of post-event memory alteration.

All participants, from generals to ordinary soldiers, would only be able to document events which they had personally experienced during the course of the battle. There are multiple occasions where ancient battles present, at least in a narratives, as a series of smaller linked actions rather than one single engagement. At Marathon, for example, the clash of the battle-lines at the start of the engagement is a completely different phase of activity to a subsequent skirmish at the Persian ships (Hdt. 6.112-115). The former action has a (slightly) more detailed narrative of activity, while the latter has the only named casualties. It is more than possible that different soldiers were involved in each of the two actions, as in other cases where similar divisions appear, with the result that it is highly unlikely that any participant would have a clear idea of what had happened. This is particularly relevant when discussing parts of battles where high, or total, casualty rates were sustained (according to the narrative).

If there were no survivors of a particular battle phase or event (as opposed to the entire battle; survivors having escaped at an earlier point), then who provided the testimony? It is possible that testimony could come from the victorious army, but whether this is a realistic in many cases is questionable. It is possible that Herodotus, for example, had access to the testimony of Persian-army participants for the end-stages of the Battle of Thermopylae (Hdt. 7.222-227), although this is not cited. Rather more questionable, perhaps, is the source for the late stages of the *clades Variana* and detailed tortures

inflicted on the prisoners (Vell. Pat. 2.120.6; Flor. Ep. 2.30.36-37; Dio 56.22.1); although there evidently were survivors, whether they were involved in either of these events, given their longer-term survival, is highly questionable.

2.4.3: Campaign journals and military documentation

The chain of transmission of participant narratives from *hypomnemata* and *commentarii* into literary history appears to have been complex, as illustrated by the historical documentation of Alexander the Great's Persian and Indian campaigns. A number of participant and contemporary histories were taken of the campaign, by military participants Ptolemy, Nearchus, and Onesicritus, by the possible campaign architect Aristobulus, and official historian Callisthenes, all of which were published sometime in the four decades after Alexander's death (see Lane Fox 1973: 499-500; Hammond 1993: 32-34). An additional account was published by Cleitarchus around the same time as the participant accounts, although whether he had been directly involved in the campaign is unclear.⁴⁴ This account evidently enjoyed brief popularity around its publication but does not appear to have been used in any great detail by later historians (Lane Fox 1973: 499-500; Bosworth 1988: 61-93). Contemporary records were kept in an official archive containing documentation regarding Alexander's reign, as per all Macedonian rulers, although claims were later made that the surviving archive had been faked either during Alexander's reign, or soon after (see Hammond 1988b). The participant accounts and the archive were used by later historians, of which works by Arrian, Diodorus Siculus, Justin, Quintus Curtius and Plutarch are the main survivors. Unfortunately, the various later historians do not always document which sources they used, nor cross-reference between themselves. Arrian (*Anab. Alex. praef.* 1) suggested that, despite both being participants, the accounts of Ptolemy and Aristobulus differed at multiple points in the text, and he relied on his own critical judgement to arbitrate on each occasion in which they did.⁴⁵

⁴⁴ For Cleitarchus see Zambrini 2007.

⁴⁵ See Hammond (1993) for discussion of the sources used by Plutarch and Arrian.

There is less evidence for ancient historians consulting archives of material composed by non-elite campaign combatants, those who would have been directly involved in the actual fighting. There are no extant campaign diaries, journals, personal letters, diaries, interim reports, despatches, or maps written or created by rank-and-file soldiers, comparable to the corpus available from modern conflicts such as the American Civil War or WWI. Based on the caches of Roman military documents recovered from Egypt and Vindolanda, textual sources almost certainly would have been created by ordinary campaigning soldiers, including personal letters, which may have provided a more individualised narrative of battle (e.g. Bowman & Thomas 1984; Fink 1971). Unfortunately, none of the surviving works discuss a battle, with the closest a brief commentary on the fighting habits of the Britons recovered from Vindolanda (*Tab. Vind.* 164).⁴⁶ Both the Egyptian and Vindolanda texts verify, however, that individual Roman military units archived relevant operational documents, which are rarely referenced by any literary histories. Historians may have incorporated these records, or indeed any other informal written texts composed by soldiers, but without direct citation, the degree to which this happened cannot be estimated.

There are reasons to suggest, however, that several ancient historians consulted primary military reports which had been stored in a central civic archive. Hornblower (2000: 39-40) suggested that the somewhat dry, annalistic style of Thucydides' history may have resulted from his use of field reports and/or letters composed by generals on campaign. Very few examples of, or indeed even reference to, such despatches survive from the Greek world, making military reports somewhat of a lost genre the content of which could only be guessed at. Greater certainty can be had from the Roman world, where it is clear that some authors had access to military despatches, including scout reports, sent to the Senate from the provinces which they could use to establish campaign narratives (Austin & Rankov 1995: 49). Herodian (7.2.8) recorded the emperor Maximinus Thrax sending a despatch to Rome documenting a battle fought in a swamp during his German campaign, as well as his later

⁴⁶ For the Vindolanda Tablets see Bowman (1998) and Birley (2002). Surviving examples include unit strength reports, supply inventories, lists of work assignments, patrol reports, and personal letters to friends and family, providing a unique insight into daily life on the Hadrian's Wall frontier. See also Fink (1971) for the papyrus records from Egypt, including duty rosters, military reports (including details of passwords), pay records, receipts, and letters.

creation of a painting illustrating the battle which was placed in front of the senate house.⁴⁷ Lucian (*How to Write History* 20) referred to a historian's consultation of a military despatch documenting casualty figures from a battle during the AD162-165 Parthian War, although he went on to say that the historian had then completely ignored the figures and made up his own.⁴⁸

2.4.4: Earlier histories and epigraphy

Ancient historians writing about the more distant past might also consult earlier historical works. In the C1st AD, according to Josephus (*Bell. Jud.* 1.14-15), the rewriting of older history was more popular than chronicling current events, and this would have left ancient authors reliant on earlier works. Evidently, significant events were quickly documented in a number of historical sources, if Polybius' (3.47.6-9) reference to multiple histories of Hannibal's Alpine crossing is typical. The chain of transmission is often difficult to identify, as so few of the texts survive, and authors rarely cited their sources. Exceptions were sometimes made where the source of the material was significant, as in Livy's (21.38.3) citation of Lucius Cincius Alimentus on the size of Hannibal's army, although Livy then moved to correct the figures.⁴⁹ Evidently a significant number of potentially popularist histories had been composed in the seventy years since the crossing, although Polybius is dismissive of their value. Tacitus (*Ann.* 1.69) directly referenced Pliny the Elder's (now lost twenty-volume) history of Rome's wars with the Germans down to c.AD47, undoubtedly a significant source of evidence for the *Annales*, *Histories*, and the *Germania* (cf. Sallmann 1984). It is likely that Pliny's lost work was the principle source of evidence for the Teutoburg battle, although the content can, at best, be only partially extrapolated from subsequent writings. Plutarch (*Romulus* 3.1) cited Diocles of Peparethus and Fabius Pictor as sources for his work on Romulus, although noted that the accounts were not an exact match

⁴⁷ Herodian places the battle deep into Germania (*contra SHA Duo Max.* 12.1). It may not be the Harzhorn battle as such, but if not is described a potentially similar engagement.

⁴⁸ Citing 70,236 Parthian casualties to 2 Roman dead and 9 wounded, after describing a casualty who died on the spot from a stabbed big toe, and a general who killed 27 men with a single shout; Lucian was, unsurprisingly, not convinced by this historian's work.

⁴⁹ L. Cincius Alimentus had been, according to Livy, taken prisoner by Hannibal at an early stage of the war.

for one another. Dio (1.1.2) specifically referred to his reading of other writer's work on Roman history, claiming to have read almost everything written by everyone over a period of ten years, although he wrote that he would only include a selection of events documented by others (*cf.* Millar 1964).

Inaccuracies in earlier histories, even those composed by or from eyewitnesses, were frequently cited as a reason for the writing of new histories, although how exactly these errors were noted is unclear. In the case of conflicting accounts, ancient authors may simply have chosen which one they found more credible (e.g. Arr. *Anab. Alex. praef.*1). Tacitus (*Ann.* 1.1) described his work on post-Augustan Roman history as a chance to correct popular perceptions about the period from a position of temporal distance, later adding (*Hist.* 1.1) that the objectivity of historians had been compromised by the political environment of the early Imperial period.⁵⁰ Arrian (*Anab. Alex.* 6.11.2) documented that inaccuracies in earlier histories were the reason for his decision to rewrite the history of Alexander the Great, as he did not want these errors to enter the permanent historical record. Dio (72.18.3-4) defended his decision to extend his history through to his own times, and in doing so record some events which might be seen as trivial, by saying that he felt he was in the best position to record them, having been involved in so many of the important events of the time. However, use of earlier historical works could lead to issues in transmission if misunderstanding or errors were introduced into the later narrative, as seen in Livy's (33.8.13-14) account of the Battle of Cynoscephalae (197BC) has the Macedonian phalanx abandoning their *sarissas* while marching into battle, evidently a complete mistranslation of Polybius' (18.24.9) original Greek which had them lowering them for attack.

It is unlikely that ancient writers would have had access to a complete historical record in the composition of their work, or even that one existed. Dio (53.19.1-6) argued that there were significant problems with the historical record from the Roman Imperial period (in contrast to the Republic) due to the fact that many reports, documents, decisions,

⁵⁰ In the *Agricola* (3), Tacitus added that it was only safe to write the panegyric biography of his father-in-law under the benevolent rule of Nerva, evidently referring to the problems experienced by Agricola under the rule of Domitian.

and even entire events, were kept secret by the Imperial Regime, leaving authors reliant on whatever had been voluntarily made public knowledge. Millar (1964: 37) argued that it is not unsurprising, given the size of the Roman Empire, that many provincial events were not documented even in accessible parts of the political archive, and that many may have had no permanent record (beyond, presumably, the local records kept by individual military units). As such, there may have been many events which were only known to those who had been directly involved in them. This process may partially explain why there is so little documented information about conflicts in Britannia, Germania, and other distant provinces, although it is still difficult to understand how this was the case even for conflicts in which members of the Imperial family, and even occasionally the emperor, were directly involved. Several authors appear to have consulted dedicatory inscriptions (*cf.* Hornblower 2000: 90-91), sculptural depictions of battle (Paus. 1.15.1, 8.11.6; Herodian 7.2.8), and local folklore (e.g. Paus. 8.13.3).

2.5: The reliability of the ancient literature on battle-narrative

In many ways, the ancient literary record is not a particularly reliable source of evidence for the history of antiquity. Writers from antiquity readily admitted the inaccuracy of works composed by their predecessors and contemporaries, although often presenting themselves as a rare exception to this otherwise unreliable corpus (e.g. Polyb. 1.14.5; Tac. *Ann.* 1.1; Dio 1.1.2; *cf.* Thuc. 1.1.3). Lucian (*How to Write History* 7; 16) noted that many historians deliberately falsified their narratives, although was equally critical of historians who recorded a narrative without literary style or structure. Thucydides (1.22.1-2) claimed to have only documented events which he either witnessed or was convinced were true as described, although he admitted to some issues with remembering exactly what he had been told by various informants, and omitted from his work elements from the accounts of others of which he was not convinced. Josephus (*Bell. Jud.* 1.16) implied that the purpose of his own record of recent events was to supplement the Roman historical record in which much of the narrative was left out. Dio continued his narrative to his own lifetime, because, being present at the events, he would be able to create a more accurate narrative than

future historians who would be reliant on documentation (Dio 72.18.3-4). Sallust (*Bell. Cat.* 3.1-2) noted, however, that historical narratives could be attacked as inaccurate because readers did not like the criticisms levelled at particular individuals and would therefore treat them as malicious inventions, and actions which readers thought they would be unable to perform themselves were dismissed (*cf.* Thuc. 2.35.2). Denial that they deliberately altered historical narrative, however, does not necessarily exculpate authors from suggestions that they in fact did so, not necessarily out of a desire to mislead the audience, but to satisfy literary convention and audience expectation.

The idea of audience expectation creates a certain interpretational problem when considering the extant narratives of battle, from the fighting to the process of looting and disposing of the dead. The idea has been that there is a preconceived societal and consequently literary convention with regard to both battle and its narrative, of which the reading audience would have been well aware. The framework of this convention has been derived from the examples in the text. In cases where certain elements of a narrative are not documented openly in a text, whatever stage of battle the absence refers to, the assumption has been that the situation was consistent with this pre-understood "normal" practice, and therefore did not need to be described. Foreknowledge on the part of the audience would therefore be assumed by the author. This explanation has been cited in instances of unexpected informational exclusions, such as Herodotus' failure to document what happened to the battle-dead from Marathon. However, there is nothing beyond a vague internal consistency between the documented examples regarding battle, looting, or disposing of the dead, that they do represent an overall societal convention. Aside from issues of accuracy innate to the text, authorial knowledge, and literary convention, how can it be known with any assurance that these examples are not the occasionally-documented representations of a societal normal practice, but rather, instances where such practice, if it even existed in reality, was not followed?

The narrative problem of incorrect or inaccurate testimony on modern reconstructions of ancient battle is illustrated by the example of the Teutoburg. No reconstructions of the battle prior to the discovery of the battlefield at Kalkriese suggested that the Germans had built a rampart, as this was not mentioned in any of the historical

sources. All attempts to understand the battle, therefore, were flawed, as they completely failed to take into account how the Roman army was trapped in a tactical position from which there was minimal chance of escape, between the rampart, a mountain, and a bog. It could be that none of the survivors had been at the Oberesch, and so did not know about the rampart, or perhaps the feature did not fit the desired narratives of the battle. Maybe the rampart was discussed in one of the non-extant sources, such as Pliny, but had not been followed by later writers. Whatever the reason, the ultimate result was that no reconstructions of the battle took into account the presence of this feature on the battlefield, and therefore, all attempts to understand the battle were undermined.

2.5.1: Deliberate simplification, alteration and literary *topoi*

Battle-narratives were composed within a literary context with certain conventions. Some alterations were deliberately made in the interests of comprehension and audience interest. Narratives could have events placed in different orders (Bosworth 1988: 42), simplified to make sense of the chaotic events of battle (Lendon 1999: 277; Erdkamp 2006), and to emphasise the main (practical, political, and moral) points of a wider campaign narrative (Woodman 1998: 1; Ash 1999). Polybius (29.12.9) acknowledged that he left elements out of his battlefield narratives, which others had included in theirs, stating that in his composition of “universal history” it became necessary to be concise where possible.

Elements of a narrative might be exaggerated for effect, particularly displeasing Polybius, who went to great lengths criticising Phylarchus' account of the Cleomenean War for being sensationalist, making random statements to entertain rather than reflect reality (Polyb. 2.56.3-2.59.3). Battlefield narratives may also have been created where actual evidence did not exist, perhaps as an amalgamation of evidence from similar incidents. Tacitus, for example, described a battle, albeit not in particular detail, between the Parthian Empire and a composite force of Sarmatians, Iberians and Armenians (Tac. *Ann.* 6.34-35). Analyses of this battle narrative have concluded that it was not based on oral or written sources, but was rather created by Tacitus; his choice to do so is defended in the broad

context of ancient historiography (see Ash 1999). As such, it must be remembered that while ancient historians may have had access to eyewitness interviews and recorded testimony, military despatches, and earlier histories, they were not averse to invention when these sources were not available, and there is no guarantee that they were consulted in any individual case.

However, the main area in which ancient historians have been criticised for deliberate inaccuracy is in troop and casualty figures.⁵¹ The inaccurate figures can undermine the usefulness of the battle-narratives to battlefield studies, particularly where the size of the army is used as a criterion in assessing potential battlefield sites. Brunt (1971: 694-697) argued that casualty figures were deliberately exaggerated or minimised in the literary record, to glorify victory or exculpate defeat.⁵² In some cases, the casualty references are merely vague, referring to several hundred, or under a thousand, casualties, rather than a whole number (e.g. Livy 23.46.4). These instances are less problematic than those of clear, improbable discrepancy. Herodotus' (9.70) record of 162 Greek casualties to 250,000 Persians at Plataea, Livy's (35.1.10-11) documentation of 12,000 Lusitani casualties against 73 Romans in 193BC, Strabo's (*Geog.* 16.4.24) description of an unnamed battle in Nabataea (26BC) with two Roman and 10,000 native casualties, and even Tacitus' (*Agric.* 37) report of 10,000 Caledonian dead at Mons Graupius against 360 Roman auxiliary dead, are just a few examples to illustrate the scale of the problem. This is not intended as a discussion of the accuracy of, or motives for distorting, the casualty figures in literary battle-narratives, and it is true that these evident exaggerations do not necessarily mean that the respective authors were not aware of the real figures. It does have to be considered, however, that battle-narratives overall might need to be altered to support the casualty figures given by the authors, particularly any elements which would have resulted in a higher death rate than the one given.

⁵¹ Brunt (1971: 694) suggested that although it would not be possible for a general to know exact casualty figures following a battle, operational reasons would suggest that knowledge of a general quantity would be required. It does not necessarily follow, however, that these figures were accurately transmitted in the literary record, even where they were freely available (*cf.* Lucian *How to Write History* 20).

⁵² A process not unknown from later history. Losses could be minimised in official reports to avoid knowledge of manpower shortages, as after Cowpens when Continental Army reports cut casualty figures by half (Babits 1998: 150-152). By contrast, during the American Civil War, casualty rates might be deliberately inflated (particularly by the Confederacy) both to demonstrate the sacrifice, and therefore bravery, of individual units, as well as to exculpate them in cases of defeat (Gilpin Faust 2006: 1006).

Battle-narratives appear to have been particularly vulnerable to alteration for literary purpose and impact. Lucian (*How to Write History* 49) has already been cited in regards to his formulaic method for writing a battle-narrative in antiquity, highlighting certain elements of the event to the exclusion of others. It is likely that an ancient audience would have been aware of literary convention in battle-narrative, in turn leading to certain expectations of individual texts (Ash 2007). Brunt (1980: 317) argued that battle-narratives were among the most vulnerable elements of the ancient literary record to embellishment, alongside geographic descriptions. There is no evidence that ancient audiences had any objection to such stylistic alterations (*cf.* Ash 1999: 115-116), although historians were aware that the veracity of works written by others in the field was, on occasion, questionable. The main problem with the use of *topoi* in ancient battle accounts, both narrative and geographic (see below), is that they undermine the veracity of the entire account, and make it difficult to know whether common features between different battles reflect genuine similarities, or imagined literary convention. The use of *topoi* depended on both the narrative and the author. Descriptions of battles and/or battlefields may have been intended to evoke comparisons with other sites, perhaps most notably in Tacitus' descriptions of the battlefields at the Teutoburg and Bedriacum used to illustrate the moral contrast between the battles, their respective commanders, and the current political situation in Rome (Woodman 1998: 70-85; Pagán 1999; Manolaraki 2005; Seidman 2014). Tacitus may also have adapted his description of the AD69 Civil War to evoke a comparison with the war between Antony and Octavian a century earlier (Joseph 2012). Literary *topoi* are most evident in a battlefield context in the description of topography and terrain-base tactics, discussed in greater depth later in the chapter.

2.6: The geography of battlefield location in antiquity

Walbank (2002: 38) commented that "...we habitually ask from ancient historians what we have no right to ask - namely that their topography shall be adequate to permit of pin-pointing an action on the contours of a large-scale Austrian Staff Map". Such a degree of accuracy is, unsurprisingly, absent from the ancient geographic descriptions of battlefield

locations. Ancient concepts of geography, at least according to Strabo (*Geog.* 4.1.1), were mainly concerned with political and ethnic divisions, not the physical landscape. Nor was there a distinctive discipline of “geography”, as would be understood today, with the subject of the physical landscape instead being incorporated into other fields of study, particularly history (Dueck 2012: 1-3). There are very few objective descriptions of geography or topography anywhere in the ancient sources (Romm 1992: 2-6). Geographic knowledge for the purposes of travel was limited, and certainly by the Roman world, was expressed predominantly in itinerary form, noting only the important and relevant landscape features to the exclusion of everything else (Bekker-Nielsen 1988). Either an audience was already relatively familiar with the locale of a battlefield, usually because it was local, in which case further information was superfluous; or, contrarily, they were not familiar with the locale, and therefore no degree of further information would illuminate the location, making it also unnecessary. This was a world in which Caesar, in all evident necessity, had to remind his readers that Gaul was found to the north of Italy (*Caes. Bell. Gall.* 1.16).

The majority of toponymic references which survive in the literary record are narrative rather than descriptive and less frequent the further from Greece and Italy the account moves. Polybius (3.36.3) openly addressed the toponymic issue, stating that he would not cite unfamiliar place-names in his work, as they would mean little to his audience, and would therefore add nothing to his narrative. Polybius’ point is reasonable. As Maxwell (1990: 3) observed, the unfamiliar toponyms provided by Roman authors, in his specific case Tacitus’ *Agricola*, have been of minimal assistance in locating any of the battlefields within the narrative. Following from this, the topographic descriptions of the battlefields could not cite specific details, but rather relied on tactical characterisations of the site - what Walbank (2002: 39) termed “...clarity through bold simplification” in the context of Polybius. It is far from certain, however, that these characterisations were accurate descriptions of the actual battlefield, leading to further problems in identifying accurate locations for sites from the literary record alone.

2.6.1: Battlefield toponyms

Many fixed and landscape locations in antiquity were referred to by reference to a toponym. A toponym is, in this context, the name applied to a particular place or feature, which goes beyond simple physical description, allowing a fixed location to be identified. As an example, in the context of Marathon, the *deme* of Marathon, the city of Athens, and the Charadra water-course are toponyms, as they refer to specific named locations. The sanctuary of Herakles, by contrast, is not, as this is a generic descriptive name which is not distinguishable from any other sanctuaries to the same deity. A toponymically-identified landscape location is any place which, although it does not have a toponymic identifier itself, can be given an approximate position through reference to toponyms lying in its vicinity.

Toponymically-identified battlefields are the easiest to place in a regional location, albeit that this can cover a large, non-specific landscape area. Many battles in antiquity were identified through a named settlement, although the two would not necessarily be in close spatial proximity, with the varying distance to some degree defined by an individual author's familiarity with the relevant landscape.⁵³ The settlement is usually part of the narrative rather than an actual location, certainly in earlier sources, although toponyms do occur independently within the narrative in some sources.⁵⁴ Settlements served as geographic checkpoints, from which armies departed, passed on the march, or encamped in proximity to, and the distance between them and the eventual battlefield - in terms of the actual area of fighting - is usually unspecified. Other toponymic features, such as passes (Thermopylae), rivers (Granicus, Hydaspes, Trebia, Allia) and lakes (Trasimene) may also be

⁵³ Carman and Carman (2005) argued that cultural perceptions of 'battle' in the Greek world meant that battles were consciously fought outside settlements to ensure visibility by the non-fighting population. This takes no account of the fact that settlements are principally mentioned as the last geographical checkpoint rather than actually marking where the battle took place; the spatial relationships of settlements to the Carmans' case-study battlefields were not established.

⁵⁴ E.g. Polybius did not refer to Ticinus, Trebia, Trasimene, or Baecula as 'the Battle of...' (Polyb. 11.20.5), in each case the toponym only occurring as part of the battle-narrative; however, he did refer to Cannae as a toponym applying to the whole battle (3.117.1), despite the fact that the settlement was only a point in the approach-narrative (3.107.2), and his narrative clearly places the battle more specifically on the Aufidus (3.110.8-9). By contrast, Livy (21.58; 22.7-8; 27.20) referred to Trebia, Trasimene and Baecula by toponym without providing a narrative geographic context of the battle, as did Florus (*Epitome* 1.22.12-15), although both Livy (22.39-57) and Florus (1.22.10-12) referred to Ticinus by its geographic setting, not as "the battle of..."

cited. Reference to a water-course or similar feature may not provide a particularly accurate location, although it may be possible to narrow the geographic region down through reference to other toponyms earlier in the narrative, particularly if the army is said to have passed a particular settlement. In cases where a settlement toponym was mentioned then it can be possible to establish the region of the battlefield, as for the Trebia near Placentia (Polyb. 3.68-70).

However, if a cross-referencing toponym is not mentioned then establishing the position of the battlefield on a river is more problematic. Dio's (60.20.5) placement of a battle during the Claudian invasion of Britain in the Thames estuary without reference to any other features is largely useless given that the (modern) course of the estuary stretches over 100km. The exact location of some Greek battlefields may have been incorporated into the religious activity which happened at some sites, particularly those from the Persian Wars, although there is no indication in the literary record of the spatial relationship between the area of fighting or graves and the focus of cult activity (Thuc. 3.58; Plut. *Aristides* 21.3-6). Ancient writers suggested that the memory of inter-*polis* warfare was intended to be temporary, and therefore the location of the fighting on some battlefields, particularly during internal conflicts such as the Peloponnesian War, may not have been memorialised (cf. Cic. *De Invent.* 2.23.69-70; Plut. *Moral.* 273c-d; Diod. 13.24.5-6).

Is there any guarantee that the toponyms cited in antiquity were accurate and have not been altered? The prompt for this enquiry comes from de Beer's (1969: 131-141) observation that multiple toponyms in the narrative of Hannibal's Alpine crossing were incorrectly transmitted, particularly the transcription of the river crossed by the army. Polybius (3.49.6, 3.50.1) refers to it as the "Skaras", Livy (21.31.4) the "Arar", the name is commonly given as the "Isère" in modern translations, in most cases without a note that the change has been made. De Beer (1969: 131-133) reconstructed the historiographical alteration of the toponym from the C16th onward, suggesting that it was the Aygues river, not the Isère, which was originally cited by the sources. Walbank (1957: 387-388) disagreed in as much as he believed it was the Isère, and therefore that the copyist alterations had been justified, although conceded that Polybius may have introduced the errors by incorrectly naming the rivers. Ultimately however, the only certainty is that the original text

does not reconcile as easily with the landscape as the altered version, and the entire incident illustrates the potential for error when military locations are identified by toponym alone. What often results is an unverified reconstruction of a text, made worse when names cannot be identified through toponymic continuity, but rather, etymological association.

2.6.2: Etymology and toponymic-landscape reconciliation

Identifying the toponyms associated with a battlefield by the ancient narratives is not always straightforward, particularly for sites outside Greece and Italy where continuous linguistic use of Greek and Latin names was far lower. It is by no means certain that toponymic identification in these cases produces an accurate general location for a battlefield, particularly where toponyms are identified by etymological connection rather than continuity and/epigraphy - as demonstrated by Baecula, and the multiple generations which placed the battlefield in completely the wrong locale. The battlefields of Alexander's Persian campaign are a valuable demonstration of the problems of relying on toponymic references in the ancient literary record to locate ancient battlefields. Although geographic records were evidently kept by the Macedonian army while on campaign (Dueck 2012: 39-41), Strabo (*Geog.* 11.5.5) noted that the physical parameters of the campaign were altered by later writers to exaggerate Alexander's achievements.

The first battle took place on the Granicus river, almost certainly the modern Biga Çayı in north-west Turkey. However none of the toponymic checkpoints close to the battlefield mentioned by Arrian (*Anab. Alex.* 1.12.6) - particularly Hermodus and Coloniae - can be identified to give a more accurate location (Bosworth 1980i: 107-111). Route reconstruction of earlier phases of the march place the battle somewhere along the river near the modern settlement of Biga, but the exact location in this landscape has been the subject of significant debate (see Hammond 1980). Similarly, although the battlefield of Issus is clearly placed by the sources on the plain outside the modern city of İskenderun,⁵⁵ the exact location is denoted by the Pinarus River, which ran through the battlefield (Arr.

⁵⁵ Identified by Strabo (*Geog.* 13.1.11) as the plain of Adrasteia, where he notes Alexander's battle took place.

Anab. Alex. 2.8.5). As there are several watercourses in this area the exact location cannot be identified from the toponym. While the Deli Çay and Payas rivers are currently preferred, it is largely on the basis of whether the initial advance was conducted by the Macedonian cavalry or infantry (Kromayer & Veith 1903-1931iv: 369; Hammond 1992: 404; see Bosworth 1980i: 203-204). Gaugamela has perhaps proved the most elusive of the Persian battlefields, not least because of a tendency, noted by Arrian (*Anab. Alex.* 6.11.4-6) for historians to locate the battle by reference to the city of Arbela, c.500-600 *stades* away from the battlefield, because Gaugamela was such an insignificant settlement.⁵⁶ The toponymic checkpoints on the approach to the battlefield (*Arr. Anab. Alex.* 3.7.1-7) do not provide an accurate location for the battlefield beyond it lying west of the Tigris in modern northern Iraq. Bosworth (1980i: 293-294) observed that the battlefield has been identified with a number of *tel*s thought to mark the ancient settlement of Gaugamela along the banks of the modern Gomel, with Jabal Maqlub currently the preferred site, largely due to its size.

The worst located battlefield is the most distant, that on the Hydaspes in the Punjab, the modern River Jhelum. Identification of the battlefield focuses on the location of Nicaea, a settlement which Arrian (5.19.4) says Alexander built on the site following his victory; however, the construction has never been identified, and despite multiple suggestions, no convincing argument for the battlefield has ever been put forward.⁵⁷ There are multiple battlefield-related toponyms running through the sources on Alexander's campaigns, including settlements and/or rivers associated with each battlefield itself, many of which can be identified in the modern landscape. Nevertheless, these features have not led to a secure identification of any of the four major Alexandrian battlefields. The toponyms are simply not specific enough to denote a particular position within the wider landscape.

There are comparable difficulties for battlefields in the Roman Republic. Battlefield-related settlement toponyms are primarily associated with battle sites in Italy, Hispania, Africa, the Near East, and, in some cases, Gaul, but can in many instances be difficult to identify in the modern landscape. Epigraphic evidence is often required to validate the

⁵⁶ Bosworth (1980i: 293-294) suggests that 80-95km is a more accurate distance, but agrees with Arrian that Arbela is not a relevant toponymic reference for the battlefield.

⁵⁷ Nor has that of Bucephala, which Arrian places on the other side of the Hydaspes marking the point at which Alexander set out to cross the river. See Bosworth 1980ii: 265-268 for debate.

identification of a particular settlement as the toponymic reference in the textual record. Toponyms were associated with almost every battlefield from the Second Punic War, and yet only Santo Tomé has been verified as a battlefield, in this case Baecula; even then, this resulted from archaeological work which corrected the mistakes made by previous attempts to locate the settlement from etymological connections (Bellón *et al.* 2004: 12-14). The battlefield of Ilipa has been conventionally located toponymically around modern Alcalá del Rio, north of Seville, based on Polybius (11.20.1) and Livy (28.17.14) who both place it near a settlement of that name. However, the toponym “Ilipa” was associated with several settlements in Spain, of which Alcalá del Rio is the best attested epigraphically and has therefore been assumed as the location of the toponym. However, Hoyos (2002) has argued that the contextual narrative does not support the battlefield being located in this area, and instead suggested that it lay further east, close to the battlefield of Baecula (at the time of Hoyos’ article unidentified), potentially at another site of the same name.

The location of Zama in Africa is long-debated, with at least three settlements claiming to be the ancient town which gave the battlefield its name. Polybius (15.5.3), Livy (30.29.2), and the late Republican Roman biographer Cornelius Nepos (*Hannibal* 6) mention the settlement at Zama in their narrative of the battle. However, only Nepos suggests that the battle was actually fought at Zama, while Polybius and Livy both present the settlement as a stopover position on the way to the actual battlefield, which Livy (30.29.9) places at Naragarra.⁵⁸ The only epigraphic evidence for a Naragarra comes from Sakiet Sidi Youssef, on the Tunisian-Algerian border near the modern town of Sicca (Hoyos 2015: 212-213). These literary uncertainties have led to significant difficulties in locating the battle on even a regional basis, and as Hoyos (2015: 212) rightly says, “the only topographical certainty about the battle of Zama is that it should not really be named Zama.”

From the Caesarian period, the location of Caesar’s victory at Bibracte has been based on identification of the *oppidum* associated with the battlefield. Early modern historians had preferred the modern town of Autun as Bibracte, but the settlement of Mont

⁵⁸ Polybius (15.5.14) originally named the second settlement as “Margaron”, a toponym unknown anywhere else in the literary or epigraphic record (Hoyos 2015: 212), and many modern translations render it Naragarra in consistency with Livy. (example from LOEB?)

Beavray, c.25km west, is now favoured. Archaeological work has shown that there certainly was a Caesarian-period settlement at Mont Beavray (Romero 2006), although there is no epigraphic evidence identifying it as Bibracte. There was a similar, if rather more protracted debate, over the identification of Alésia, now placed relatively securely at Mont-Auxois near Alise-Sainte-Reine, Burgundy. The identification is supported by the large-scale fortifications (von Schnurbein 2008) and weaponry (Sievers 2008) excavated at the site. The settlement associated with Caesar's battle against Pompey of Pharsalus is also unidentified, although the general area is fairly well accounted for, as it is not clear which settlement Caesar (*Bell. Civ.* 3.6) was actually referring to by the toponym (Morgan 1983).⁵⁹ Nor has the battlefield of Munda been securely located in Spain, with the modern settlements of Ronda, Montilla and Osuna all claiming connection to the battle. The recent discovery of Punic and Caesarian-period slingshots at La Lantejuela, on the periphery of Osuna, suggest that this may be a more plausible location, although there has been no further archaeological exploration at the site (Grünwald & Richter 2006). In the Imperial period, uncertainty over the identification of the few toponyms provided is more significant, particularly where the ancient sources refer to named natural features, rather than settlements. There is no evidence in the ancient record as to where in Germania the Teutoburg Forest was (*Tac. Ann.* 1.60), nor the plain of Idistavisus where Germanicus fought Arminius (*Tac. Ann.* 2.12). Tacitus' (*Agric.* 29) Mons Graupius also remains unidentified.

In the absence of toponymic continuity etymological connections have been searched for, but have largely proved ineffective. The battlefield at Baecula was wrongly identified as a result of etymological analysis, eventually corrected by topographic analysis of all potential sites (Bellón *et al.* 2004: 12-14). In 1835, a somewhat dubious attempt was made to associate Winfeld in the Rhineland with the Varus battle based on the etymological association - literally, the 'Win-Field' (Gibson 1835: 40). This is even more tenuous than the modern extent of the Teutoburg Forest, associated with the same conflict, which barely encompasses the area of the actual battlefield at Kalkriese, located on the fringes. The German historian Philip Clüver (1616) was responsible for changing the name of the Osning Forest, running from Paderborn in the south to the western periphery of Osnabrück, to the

⁵⁹ Frontinus (*Strat.* 2.3.22) refers to 'Palaepharsalus', adding to debate that there were two settlements in close proximity with the same name.

Teutoburg. Clüver believed that the battle had been fought near Detmold, as a mountain nearby was known as the “Teutburg”.⁶⁰ Various attempts have been made to identify etymologically the Grampian mountains, either through the root-word ‘crup/crub’ (e.g. Feacham 1970) or Ptolemy’s (*Geog.* 2.3.7) site of ‘Victoria’ (e.g. Fraser 2005: 74), neither of which has proved successful (see Campbell 2015: 409).⁶¹

Early attempts to locate the battle fought between the Romans and Boudica were led astray by a connection made between ‘Mona’ and the ‘Isle of Man’, leading to the battlefield originally being sought in southern Scotland (Hingley & Unwin 2005: 116-117). On a slightly more unusual note, a considerable amount of academic attention has been given to the case of Cynoscephalae, the ‘dog’s head’ battlefield of 197BC. By route reconstruction it was known to have been a hill-range somewhere near Pthiotic Thebes and Pherae (Polyb. 18.18.1-21.2; Livy 33.6-7). In attempting to identify the exact location, Hammond (1988a: 80-81) discussed not just from what angle the ridges of the hill-range had the appearance of a dog, but also which breed he believed it to have been (concluding, a sheep-dog), although the only details in the ancient record for their description was that they gained a significant height (Polyb. 18.22.9). These enquiries often fall into the realm of speculation, and may lead to no more accurate locations, certainly through etymological association alone, than those for sites with no associated toponyms.

2.6.3: Geographic location without toponyms

There are some battles in the ancient narrative for which there are no associated toponyms, or if there are, they lie so far from the battlefield as to be of little assistance in locating it, with the majority located in the northern Roman provinces. This is perhaps no surprise. Following Polybius, unfamiliar toponyms were unlikely to be included in the

⁶⁰ Mommsen (1885) correctly believed the battle lay outside the environs and therefore continued to refer to the modern Teutoburg as the Osning. Creasy (1851: 134), following contemporary convention with the battle near Detmold, was evidently unaware of the renaming, stating that “...this region still retains the name... which it bore in the days of Arminius”; Delbrück (1975ii: 69-96) was aware of Clüver’s renaming but did not find it problematic, largely as his identification relied on terrain analysis rather than etymological identification.

⁶¹ Victoria is now commonly identified as the legionary fortress at Inchtuthil (Rivet & Smith 1979: 499).

narrative if they added nothing to reader comprehension. It is not necessarily the case that no geographic information was provided, with some battlefields located to the tribal association of the area, although in some cases this can only be extrapolated from the reference to the tribe being fought.⁶² Battlefields in Britannia and Germania have by far the least toponymic identifiers in the extant written sources. Although toponymic references from other provinces, particularly those in the Near East, may not have been particularly specific, they provide a far greater degree of certainty than the vague references to tribal territory/ies and unnamed natural features of the north. The lack of settlement toponyms in these provinces in particular may reflect the absence - at least, at the time of the battles - of Roman habitation and/or control of the landscape, rather than deliberate omission. Caesar (*Bell. Gall.* 5.11) was able to name the Thames, and so consequently Dio (60.20.5), but no other topographic features which evidently did not, as yet, have a Roman name.

By contrast, when the province was more firmly established and a series of Latin names were associated with the landscape, toponyms were mentioned in military narratives, such as Ammianus Marcellinus' (27.8.6) unique record of a landing position of a Roman army in Britannia, when a late C4th AD force docked at Rutupiae. While, particularly in the case of Britain, toponyms might later become associated with the areas of battle, they were clearly never retrospectively inserted into the texts of later writers, who appear to have followed the geographic citations of earlier writers without amendment. For instance, while it might not have existed in AD43, by the time Dio was writing his *Roman History* two centuries later there must have been a Latin(ised) name for the river where Britons and Romans fought the first battle of the invasion, but the information evidently given by the original sources was not updated to include this in his narrative. Such ongoing omissions may, however, reflect the fact that provincial battle locations were rapidly forgotten in antiquity. Dio may have had access to all the river toponyms in southern Britain, but been unable to identify which one had seen the battle. Similarly, he did not revise the original invasion narratives to name the port(s) at which the invasion had arrived.

⁶² This corresponds with Strabo's (*Geog.* 4.1.1) statement that geography was primarily concerned with political and ethnic divisions; in the absence of a polity with which to associate territory (as in the Mediterranean and Near East), tribal identification may have been the most viable alternative.

Britannia was particularly badly affected by poor geography in accounts of conflict in the C1st BC-C1st AD. The last toponymic checkpoint in Caesar's second invasion of Britain was Portus Itius on the Gallic coast (Caes. *Bell. Gall.* 5.3-5), usually identified as either Boulogne or Wissant. Even this is missing from his first invasion, which is only described as departing from the territory of the Morini (Caes. *Bell. Gall.* 4.21-23), tribal territory consistent with the Boulogne/ Wissant area. Dio did not name the landing position of the AD43 invasion, typically identified now as either Richborough in Kent or Colchester in Essex, and could only place the first major battle between Romans and Britons on a river somewhere between the (unspecified) landing position and the Thames (Dio 60.20.2-4).⁶³ The second battle was somewhere in the tidal estuary of the Thames (60.20.5), with no reference to nearby settlements.⁶⁴ Caesar (*Bell. Gall.* 5.11) had previously provided the name of the Thames, presumably explaining why Dio knew the toponym when he had no record of any others. Tacitus (*Ann.* 12.33) could only place the set-piece battle between the Romans and the Britons under Caratacus in Ordovician territory, identified now as northern-central Wales.

The battle against Boudica, based on the sources, could lie anywhere between Anglesey and Kent, although the Midlands and the immediate west of London are the most common suggestions. Tacitus did not even provide tribal identification of the battlefield area (Tac. *Ann.* 14.33-34).⁶⁵ Agricola's battle against Calgacus lay near some mountains north of the Firth of Forth (Tac. *Agric.* 1.25-29). Severus' campaigns in Caledonia have no geographic or topographic context, beyond Dio's (77.13.3) comment that he reached the extremity of the country. Ammianus Marcellinus (27.8.1-10) on the Great Conspiracy of AD367-368 mentions some, if not many, toponymic references, although most are associated with the route of advance rather than individual battles. As such, only vast regional areas can be identified in association with each narrative documented engagement, making identification of an actual battlefield somewhat difficult (Fig. 2).

⁶³ See Manley (2002: 31-37) for a summary of the Richborough – Colchester landing debate.

⁶⁴ A territorial link with Gloucestershire could be suggested by Dio's (60.20.2) mention of a garrison placed in Bodunni territory, usually taken as a transcriptional error for the "Dobunni". However, it is difficult to fit this area into an (traditional) interpretation of the invasion.

⁶⁵ Dio (62.8.1) records that Suetonius Paulinus sailed from Mona to confront Boudica, but does not give any indication of where the two armies met.

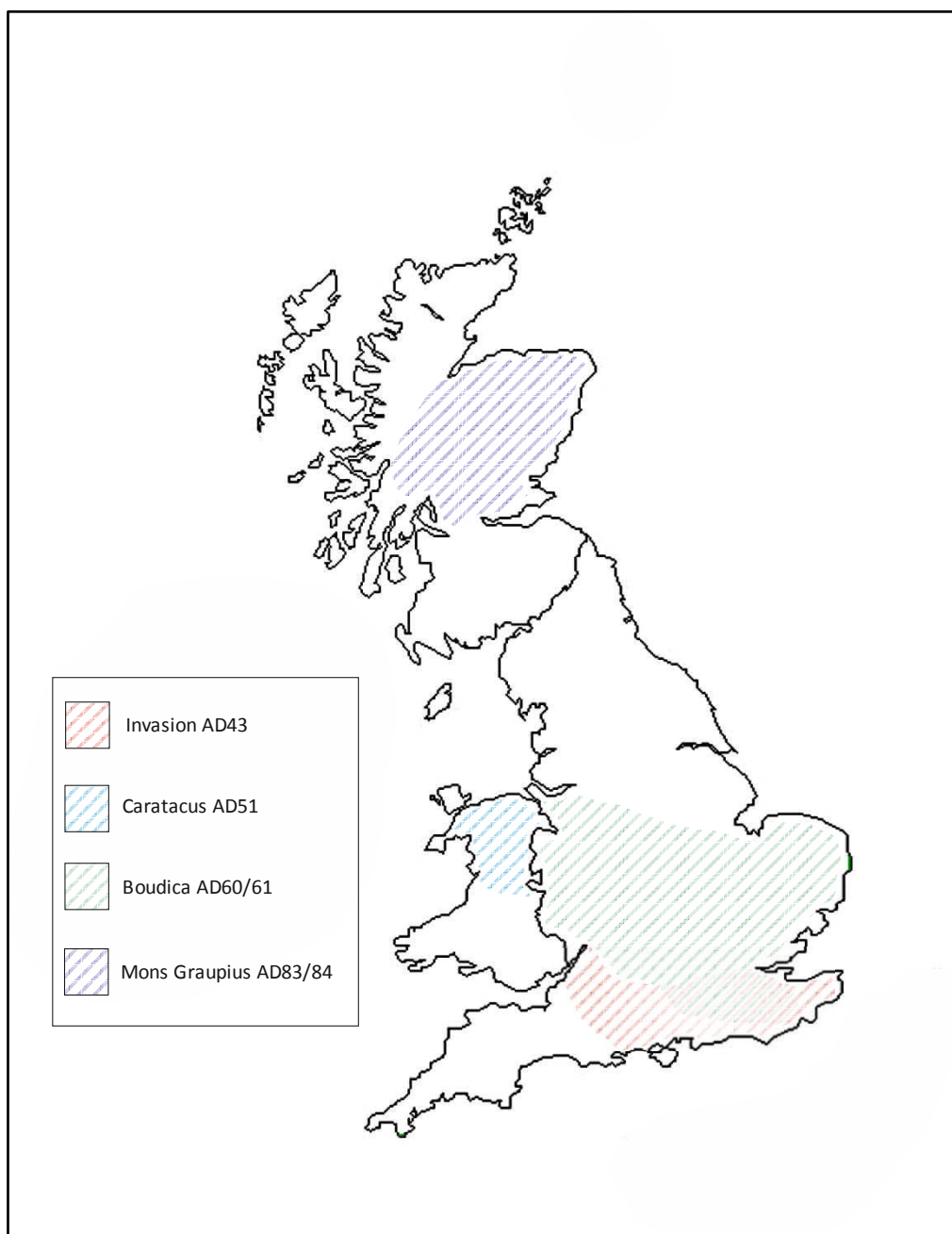


Figure 2: Regional locations for battlefields in Britannia based on the literary sources.

Germania was not much better served. For the Varus battle, Velleius (2.117-118) and Florus (*Epitome* 2.30.29-39) only record that it took place somewhere in Germania, with Dio (56.18.5) adding that it was towards the Weser in Cheruscan territory, described by Tacitus (*Germ.* 36) as covering an indeterminate area around the Weser, potentially extending as far as the Ems in the east and the Elbe in the west. Alone of the sources related to the battle,

Tacitus (*Ann.* 1.60) mentions the Teutoburg Forest, but does not locate the forest, and based on his narrative the battlefield itself could lie anywhere between the Ems and Lippe. However, the vague nature of the geographic location of this particular battle may be understandable, given the fact that the narrative ran for three or four days across a wide landscape area, of which the identified site at Kalkriese is likely to represent only a part. It is little wonder, therefore, that the literary sources were unable to identify a 'battlefield' within this area. However, the more conventional battle between Arminius and Germanicus on the plain of Idistavus (Tac. *Ann.* 2.12) is no more closely located than as lying in Cheruscan territory, beyond the right bank of the Weser.⁶⁶ The C3rd AD raid into Germania by Maximinus Thrax resulted, according to the *Historia Augusta* (*Duo Max.* 12.4) in a battle fought in a swamp, 30-40 Roman miles in advance of the frontier, with no further details.⁶⁷

However, both archaeologists and historians should consider the very real possibility that few Roman soldiers fighting in the provinces, particularly in northern unconquered territory, had any idea of where they were campaigning on a day-to-day basis. In a landscape with no recognisable Latin-named settlements or landmarks, subsisting predominantly on local forage and billeting in temporary camps, it would be unsurprising if soldiers did anything other than locate their position with reference to the last named location they had seen, and how far they had moved since. This form of itinerant reference was, after all, how practical geography worked throughout Roman society, identifying routes by distance from recognisable features in the nearby landscape. Where ancient historians could mention toponyms or identify a particular provincial area, they frequently did, albeit that these references do not provide a pin-point location in the modern world. The implication would be that the majority of vague geographic references for battlefield locations in the ancient literary record do not reflect deliberate choice, but the complete lack of objective knowledge about where battles had taken place.

⁶⁶ The battle is usually placed somewhere between Minden and Hamelin but no location has been identified.

⁶⁷ Johne (2006: 262-263) further observed that this may be a 'correction' of 300-400 Roman miles, leaving a much wider potential provincial area for the battlefield. Herodian's (7.2.3) account of the campaign suggests it advanced deep into Germany, although he does not cite exact distances.

2.7: Battlefield topography in the ancient literary record

If battlefield geography provides a general location for a conflict site, then the topographic description should, in theory, provide the exact location of mustering, fighting, and flight. Accurate topographic evidence was recognised as an important element of historical writing by some authors in antiquity, particularly Polybius who discussed the relevance of terrain to battlefield tactics on a number of occasions in his work (e.g. Polyb. 3.36-38, 3.57-59, 5.21.6, 12.25d-e; cf. Walbank 1957: 367-371). Other writers evidently placed less importance on geography and topography, such as Thucydides who, for all the positive elements in his work, largely marginalised terrain in his work (Funke & Haake 2006: 369-373). Topographic evidence is documented in two ways, through a digressive description of the site bearing similarities with C19th military histories, and as a narrative element.

Most authors swapped between the two, describing certain sites in greater depth than others, usually – but not always – providing just enough information to allow the reader to follow the narrative, without superfluous details (e.g. Funke & Haake 2006: 378-379; Ash 2007: 436). Polybius (3.36.2) emphasised the importance of accurate topography to understanding a battlefield site, stating that vague approximations were insufficient to understand the tactical implications of a site. He also noted that many of his contemporaries gave incorrect topographic descriptions of sites, not just battlefields, because they relied on secondary information rather than visiting the sites themselves (Polyb. 3.59.8). However, when the topographic evidence in the ancient literary record is examined in any depth, it becomes obvious that the descriptions are incomplete characterisations of tactical-related terrain, which may have been adapted to suit narrative purpose and/or to compensate for the author's personal lack of knowledge regarding the site. It is not the case that the topographic descriptions are *wrong*, as such, although this is a concern in certain cases, but rather, that even when entirely accurate, they are too vague and incomplete to actually be of any practical use, particularly when the general location of the battlefield is in doubt.

The majority of topographic references are to the terrain of the battlefield, particularly natural features which played a role in the outcome of the battle. Very few ancient narratives mention constructed features in the topography of a battlefield, and the majority of references are associated with the Greek world. Religious sanctuaries are mentioned when located on, or close to, battlefields, in several cases with armies quartering and mustering either within or next to the enclosures, although often spatial relationship between the sanctuary and area of fighting is not specified.⁶⁸ Many of these sanctuaries cannot be identified in the archaeological record, and it is therefore difficult to locate a battlefield through their position within the regional area.⁶⁹ There are fewer citations of sanctuaries in narratives from the Roman world. Tacitus (*Ann.* 1.61) recorded Germanic religious groves around the Teutoburg battlefield, and a sanctuary of Herakles near the battlefield on the Idistavisus plain, near to which the Roman army camped and within which the Germans mustered (*Tac. Ann.* 2.12-16). This may reflect the fact that few constructed features were used in battlefield tactics, as suggested by Carman and Carman (2005), but is more likely to be associated with the fact that open spaces without features were preferred for pitched battle in Greek and Roman warfare, and it is these engagements, rather than 'lesser' skirmishes and ambushes, which were more frequently documented in the historical record.

2.7.1: Battlefield terrain descriptions

The use - and risks - of terrain were well known to ancient military writers, and both Greek and Roman military manuals cited the importance of terrain to battle, particularly choosing the correct terrain for different unit types (e.g. Onas. *The General* 31.1; Veget. *Epitome* 3.9, 3.13). The characterisations of terrain in most sources are typically subjective,

⁶⁸ Nearby: Thermopylae (Ceres; Hdt. 7.176); Plataea (Hdt. 9.59-62). Encamping: Athenians at Marathon (Herakles; Hdt. 6.108); Athenians at Delium (Apollo; Thuc. 4.90); Greeks at Plataea (Androcrates; Hdt. 9.25, later Hera, Hdt. 9.52); Spartans at Mantinea (Herakles; Thuc. 5.64); Romans at Cynoscephalae (Thetis; Polyb. 18.21.1).

⁶⁹ Pritchett (1965-1992ii: 46-49) attempted to associate remains at both Marathon and Mantinea with the documented sanctuaries of Herakles, but in either case it is difficult to prove that the limited sculptural evidence has not moved in the intervening millennia. Leake (1835iv: 472-473) unsuccessfully tried to locate the sanctuary of Thetis at Cynoscephalae and subsequent work has been unable to do much better (Pritchett 1965-1992ii; Hammond 1988a).

containing no objective measurements or even comparisons (see Table 1). This is particularly problematic when it comes to features such as steep and gentle hills, in terms of ascertaining what the individual author (and their sources) would define as such, rivers which were difficult to cross due to their width, current, and/or banks, and dense forested areas. While identifying by what criteria the topography was assessed and described is beyond this thesis, nevertheless it should be considered when examining the literary descriptions that modern perspectives on natural features may not be consistent with those of antiquity.

Typically battlefield terrain was documented in greater detail when it played a significant role in the narrative of the battle. While non-relevant terrain could be omitted. In some cases it is assumed that undocumented terrain features were left out because they served no narrative purpose, as Krentz (2010: 114) did for the Charadra at Marathon, dismissing Herodotus' failure to mention the watercourse by suggesting that "...it probably did not play a significant role in what happened". However, Funke and Haake (2006: 381) observed that Thucydides left out important terrain features on multiple occasions, particularly in Sicily, which undermine the comprehension of his text, suggesting that it was not simply superfluous details which were subject to omission. The focus on tactical terrain frequently resulted in an incomplete characterisation of individual battlefield topography which, when viewed objectively, could apply to myriad sites within even a relatively specific area, let alone a wider regional location.

Relative tactical information was readily relayed - whether the battlefield was an open plain or a narrow defile, the position and number of access routes to the battlefield, the position of high or low ground, forested and/or marshy areas, and the presence and position of rivers and other bodies of water. Each had tactical implications. The openness and flatness of terrain was often mentioned in conjunction with unit type, particularly the suitability of the terrain (or otherwise) for cavalry. Areas of high ground were mentioned in the context of battlefield visibility and supplementary troops entering the battlefield. Forests and marshes tied in with issues of ambush, particularly while the army was on the

move in the northern Roman provinces.⁷⁰ Narrow defiles served a similar purpose in the Near East, although they were also used more positively as a way to restrict access to a battlefield when facing vastly superior numbers. Rivers and seas were used to protect the flank and rear of armies, and or by (usually non-Greek or non-Roman) armies to shelter behind. The sources also discussed the fordability of water-courses, and difficult terrain on the river-banks.

Terrain Characterisation	Source
Open plain	Marathon (Hdt. 6.108)
- Treeless	Trebia (Polyb. 3.71.1-2); Cannae (Polyb. 3.110.2); Carrhae (Plut. <i>Crassus</i> 22.1)
Open plain with hill(s) in battlefield	Plataea (Hdt. 9.59-62); Granicus (Arr. <i>Anab. Alex.</i> 1.14.4, 1.16.2); Delium (Thuc. 4.93); Mantinea (Thuc. 5.64-66); Mantinea (Thuc. 5.64-66)
Open plain with hill(s) around the battlefield	Issus (Curtius 3.8.28); Caphyae (Polyb. 4.11.3)
Open plain enclosed by sea	Issus (Curtius 3.8.28)
Narrow defile (by mountains/sea)	Thermopylae (Hdt. 7.176); Trasimene (Polyb. 3.83.1-3); Beth-Horon (Jos. <i>Bell. Jud.</i> 2.19.8-9)
River with various depth	Granicus (Arr. <i>Anab. Alex.</i> 1.13.4-6); Tac. <i>Ann.</i> 12.33
Irregular/steep river banks	Granicus (Arr. <i>Anab. Alex.</i> 1.13.4-6; Plut. <i>Alex.</i> 16.5); Trebia (Polyb. 3.71.1); Caphyae (Polyb. 4.11.3-4)
River running through/alongside battlefield	Plataea (Hdt. 9.59-62); Issus (Curtius 3.8.28); Caphyae (Polyb. 4.11.3-4)
High ground hard to climb	Sparta (Polyb. 5.22.3-5)

Table 3: Topographic descriptions of ‘located’ ancient battlefields.

⁷⁰ Polybius (3.71.2-3) noted the problems Roman armies had faced in these landscapes in the Republic. Frontinus (*Strategems* 2.5) addressed how Roman army had been tricked into ambushes in the past.

The vague nature of the topographic descriptions means that multiple locations even within a relatively confined, toponymically-defined, area could be the features documented by the narrative, whether they were natural terrain or constructed features. Thucydides' topographic descriptions of most sites contain so little detail that it is unlikely even individuals already familiar with an area would be able to reconcile his narrative with the landscape (Funke & Haake 2006: 380). Hammond (1988a: 64) observed that he, Kromayer, and Pritchett, had all proposed a different location for the battlefield at Cynoscephalae based on varying interpretations of both the narrative manoeuvring and the location of the sanctuary to Thetis, differing by up to 10km (Fig. 3).

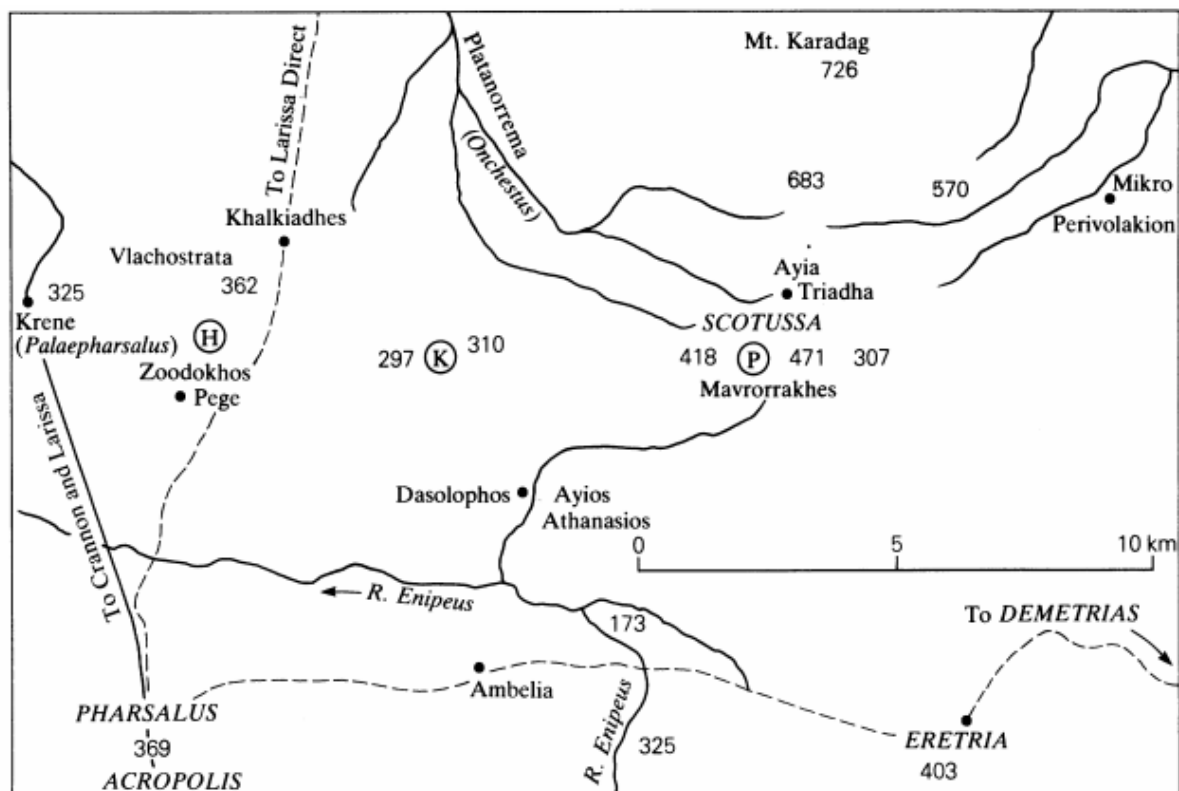


Figure 3: Cynoscephalae from Hammond (H), Kromayer (K) and Pritchett (P) (from Hammond 1988a: 64).

Even battles fought in landscapes which could have readily been inspected by ancient writers suffered from vague topographic descriptions. The battlefield at Cannae, for example, can be readily associated both by toponymic continuity of the settlement name through to the Medieval world (another battle was fought there in 1018) and association in

the narratives (Polyb. 3.110.8; Livy 22.44). Nevertheless a conclusive location has not been identified, with Daly (2002: 33-35) observing that at least eight locations have been proposed for Cannae battlefield based on the narrative of the battle and the suggested course of the river (Fig. 4).

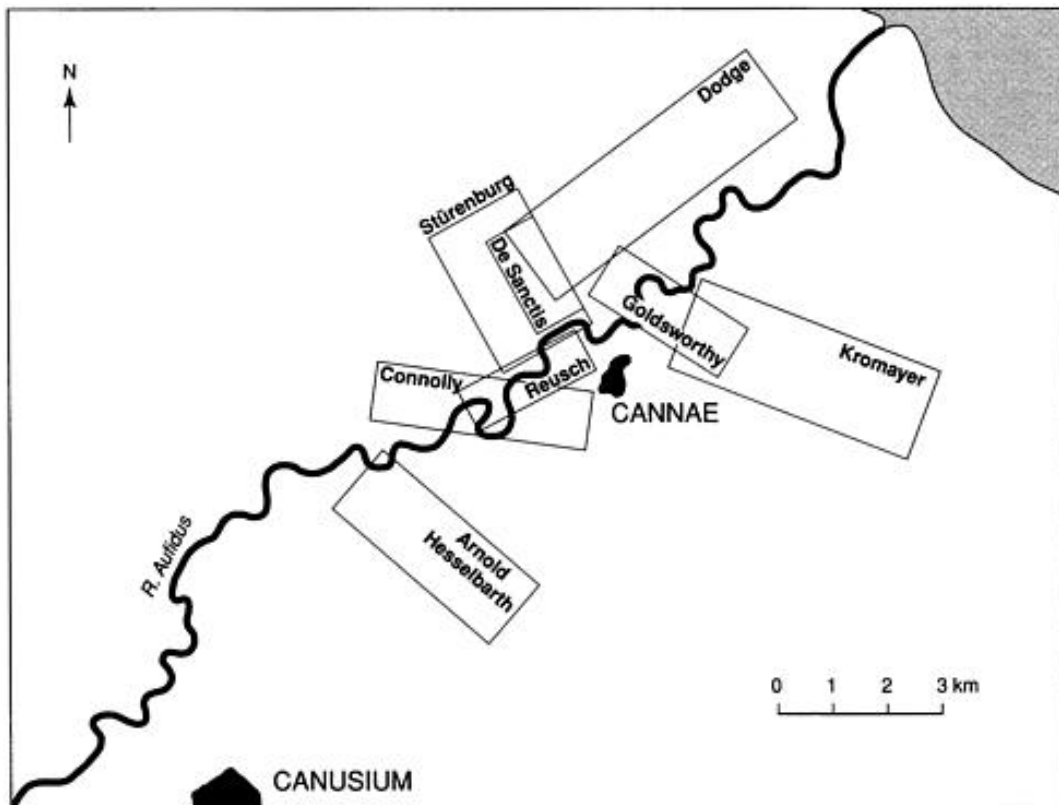


Figure 4: The 8 locations proposed for the location of Cannae based on the literary description (from Daly 2002: 33).

The problem is no less for sieges. Jones (1977: 81) observed that in Thucydides' description of the topography of Amphipolis, around the modern site four hills meet the criteria for Brasidas' camp, five that of Kleon's pre-battle position, and multiple possible areas are suitable for the following narrative depending on which combination of initial positions is preferred. That said topographic reconciliation can work when the narrative refers to unique/singular features within a confined area, such as Josephus' description of Gamla which appears to be highly accurate (Aviam 2006: 373), although the identifying the area from the description would have been more problematic had it not been centred around a known settlement.

2.7.2: The terrain of 'lost' battlefields

For battlefields with an unknown location, and particularly for those with no toponymic references, the topographic descriptions can be next to useless in identifying the exact location. As discussed above, the literary sources focus on the tactically relevant features, but these often form a generic characterisation of the site rather than an actual description. For the northern Roman provinces, there is a greater focus on the risks in forested and marshy terrain, particularly with regards to ambush, and native attempts to use water-courses, particularly rivers, as natural fortifications. Table 2 summarises the topographic information provided for battlefields in Gaul, Germania, and Britannia by the literary record. It is evident that the descriptions are generalised characterisations, heavily influenced by tactical narrative, and likely to be of very little use in identifying one particular site among a wider region. The difficulties in locating battlefields in, for example, Britain, become clear when the descriptions in Table 2 are compared with the regional parameters illustrated in Figure 2. Many sites within each region meet the vague topographic characterisations given by the literary sources in each case.

For the Boudican battlefield, for example, the only geographic or topographic evidence is that the battle took place in a defile facing an open plain, which had room for two large armies (if not perhaps the exaggerated numbers quoted by the sources), somewhere in England. A hydrological search for the battlefield of Boudica came up with 263 potential sites for the battlefield within just the southern half of England alone, although not all were considered as serious candidates (Kaye 2011). Multiple sites have been seriously proposed for the battlefield, all of which meet the topographic description provided by Tacitus (and were regionally located based on route reconstruction, predominantly in the Midlands), continuing the debate which Webster (1978: 111-112) thought he had settled by suggesting the site was around Mancetter, north Warwickshire. Many further sites have since been suggested in recent years.⁷¹

⁷¹ Including Mancetter, Virginia Water, Godmanchester, High Cross, Clifton-on-Dunsmore, Arbury Banks, Paulerspury/Cuttle Mill, Church Stowe, Dunstable.

Province	Topographic description	Source
Gaul (Eburone rebellion 54 BC)	Forested, suitable to ambush, two miles from the Roman winter camp.	Caes. <i>Bell. Gall.</i> 5.32
Germania (Varus AD9)	Forested, marshes, suited to ambush.	Velleius 2.119.2
	(Varus' camp) Forested plain, landscape of marshes and uneven terrain. Native religious groves in vicinity.	Tac. <i>Ann.</i> 1.61
	Marshes, forested.	Florus <i>Epitome</i> 2.30.36
	Forested, mountainous, uneven terrain. During the battle encountered an area of open terrain but forested soon after.	Dio 56.20.1-2
Germania ('Idistaviso' AD16)	Open plain surrounded by forest, between the Weser and nearby hills.	Tac. <i>Ann.</i> 2.16
Britannia (Invasion AD43)	A river thought not to be fordable by the Britons, but which the Romans were able to cross. ⁷²	Dio 60.20.2
Britannia (Thames AD43)	Area of (tidal) flooding, small areas of passable land, not fordable (bridged), near swamps. Safe paths through the marshes, known to Britons.	Dio 60.20.5-6
Britannia (Iceni AD51)	Embankment with a narrow approach, unsuited to a cavalry attack.	Tac. <i>Ann.</i> 12.31
Britannia (Caratacus AD51)	Steep hills, with gentle slope areas barricaded with stones, with a river in front, of varying depth but fordable.	Tac. <i>Ann.</i> 12.33
Britannia (Boudica AD61)	Open plain, approached by a narrow defile, backed onto a wood, minimal chance of ambush.	Tac. <i>Ann.</i> 14.34
Britannia (Mons Graupius)	Open plain, steep hill to the rear, forested area nearby, close to native settlement(s) and a Roman fortified camp.	Tac. <i>Agric.</i> 35-38

Table 4: Topographic descriptions of non-toponymic (provincial) Roman battlefields.⁷³

⁷² Dio (60.20.2) says that the Keltoi (interpreted as Batavians) were able to swim across unexpectedly, as they also did at the Thames (*cf.* Tac. *Ann.* 14.29), but does not explain how Vespasian and his men were also able to cross soon after, only that they crossed in some manner (Dio 60.20.3-4). It is not clear whether the river should be considered fordable or not.

⁷³ Includes battlefields with no toponym and those with a toponym which cannot be identified in the modern landscape.

Outside Britain, similar debate can be found in locations for the site of Alésia. Although excavations have suggested that it is probable the battle occurred at Alise-Sainte-Reine, at least ten other sites are commonly cited as viable alternatives for the battlefield (Fields 2014: 89).⁷⁴

2.7.3: The sources for ancient battlefield topographies

It has never been fully established exactly where ancient historians sourced their topographic information regarding battlefields and military geography more widely - particularly, as in most cases, when they would never have visited the place in question. Even when sources were describing places they had seen, whether Caesar's first-hand record of his own campaigns, or Polybius' later tour around the sites of the Second Punic Wars, there is not necessarily a correlative improvement in the topographic descriptions. Whether any cartographic evidence would have been available to particular authors is unclear. Although itinerary maps did exist, they did not contain any contextual geography information (Bekker-Nielsen 1988: 155), and the military narratives of earlier historians do not suggest that they had access to terrain maps (Horsfall 1985: 198-199).⁷⁵ Descriptions of local/campaign topography appear to have been contained in military despatches sent to the Roman Senate by provincial governors, particularly in scouting reports (Austin & Rankov 1995: 49; *cf.* Tac. *Ann.* 1.50).

It is almost certain that the Roman army scouted the topography of campaign regions before moving into them, to minimise the possibility of mistakes made from ignorance and identifying locations at which the marching army would be vulnerable to ambush (Austin & Rankov 1995: 42-54; Isaac 1996; *cf.* Polyb. 9.13.6, 9.14.2-3; Onas. *The*

⁷⁴ Lagrely located in Franche-Comté, the modern region of the Sequani tribal territory, where Dio (40.39.1), although not Caesar, implied the battle was fought.

⁷⁵ See also Dilke (1985: 112, 210).

General 6.7; *Veget. Epitome* 3.6, 3.9, 3.13, 3.22; for frequency of ambush, see 1.4.2).⁷⁶ Generals were recommended to consult with any men in their army who knew the territory being moved through if possible (*Xen. Cavalry Commander* 4.6; *Veget. Epitome* 3.6). Polybius (3.48.1-5) was doubtful that Hannibal would not have researched the route over the Alps prior to advancing, as suggested by other contemporary historians. Caesar (*Bell. Gall.* 4.20) says that he attempted to interrogate merchants about the geography and topography of Britain prior to his invasion in 55BC, although they were unable to provide much useful information due to their own ignorance of the landscape. The AD43 invasion, however, may have been geographically informed by Verica (Bericus in Dio), a Briton from the native elite who was evidently exiled following a revolt, providing the formal justification for the invasion (Dio 60.19.1; cf. *Suet. Claud.* 17.1). The nature of Roman military geographic knowledge in a non-localised context, particularly in terms of provincial geography in Rome, is almost completely unknown (see Syme 1988).

2.7.4: Literary *topoi* in battlefield topography

Deliberate alteration and unintentional errors are also a cause for concern in using literary topographies to locate battlefields. Topographic descriptions in literary texts are often simplified versions of the real landscape, although whether this was because writers deliberately engaged in simplification (e.g. Pelling 1981) or due to an original failure to accurately observe absolute data during the conflict (e.g. Morgan 1983: 24) is unclear. The physical terrain was shaped around the battle-narratives, which were, as argued previously, subject to alteration based on literary *topoi* and narrative purpose. Thucydides' topographic

⁷⁶ Strabo (*Geog.* 1.1.17) blamed defeats in Parthia and Germania on the military's ignorance of the local landscape and topography. Parthia almost certainly refers to the campaigns of Crassus and/or Antony; for Germania, it depends on whether the reference was in the original or revised work. If the former (published c. 7BC), the reference may be to the Lollian Disaster (16BC) or to Drusus the Elder's campaigns, particularly his somewhat disastrous retreat from the Weser around 11BC (Dio 54.33.3-4); if the latter (published by AD23), the Varus Disaster (AD9) and Germanicus' campaigns (AD15) also become possibilities. It could, however, be a composite reference to all four- the ongoing frequency of similar disasters in the same area perhaps emphasising the issue. Similarly, Strabo (*Geog.* 16.4.23-24) noted how poor geographic preparation for a campaign into Arabia from Egypt by Aelius Gallus in 26BC, ordered by Augustus, caused large casualties when an uncooperative Nabataean official directed the Roman army into unsuitable territory. Although a battle was won, the expedition was a disaster and abandoned after six months, with Gallus forced to find a rapid route of retreat through the unknown landscape, having lost many of his men.

description of the battlefield at Pylos has been criticised for multiple errors, which recent scholarship has suggested were the result of deliberate alteration to explain Athenian and Spartan narrative actions (Sears 2011).⁷⁷ Hammond (1980: 77) and Devine (1986: 267-268) both argued that the terrain of the Granicus battlefield was deliberately exaggerated to emphasise the scale of Alexander's achievement, although their judgement is in part predicated on Hammond's location actually being correct. Polybius (12.17.12) noted that Callisthenes altered the narrative of Alexander's battle at Issus, describing an event which could not have happened in a battlefield with a river running through it - a river which Callisthenes had mentioned in an earlier part of the narrative.

In the Roman world, O'Gorman (1995) argued that topographic descriptions were altered to fit authorial judgements on conflicts, by exploring the differences between Italian and Germanic battlefields in AD69. In the former, agricultural destruction physically impeded the Roman army, while in the latter every element of the terrain was hostile to the Roman army, exculpating their defeats within these landscapes. Caesar's *topoi*-laden topographic descriptions of forested and marshy areas in Gaul, Germania, and Britannia run through the narrative as areas of potential ambush in which the Roman army could not operate effectively (Riggsby 2006: 24-26), and may have been used to justify his decision not to campaign beyond the Rhine (Krebs 2006: 119-124).⁷⁸ Caesar's (*Bell. Gall.* 5.32) description of the terrain, and indeed, the overall narrative (*Bell. Gall.* 5.26-38) of an Eburone ambush of a Roman column in Gaul in 54BC is almost identical to that of the Teutoburg several decades later - and indeed, to Dio's (54.33.3-4) description of a near-disaster under Drusus the Elder in Germania around 11BC. Ash (2007: 439) suggested that forests became characterised in ancient historiography as the "traditional refuge for barbarian soldiers". Although there was probably an element of truth in this idea, at least originally, the association of Roman provincial battle with forested areas may have developed into a *topos*, with the fighting either assumed to have taken place near a forest by the author, or a forest placed into the topography of the battlefield in order that the (defeated) Britons or Gauls

⁷⁷ Although Pritchett (1994: 145-176) argued in favour of Thucydides' topography of Pylos, arguing that Thucydides had not made an error in the length of Sphacteria, and criticising historians who, accepting a mistake on this point, "felt free to assume other errors at will to accommodate some new reconstruction."

⁷⁸ *Contra* Tacitus (*Ann.* 2.14) in which Germanicus is said to have argued that the Roman army could operate effectively in such landscapes, not least because their weaponry was suited to enclosed spaces.

could flee into it. The tactical use of forests and marshes for surprise attacks may have become a similar *topos*, and ambushes of the Roman army assumed to always have taken place in such contexts. This may be implied by the characterisation of the Teutoburg battlefield (Vell. 2.119.1; Tac. *Ann.* 1.61; Florus *Epitome* 2.30.36; Dio 56.20.1-2) as almost entirely forested and marshy, while environmental analysis of the landscape shows that it was managed at the time of the battle.

Water-courses may also have become associated with battle-related literary *topoi*. Dio's (60.20.5-6) description of the terrain which the Britons lured the Romans into around the Thames - uneven, with safe paths through but risk of drowning to those who did not know them - is identical to that in Frontinus' (*Strat.* 2.5.7) account of Viriathus luring a Roman army into uneven watery terrain in Lusitania, where they also drowned in great numbers. By contrast, the natives were frequently defeated when they placed their faith in terrain which the Roman army was able to overcome, in many cases by crossing unfordable water (Dio 60.20.2, 60.20.6), overcoming the high ground, and preventing flank attack.⁷⁹ The main concern for battlefield studies is that where the ancient sources mentioned a forest, marsh, or water-course, in the topographic description of a battlefield, is that it may not have been a real feature, but a narrative construction inserted to satisfy literary convention and audience expectation

2.8: Conclusion

It is clear that the ancient literary record is limited in documenting either the narrative of a battle or its physical location. This is not a criticism innate to its original composition, as these issues would have been of lesser importance to the ancient audience than they are to historians and archaeologists two millennia later. The unwillingness to marginalise the ancient literary record in regards to ancient battle is understandable. Despite increasing recognition of its limitations, the narratives are still, in many cases, accurate *enough*, particularly if there is no obvious alternative, and are better than nothing.

⁷⁹ See Austin & Rankov (1995: 174-180) for rivers as natural defensive architecture to the Roman army, and destruction of bridges as prevention against enemy crossing (*cf.* Tac. *Ann.* 1.69)

However, it is clear that there will be serious flaws in any archaeological methodology based heavily on the ancient literary record. The narrative accounts of ancient battle presented by the written sources are, at best, elite-focused characterisations which present the broad trends of the battle with very little actual detail. So too with the geographic and topographic descriptions of the battlefields themselves, which appear less likely to depict actual places the further from Greece, and particularly from Rome, the battle took place. It would be wrong to completely ignore the literary record, of course, as it can at least identify battles which did, in all probability, actually take place. While the ancient sources may not provide an accurate narrative or geographic reference, they certainly contain evidence which can prove useful in the location or identification of a battlefield.

The historical sources may, however, play a much reduced role in comparison with Modern, even Medieval, battlefield archaeology. While not a judgement on the sources themselves, the evidence that they contain is in many cases simply not detailed enough to provide an accurate location of a battlefield in most cases. Cited toponyms would not have had any consistent spatial connection to the actual battlefield, and even in the Greek world, do not provide a particularly specific location within what are usually wide and open landscapes. For Roman provincial battlefields, particularly during campaigns of conquest and consolidation, the army may not have known objectively where their battles were actually being fought, and even if they did, this information appears to have been unwanted by the readers of battlefield narratives. Even topographically, the literary evidence is insufficient and often unhelpful, and the generalised characterisations of battle landscapes may reflect the same within the corresponding battle narratives. The texts can, however, contribute to drawing up a shortlist of potential sites within a wider geographic area, and provide a chronological framework, inclusive of individual events, within which archaeologists can work.

Chapter Three: Landscape approaches to ancient battlefield location

3.1: Introduction

It is not unreasonable to say that all ancient battlefields, outside of those examples which have been excavated, are to some degree 'lost' sites. The previous chapter discussed the limited usefulness of the ancient written record in providing locations for battlefields, beyond association to a general area in a particular landscape. As battlefield archaeology methodology is suited to a more limited potential study area, it is worth considering whether there are alternative methods for locating sites independent of the written record, using archaeological indicators within the conflict landscape. The challenge of locating 'lost' battlefields is not one engaged with in any great detail by battlefield archaeology, as sites with such incomplete historical records often fail to satisfy the background criteria for study. Ancient and early medieval battlefield archaeology is therefore somewhat alone in attempting to identify battlefields of unknown location. A methodology for situating ancient battlefields in a reasonable archaeological study area does not only affect sites in the Roman provinces.

Although it can be argued that toponymically-identified sites are securely placed within a reasonably limited location, in no other field of archaeology would this general degree of uncertainty continue to be methodologically acceptable. While the Battle of Marathon, for example, was without question fought on the plain of Marathon, the total area of the plain is in excess of 21km², somewhere within which the battle was fought (Fig. 5). In practical archaeological terms, this level of location is only marginally more useful than the regional or tribal-territory locations provided for Roman provincial battlefields. One of the primary challenges in ancient battlefield archaeology is the identification of reasonable study areas within which to implement preliminary survey prior, if the results allow, to excavation and detailed survey.



Figure 5: Aerial view of Marathon plain (image from Google Earth). The probable area of the battle is indicated within the red-dashed square.

As discussed in the previous chapter, at best the literary record identifies the location of a battlefield based on its (not necessarily close or consistent) spatial relationship to a named settlement or landmark or, at worst, a general provincial region or tribal territory. Neither is suited to preliminary site survey, which requires intensive activity over a relatively small study area. A location incorrect by even a few kilometres may completely fail to identify any relevant archaeology. As such, it is necessary, as far as possible, to establish as limited a location as possible prior to survey, producing a relatively limited initial study area. This location need not be 'accurate' in the modern sense - an inch-perfect map reference delineating the exact boundaries of the battlefield - but identification at least of potential areas of fighting or pre- and post-battle activity will greatly assist subsequent exploration techniques, whether they be more intensive field survey or excavation.

This chapter explores how battle-related archaeology in the conflict landscape around a battlefield can be used in the identification of more focussed study areas for battlefields, using modelling adapted from both modern (i.e. C20th) combat archaeology and landscape archaeology more generally in conjunction with the archaeological record. For Roman provincial battlefields located only to a regional or tribal-territory area provincial level by the literary record, the landscape evidence begins on a macro scale, identifying areas of campaigning and route reconstruction principally through the identification of temporary camps. The northern Roman provinces in particular are impacted most severely, especially sites in Britain from the invasion of Caesar in 55BC to the campaigns of Septimius Severus at the start of the C3rdAD, although those in Gaul and Germania have also been studied using similar approaches. Although unlikely to result in as specific a location as that given by a toponymic reference, this approach may at least isolate more limited regional areas. Ideally, route reconstruction would allow an area sized similar to toponymically-identified battlefields; an area of c.21km², comparable to that at Marathon, would not be unreasonable, although would still present methodological issues for archaeological exploration. Within this more limited regional area, other artefacts and features located in the more immediate vicinity of a battlefield - camps, military artefacts, graves and monuments - can contribute to a still more detailed location, allowing the identification of preliminary study areas.

3.2: Locating modern battlefields

In the context of modern battlefield archaeology, the initial parameters of the discipline – to study C19th battlefields in the United States – did not require the development of a detailed methodology for locating ‘lost’ sites, as their general positions were already relatively well-known from the historical record. The same is true of sites back to at least the Early Modern period (C16th-C17th), from which time some battlefields were even captured in contemporary maps depicting the battle itself, which could be published in historical accounts and used by the military authorities as training devices (Pollard 2009c: 31-33). As such, methodologies for locating ‘lost’ battlefields, particularly those in a wide

landscape, have not been substantially developed. Military terrain studies have suggested that battlefield archaeology uses landscape archaeology and/or terrain analysis as a tool to study individual sites, rather than to place a battlefield within a wider conflict context (Woodward 2014). The Bloody Meadows Project attempted to identify common characteristics in battlefield sites from different historical periods to suggest why certain places were “chosen” as battlefields, citing elements such as visibility and the presence/use of certain topographic features and terrain types (e.g. Carman & Carman 2001, 2005, 2006; Carman 2013). However, as the methodology does not advocate the excavation, and therefore the verification, of sites, it is of limited use in identifying or establishing the location of individual battlefields.

3.2.1: Late Medieval and Early Modern sites

Most battlefields from the Early Modern period onward are located with a reasonable degree of accuracy by toponymic reference, usually to a settlement or landscape feature in relatively close proximity to the battlefield. During the Napoleonic Wars, Wellington tended to name his battles after the location in which he spent the night before the engagement, most notably Salamanca, when the battle actually took place at Arapiles, over 10km from the toponymic settlement. Marshal Blücher originally proposed naming the Battle of Waterloo as the Battle of La Belle Alliance, for the inn at which he and Wellington had met following the fighting, rather than for the village of Waterloo where Wellington had spent the night before battle (O’Keeffe 2014: 159). “La Belle Alliance” was used by the English press in the immediate aftermath of the battle, but Wellington’s dislike of the name ultimately led to the engagement becoming known as “Waterloo”. A battle however, can be known by more than one toponymic name, a phenomenon well illustrated by the relatively recent tradition in the American Civil War of the Confederate Army naming battles after the toponym of the nearest settlement (or constructed feature), while the Union instead used

nearby water-courses or prominent natural features.⁸⁰ Very few battlefields or conflict sites from this period became truly 'lost', and even when exact locations were uncertain, the general position was relatively specific. The location of the Sand Creek Massacre was a mystery by historical standards until archaeological investigation was conducted in the early 2000s. Archaeologists struggled to find the site despite knowing from contemporary accounts and maps that it lay in a curve of the Big Sandy Creek less than c.65km from an US position at Fort Lyon. It was eventually confirmed by using route reconstruction to establish a series of potential study areas for preliminary survey (Greene & Scott 2004: 39-52).⁸¹ The site had been proposed as the massacre location previously, but had lacked the necessary archaeological verification to prove the hypothesis conclusively. It is not, therefore, often the case that archaeology is needed to identify a conflict site without any other context but rather that it provides the verification of one area of direct engagement, from which the full extent of the assemblage, and therefore the battlefield, can be established.

Battlefields in the C19th were often extensive in size and generous in deposition, and archaeologists have found that securely locating just part of a battlefield is often enough to facilitate archaeological exploration. This initial position can be used as a preliminary study area from which further survey and excavation can expand, wherever the area happens to lie on the battlefield. All it is necessary to do, therefore, is to identify one location which was definitely associated with the battle. In the modern context in which battlefield archaeology was first developed, this was a relatively simple task, due to the extensive campaign records, maps, and even photographs taken of the battlefield, as well as post-battle features marking the location within the landscape. The distinctive nature and military use of lead munitions in this period makes it relatively straightforward to identify battle-related assemblages, where munitions occurred in sufficient quantity, while the munition type frequently provides an immediate approximate date and shortlist of potential combatant forces. As a result, it has not proved particularly necessary in modern battlefield

⁸⁰ E.g. Manassas/Bull Run, Elkhorn Tavern/Pea Ridge, Perryville/Chaplin Hills, Sharpsburg/Antietam etc. In most cases, the historical record used the name corresponding to the victorious army, but there are exceptions (Ball's Bluff (Union defeat, Confederate name Leesburg); Mill Springs (Confederate defeat, Union name Logan's Cross Roads); Shiloh (Confederate defeat, Union name Pittsburg Landing).

⁸¹ Several factors complicated the location, including that until 1862 the position had been known as Ft. Wise, in 1866 the fort was abandoned due to flood damage and a new position of the same name was built c.8km east, although the original was not abandoned until 1897, whereupon it was destroyed by Native Americans.

archaeology (from the C19th onward), and consideration of how to identify a battle-related assemblage is predominantly limited to establishing the extent, rather than existence, of the battlefield (e.g. Pratt 2009).

For battlefields in the late Medieval and Early Modern periods, the situation is slightly less straightforward, although not as complex as it is for sites pre-dating the C15th. Although the precise extent of the battlefield has often been lost, the historical record in most cases preserves the location of the site with the necessary degree of accuracy to establish a preliminary study area. Prior to the development of battlefield archaeology, attempts to locate medieval and early modern battlefields relied on a similar methodology applied to ancient studies - to locate topographic checkpoints mentioned in the historical record within the contemporary landscape, particularly battlefield graves. Topographic checkpoints involved in the campaign and around the battlefield are often documented in official historical narratives, based on the descriptions recorded in campaign reports and contemporary military maps as well as in personal letters and diaries.

In many cases, battlefields in this period were identified in the historical record by a toponymic reference, usually but not always, to the nearest settlement. Medieval battles such as Agincourt, Crécy, Towton, and Bosworth, illustrate this broad convention, geographically associating the battlefield with towns located nearby. For several years after the event, medieval battles appear to have been known by more local topographic names, referring to a specific location such as a field or water-course.⁸² When they came to be chronicled in more formal histories, such names were abandoned in favour of a settlement name locatable on a map, allowing readers unfamiliar with the local topography to locate the general area of the engagement (Morgan 2000: 42-44). Toponymic names could also replace earlier “iconic” ones which identified a battle by a unique characteristic of the event. Examples are relatively rare, and it is clear in the cases of most, such as Towton which was referred to by some early sources as the “Battle of Palme Sunday” (Morgan 2000: 38-40), the toponymic association with the nearby settlement was not forgotten. The use of

⁸² E.g.. The Battle of Bosworth Field, was originally variously known as the Battle of Redemore, Dadlington Field, Brownheath, Sandeford, and the Battle of Shewsbury as the Battle of Harlescote, Hateleyfield, or Bull’s Field (Morgan 2000: 44).

toponymic names could, however, lead to problems of accuracy, particularly where the associated settlement lay some distance from the battlefield, as at Bosworth where the town of Market Bosworth is over 5km from the area of fighting (Foard & Curry 2013). The assemblages from medieval battlefields may be less distinctive than their C19th counterparts, particularly in the absence of lead munitions, but are still likely to be dominated by projectiles which can be associated with the contemporary military.

Towards the later medieval period, the introduction of blackpowder weapons, as witnessed at Towton (Sutherland 2012) and Bosworth (Foard & Curry 2013), may provide more solid verification of the exact battlefield location. Ferrous assemblages can be more difficult to detect during survey, because of the often high levels of signal contamination from later material (see 6.4.1), although at Towton it was demonstrated that metal detectors can be calibrated to the specific frequency of a projectile-type if one example can be recovered from the site, and so greatly increasing the recovery rate across the battlefield (Sutherland & Richardson 2009). A greater problem results from the survival of ferrous assemblages, often less robust in the archaeological record (Foard & Morris 2012: 90-91). When medieval battlefields are surveyed and recover no battle-related artefact hits, as at Agincourt (Sutherland 2005), it is difficult to know whether an assemblage is absent because the surveyed area is not the battlefield or because the artefacts themselves have not survived.

3.2.2: Early Medieval 'lost' sites

Sites pre-dating the C15th present a greater challenge. Many are scarcely more accurately located than their ancient Greek counterparts, although few fare as badly as the Roman. Although some of the earlier historical sources do mention geographic and topographic checkpoints, as in antiquity these references are often not detailed enough, or can no longer be reconciled with the contemporary landscape. As with later sites, some Early Medieval battlefields, particularly from the C11th onward, are named after a nearby settlement, such as the Battle of Maldon or Stamford Bridge in England, both named after

the closest village to the site. These cases appear to provide a degree of accuracy for the battlefield location comparable to that of sites from the later Medieval and Early Modern world. However, Foard (2009) argued that the reliability of such references is significantly reduced in the earlier Medieval period, with Maldon representing the earliest possible battlefield that could possibly be located through the historical record. Few battlefields are known by iconic names from this period, and those which are, such as the Battle of the Standard, also retained their associations with settlement toponyms, in this case Northallerton, Yorkshire.

Battlefields from the C5th to C10th may be difficult to locate even when they were given toponymic names. These toponyms can no longer, in most cases, be applied to an actual place in the landscape. The location of the battlefield of Brunanburh remains completely unknown because the settlement after which it was named has been lost. Although a strong case has been put forward for Bromborough on the Wirral, in part based on etymological association, sites throughout Lancashire, Yorkshire, Lincolnshire, Devonshire, Merseyside, Northumberland and Dumfries and Galloway have all been suggested as potential locations for the engagement (see Cavill 2011). The lack of an accurate location, only a vague toponymic reference, is often found alongside a general lack of contemporary documentation in the historical record, and as such, these sites have generally not been significant priorities for archaeological research. The exception is Bannockburn, located somewhere around the settlement and water feature of the same name, but without a secure location. Despite intensive archaeological remote survey and test excavation, including the successful identification through LIDAR analysis of the Roman road known to be pivotal to the progress of the battle, the precise location of the battlefield is no clearer now than it has been in previous centuries (see Pollard & Oliver 2003: 8-25 for recent results).

However, for battlefields which cannot be identified from geographic and topographic references in the historical record, there has been very little methodological development. This is perhaps understandable, as it is not a problem which affects the vast majority of battlefield sites from the late medieval, early modern and modern periods. Indeed there is a degree of pessimism among battlefield archaeologists that sites predating

the C11th can ever be located, both through the vagueness of the historical evidence, and the non-survival of the physical assemblage (e.g. Foard 2009; Foard & Morris 2012: 18). Certainly, the archaeological assemblages on sites of this time may not survive in particularly good condition, and may not prove particularly distinctive if they do. As with later medieval sites, the archaeology of early medieval battle may be difficult to locate or identify as battle-related, and it is difficult to know whether to interpret an absence of artefacts as evidence of an incorrect location or as a consequence of other factors. Even sites which are relatively accurately located via the historical record, such as Hastings, may not have any artefacts recovered by survey. The form of the archaeology may not be distinctively martial, as at Fulford where the evidence comes in the form of portable hearths used by Hardrada's army for metal reprocessing, identified as such from examples found on other battlefields in Norway (Jones 2011). As such, there is relatively little to be drawn from wider battlefield archaeology methodology regarding the location of 'lost' battlefields, beyond attempting to reconcile the topography of the written record with the contemporary landscape, hoping that some archaeological verification emerged along the way.

3.3: Terrain in ancient battle

In the past, ancient battlefield studies have been able to rely on a certain degree of informal terrain analysis, still based largely on the written record, to locate battlefields within the landscape. In a military context, terrain can control movement and activity, and unavoidable physical restrictions in the landscape can be used as evidence for where an (ancient) army could not have fought or operated. If the nature of terrain in a particular area leads to predictable behaviour, particularly with armies of known sizes and troop-types, then the places where generals would have chosen to fight can theoretically be predicted. That said, Whatley (1964: 123-124) observed that terrain alone could not reveal military behaviour in more open terrain. The belief that terrain had an innate and unchanging impact on military operation can be seen in the attitude of army surveyors such as Roy and Leake and in *Schlachtfeldstudien* where it was attempted to learn from ancient

examples how best to operate in certain types of terrain. Roy characterised the typical attitude in stating:

“The nature of a country will always... determine the general principles upon which every war there must be conducted... it will appear evident, that what, with regard to situation, was an advantageous post when the Romans were carrying on their military operations in Britain, must, in all essential respects, continue to be a good one now... with proper allowances being made for the differences of arms” (Roy 1793: i).

In the search for ancient battlefields, whether toponymically identified or lost, this attitude has been turned backwards, using terrain analysis to suggest where ancient armies could operate effectively, and therefore would have fought, in individual engagements from antiquity. *Schlachtfeldstudien* in particular took this approach, with some, particularly Delbrück (1975), working almost exclusively from tactical terrain analysis, alongside his own interpretation of how ancient armies operated in the field.

3.3.1: Historic terrain reconstruction

Identification of the exact location of many Medieval and Early Modern battlefields has relied on reconstructing the condition of the terrain contemporary with the battle. The methodology used is predominantly reliant on an extant cartographic record, with historic maps being used to regress battlefield terrain to its past condition (see Foard & Morris 2012: 18-21). Historic terrain regression can identify features in the landscape which have not survived, and assist the spatial interpretation of the battlefield assemblage by highlighting which terrain features were extant at the time. At Towton, historic terrain regression was used to identify the areas used for mass graves in the aftermath of the battle, identifying several previously unknown locations of human bone deposits (Sutherland & Holst 2014). Historic map regression was able to show that the road running through the clan graves at Culloden was not a post-battle feature, as had been commonly assumed, but extant at the time of battle, presumably therefore used to transport the bodies of the dead for burial in the area (Pollard 2009b). The distribution of munitions at the

English Civil War battlefields at Marston Moor (Foard 2009) and Edgehill (Foard 2012), and the skirmish site at Lostwithiel (Ferguson 2013) became much more clear when the contemporaneous field boundaries were reconstructed, demonstrating how they directed the movement of soldiers around the sites. Historic maps may also indicate where battlefields were located by previous scholars and antiquarians, with battlefields often marked with a sword symbol. In theory, maps produced soon after the battle, as became increasingly common from the Late Medieval period onward (see Pollard 2009c), should contain relatively accurate evidence for the general, if not specific, location of a battle. However, confusion over the location of a battle could enter the historical record at a very early stage, making accurate positions difficult even on contemporaneous maps. Sutherland (2005: 246-248; 2015) observed this process in the historical documentation of Agincourt, where a series of historic maps provide a range of different locations for both the battlefield and mass graves.

In antiquity, the issue of historic terrain reconstruction is more difficult. There is a lack of contemporaneous cartography which might record the original location of battlefields or features. While some now non-extant battlefield features may have been recorded in antiquarian observations from later periods, particularly in Greece, there was no tradition of recording their position on a map until the late C19th, by which time many had been lost. However, pollen analysis has proved useful at Kalkriese in identifying the surface vegetation of the battlefield landscape at the time of the battle. This environmental analysis indicated that while the region around modern Osnabrück was forested in antiquity, consistent with the ancient historical record, the region was under a certain degree of agricultural cultivation, which had not been expected (Tolksdorf-Lienemann 2004). Recent work in the landscape around the Kalkriese area has shown higher levels of native settlement than had previously been known (Rost & Wilbers-Rost 2014b). This discovery revised the previous evaluation of the battlefield landscape from a heavily forest and depopulated region to an area under some degree of organised land cultivation populated by a number of settlements. Establishing the extent of the forest and marsh suggested how the Roman army were funnelled towards the Oberesch, while the German rampart found there provided an explanation of why casualty rates were so high in this area, and therefore why the combat cohesion of the Roman army may have collapsed. At Marathon, although

the exact area of fighting has not been established, geological analysis has been used to establish the sea-levels, coastline and the extent of the marsh at Marathon (Pavlopoulos *et al.* 2006; *cf.* Krentz 2010: 113-117). Historic terrain regression has been used to reconstruct the terrain of the Thermopylae pass in 480BC (Kraft *et al.* 1987), and debate over the exact location of Cannae has also involved reconstruction, albeit without a significant geological element, of the course of the Aufidus river contemporaneous to the battle (Daly 2002: 32-35). The near contemporary battle at Lake Trasimene has had to be relocated as geological analysis indicated that the presumed site would at the time of the battle have lain deep in the lake. Historic terrain regression is a necessary factor to understanding ancient battlefield archaeology, and should be used wherever possible. In particular, understanding the physical terrain of both a battlefield and its conflict landscape at the time of a battle may be able to highlight errors in narrative interpretation, and potentially also new avenues for research.

3.3.2: Hoplites, legionaries, and terrain

In some ways it is problematic to reconstruct the tactical use of terrain in ancient battle, and retrospectively apply it to the search for exact positions or lost sites, because, as discussed in the previous chapter, the ancient literary record in regard to battlefield narratives is not particularly accurate or reliable. Identifying consistent military use of certain types of terrain is problematic if the topographic descriptions were themselves inaccurate. Similarly, if terrain is reconstructed from the narrative description of the battle, any simplification of the narrative, as discussed in the previous chapter, will also cause methodological issues. Traditionally, it has been assumed that the heavy-armed troops of the Greek hoplite phalanx and the Roman legions were only effective when deployed in level, open-ground of considerable size, and free of natural features, which allowed for a decisive battle (e.g. Hdt. 6.102, 7.9; Jos. *Bell. Jud.* 3.102; *cf.* Hanson 1989: 9-18). Marshy, forested, and uneven landscapes posed a military threat and would therefore be avoided where possible. Thucydides (4.33.2) noted at Sphacteria that hoplites were unable even to pursue the enemy over uneven ground due to their armour. The benefits of open terrain

were not limited to the Greeks and Romans, but to any large formal army. The Hellenistic Spartan tactician Xanthippus is said to have advised Hannibal of the advantages of flat, open terrain (Polyb. 1.32.4), and the accounts of the Second Punic War describe the Romans avoiding battle with the Carthaginian army in this type of terrain (e.g. Polyb. 3.90.10, 3.92.7, 3.111.1). Hoplite forces were evidently vulnerable to attack by light-armed troops, particularly if they occupied the high ground. During the Peloponnesian War, an Athenian force under the command of Demosthenes was defeated by light-armed Aetolian troops, who were able to deploy on high ground above the hoplite phalanx and assault them with missiles from a distance (Thuc. 3.97.3-98.3). Enclosed terrain might be used to neutralise large forces, such as the Persians at Thermopylae (Herod. 7.177), but is generally not viewed as a regular part of Greek hoplite warfare.

Similarly, the Roman army evidently preferred to operate in comparable terrain, favouring large open-spaces for the deployment of legions, although in many cases care seems to have been paid to the natural enclosure of the battlefield to prevent flanking and/or rear attack. Legionary units tended not to operate particularly well in other terrain types, particularly the marshes, hills, and forests found throughout the northern provinces, in which it was typically observed that Roman legions could not fight (e.g. Tac. *Ann.* 1.63). Roman legions caught in these areas tended to suffer defeat, at least according to the literary record. Under Sabinus and Cotta in Gaul, a legion was almost wiped out when it was attacked in a forest several miles from camp (Caes. *Bell. Gall.* 5.26-38), as were the legions attacked in Germania in similar circumstances under Lollius (Vell. Pat. 2.97.1; Dio 54.20.4-5), Drusus (Dio 54.33.3-4), Varus, and Caecina (Tac. *Ann.* 1.65).

Terrain analysis of ancient battlefields has tended to favour easy approach routes to a battlefield and, for toponymically-identified sites, places the fighting in the flattest, most open area around the identified position. Correspondingly, when forces who did not fight in hoplite or legionary style 'chose' the battlefield, the opposite appears to have been true. Battlefields with high-ground and uneven terrain were favoured in the British battles against Caratacus (Tac. *Ann.* 12.32-35) and Calgacus (Tac. *Agric.* 35), although the Roman army may only have engaged if they felt they could win despite the topographic disadvantage (Goldsworthy 1996: 143-144).

There were responses to the difficulties of heavy-armed troops and their struggles to operate in certain terrain. Greek armies evidently did use light-armed troops, with van Wees (2004: 61-65) suggesting that they may have been a common unit type where the landscape was not suitable for heavy infantry. At the Granicus, Alexander is said by Arrian (*Anab. Alex.* 1.16.1) to have used his cavalry and light infantry to cross the river, the latter inflicting heavy casualties on the Persian force. In the Roman world, the introduction of the manipular, and later the cohort, system was a response to the increased need of the army to operate in difficult terrain, particularly the against the Samnites in Italy and Spain and later with the Sasanian Empire. The new systems introduced a greater degree of flexibility to the military operation of the Roman army (Goldsworthy 2003: 47-48, 175-176). By the Imperial period, auxiliary troops could be used to operate in difficult terrain, in particular Batavian troops who could cross rivers and water-courses as both infantry (*Tac. Ann.* 2.18; *Hist.* 2.17; Dio 60.20.2) and cavalry (*Tac. Hist.* 4.12; Dio 69.9.6).⁸³ The battle at Mons Graupius was apparently won by the Roman *auxilia* without the involvement of the legions at all, although Tacitus' (*Agric.* 35-37) narrative suggests that the battle unfolded in the same way as any other pitched engagement in the field.

3.3.3: The “selection” of ancient battlefields

Is it realistic or accurate to suggest that ancient battlefields were deliberately chosen, given the contemporary level of geographic and topographic knowledge? Polybius (13.3.3) stated that armies in earlier antiquity had fought at an agreed time and place, in contrast to the warfare of the C2ndBC, of which he was a contemporary, which he viewed as more informal. Van Wees (2004: 133) noted Polybius' idealistic tone, suggesting that his was a retrospective opinion as battles had been fought "... *as if* they had been arranged, because there was rarely much room for surprise when a general levy marched out to meet invaders in the plain where they had been destroying farms." In many instances, a battlefield was “chosen” because one army found a suitable site, took up position, and simply did not move from it, waiting for the enemy to need to fight, as with Darius at Gaugamela (*Arr. Anab.*

⁸³ Also probably in the AD60 attack on Mona, *cf.* *Tac. Ann.* 14.29.

Alex. 8.7), Caratacus in Britannia (*Tac. Ann.* 14.32) and Calgacus in Caledonia (*Tac. Agric.* 29). In both Roman and Greek warfare, armies appear to have moved into the vicinity of one another, pitching fortified camps a few miles apart and waited for the right opportunity to fight (Sabin 2007: 404). On several occasions, pitched battles resulted from skirmishes between scouting parties, most famously at Cynoscephalae (197BC), where Polybius (18.21.2-6) noted the chaotic situation leading to the engagement, emphasising that Philip had not expected to fight on that day (*Polyb.* 18.22.1). Some battlefields were therefore not chosen but were simply where the two armies happened to engage; the element of pre-decision would be almost absent.

The ancient literary record also suggests that in some cases, armies hoping to remain in the field but avoid battle in the immediate future would adopt a landscape position that they hoped the enemy would hesitate to attack. This practice was not always successful, with the result that battles could be fought in unexpected positions, with one force attacking another from a terrain disadvantage. In his narrative of Amphipolis, Thucydides (5.9-10) documented how both Cleon and Brasidas took up positions of battle-array, but were each equally reluctant to enter into battle, and hoped to withdraw without being attacked. The Athenian retreat in fact presented such an opportunity that Brasidas did successfully attack them. In the AD43 invasion of Britain, the Britons attempted to avoid battle with the Roman force on multiple occasions, eventually crossing a river which they thought the enemy would not be able to pass, but the battle was fought on the banks (*Dio* 60.20.2).

The ancient literary record does not support a universal convention in the choice of battlefield sites. The characteristics of the ideal terrain varied depending on the composition and size of the respective armies, the background and strategic objectives of the campaign, and even which side was taking the initiative in provoking battle. There was no consistently used terrain-type which suited all military situations. Most ancient writers recommended fighting in whatever terrain was either favourable to one's self or, if that was not possible, at least of disadvantage to the enemy (e.g. *Onas. The General* 31.1; *Veget. Epitome* 3.6, 3.9,

3.13; *cf.* Polyb. 1.32.4).⁸⁴ The benefits of surprise and/or ambushing the enemy in difficult terrain and of forcing them to move into locations where they would struggle to fight or to escape were recommended by military treatises (e.g. Xen. *Cavalry Commander* 5.9; Veget. *Epitome* 3.6). Deceptions, ruses, tricks, and surprise attacks were all in fact thoroughly recommended in theory, and enacted in practice. Thucydides (3.98.2) described an Aetolian light-armed force, after attacking an Athenian phalanx from a distance, driving the fleeing hoplites into a thick wood which they then set on fire, and, during the Sicilian Expedition, Athenian hoplites being trapped in an enclosed orchard and massacred from a distance with projectiles (Thuc. 7.81.4-5). Frontinus (*Strat.* 2.1.) discussed various ruses used to trick the enemy into fighting in unsuitable circumstances and disguising the strength of an army from the opposition (*cf.* 2.12.3; Polyæn. 3.9.19) and elsewhere gave numerous examples of how to effectively ambush an army on campaign (Front. *Strat.* 2.5). Polybius (1.84.8-10) observed that Hamilcar Barca favoured surprise attacks on his enemies or failing that to entrap them in a position from which they could not escape, and starve them out. As such, the “chooser” of the battlefield, if this can be said to be an appropriate term, may have selected a site not for its advantages for their own army, but rather, the disadvantages for another, characteristics which may not be immediately obvious without knowing the exact tactics in use.

Although unexpected defeats could be blamed on fighting in unsuitable terrain (e.g. Tac. *Hist.* 2.42), particularly if the army had been ‘tricked’ into entering the area by an unreliable native guide (e.g. Caes. *Bell. Gall.* 5.26-38), it was clearly possible for them to operate in a variety of landscapes. Tacitus (*Hist.* 5.14-17) suggested that it was only the relative inexperience of Roman soldiers operating in enclosed terrain such as forests and marshes, rather than an innate inability to do so, which was the main tactical problem. This echoed an earlier sentiment expressed in Germanicus' encouragement of his troops in Germania, where he also argued that Roman military training was adaptable to difficult terrain (Tac. *Ann.* 2.14). In the subsequent battle, Germanicus is described as turning the situation to Roman advantage, enclosing the Germans by the same natural barriers with

⁸⁴ Armies could be forced to fight in disadvantageous situations through logistic challenge, in particular, and Roth (1999) suggests that denying resources to the enemy was often done to leave them little choice but to accept pitched battle when offered, despite the tactical risk.

which they had hoped to entrap the Roman army (Tac. *Ann.* 2.20-21). Flat terrain could, in some cases, even represent a tactical risk. According to Polybius (1.39.32), for two years during the First Punic War the Romans fought exclusively in uneven terrain to neutralise the threat of Carthaginian elephants. Elsewhere military treatises addressed some of the potential problems of fighting in less than ideal terrain. Onasander (*The General* 18.1) discussed how to adapt battle-array for operating in hilly terrain, while Vegetius (*Epitome* 1.27) advised that soldiers should be drilled equally on flat and difficult terrain. This was eminently sensible for Roman soldiers in the provinces, who were evidently forced relatively often to fight battles on difficult terrain when tribal armies took up position on the high ground and refused to move (e.g. Tac. *Ann.* 12.31; *Agric.* 29).

3.3.4: A valid approach in antiquity?

Whether it is possible to reconstruct Greek and Roman tactical behaviour and attitude to terrain from the written record alone is far from certain. The only consistent factor in the ancient sources with regards to military terrain is that armies exploited (battlefield) topography when it was suitable to do so, and were wary of the same being done to them. Different forms of conflict and troop type would be used if dictated by terrain, and neither the Greek nor Roman armies were evidently averse to the use of ambushes or surprise attacks. It is probable that, with the exception of *ad hoc* engagements, sites were chosen for consistent reasons. Unfortunately, as that reason is likely to have been that it offered the best chance of victory in that particular situation alone, it is unlikely that the conclusions from any one engagement can reveal very much about another. Any battlefield is likely to have conferred a tactical advantage on at least one of the armies which was decisive in causing the battle to be fought there. There are no grounds for suggesting however, that this would have been in the same terrain each time. Similar tactical occasions, even within the same provincial territories, might have been altered in each occasion by myriad unknowable factors - the size and morale of the army, the wider tactical and strategic situation, and even the weather.

What must also be considered is that almost everything which is known, or presumed, about ancient approaches to military terrain has been derived from the ancient literary record. The source's descriptions of ancient armies manoeuvring around battlefields and the topography of the sites have influenced the way that the use of military terrain has been interpreted in an antique context. Yet in the previous chapter, it was argued that battlefield narratives and topographic descriptions were frequently altered or simplified, which may have led to misunderstandings regarding ancient military attitudes to terrain. The battle accounts may present illustrative uses of terrain which served a narrative purpose, rather than an accurate documentation of how it was used in reality. In Chapter One it was suggested that the literary record may also have been disproportionately focused on pitched battle, ahead of 'lesser' engagements such as skirmishes which were not documented in great detail. Yet these are the engagements which would reveal the reality of military operation in the field, suggesting how constrained ancient armies really were by particular terrain.

The battlefield at Harzhorn, an ambush of one army, probably Roman, by another, likely Germanic, clearly shows that the (probable) Roman army was able to operate successfully in uneven terrain, flanking the high-ground and attacking their ambushers from behind (see Berger *et al.* 2010/13 for a narrative of the battle). Harzhorn may be just one engagement of many in antiquity where armies were able to operate effectively in difficult terrain, contrary to what the literary sources suggest, leading to a disproportionate impression of their unsuitability in such topographies. The focus of the ancient sources on pitched battle, consequently, may have elevated the perceived importance of flat, open, terrain, when in reality it may have meant nothing more, if a battle was to any degree "planned" to be fought in such a context, than a tactical recalculation or sending in lighter-armed troops. If this is the case, it may be that little predictive value for locating ancient battlefields can be extracted from the literary record's documentation of military terrain. These uncertainties make it difficult to apply the kind of terrain analyses which have been used in other contexts of battlefield archaeology.

3.3.5: Inherent military probability, KOCOA, and METT-T

Military terrain theory has been used to establish why battles from the past were fought in the locations that they were. A consequent methodological development has been to use these theories to establish common patterns in the location of sites from an individual conflict or period, and more recently, to apply the methodology backwards to locate lost sites within a landscape. Following the Second World War, the field of “Inherent Military Probability”, the favourite pastime of retired military officers and armchair generals, was popularised by the military historian Alfred Burne. His methodology argued that the decisions made by commanders in the past, and therefore both the location and narrative of individual battles, could be reconstructed by viewing the battle from the commander’s perspective, particularly in choosing where to fight – and was unduly influenced by contemporary military theory. Although nothing particularly new, as seen in the *Schlachtfeldstudien* use of modern experience and military theory to reconstruct battles, particularly by Delbrück (1975), Burne formalised the method and provided a consistent framework within which to operate (Burne 1950, 1952).

The majority of Burne’s case studies came from the Early Medieval period, where he anticipated the positions taken at battlefields with a known location, but he did address the battle between the Roman army and Caratacus. Burne (1952: 1-19) placed the battlefield at Clunbury Ridge (Shropshire), as he concluded that Caratacus’ main objective would have been to neutralise the threat from the Roman army which outnumbered his own by choosing a battlefield with limited access. This approach has been a longstanding and informal practice, employed by ancient historians and archaeologists without necessarily realising it. When Webster (1978: 96-97) located the Boudican battlefield at Mancetter, he chose the site following a reconstruction of what he thought Suetonius Paulinus’ objectives and decisions would have been. Although this was not cited formally as “inherent military probability”, the underlying methodology is identical. Sabin’s (2009) concept of “comparative dynamic modelling” used to reconstruct ancient battles also bears a close resemblance to Burne’s approach.

More recently, the US military theories of METT-T⁸⁵ and its sub-sets, of which KOCOA is the best-known,⁸⁶ have been introduced to battlefield terrain studies and archaeology, also contributing to the interpretation of battlefield assemblages (see Scott & McFeaters 2011: 115-116; Babits 2014). The potential benefit of this tactical analysis to ancient battlefield archaeology is that it does not rely entirely on reconstruction of contemporary strategic, tactical, or cultural attitudes to warfare (although they do have a role in many analyses), but is focused rather on absolute evidence, such as the range of weaponry, and physical terrain. METT-T and KOCOA have primarily been used to establish why battles were fought in particular locations, or the consequences of adopting a particular position, working within the parameters of a pre-identified site. At the Little Bighorn, KOCOA analysis, particularly field-of-fire analysis, allowed the excavators to understand the vulnerability of the position adopted by the US cavalry in the last stage of the battle (Scott & McFeaters 2011: 116).

The application of the methodology to the location of lost battlefields or conflict sites may be limited, certainly without a substantial archaeological corpus verifying the parameters of the factors in the relevant period. However, the methodology has had some success in identifying 'lost' military positions, albeit within a limited area. METT-T and KOCOA have also been used to search for naval battlefields and their associated shipwrecks, from the American Revolutionary War and the 1812 War through to the naval war of the American Civil War (e.g. *Mapping Charleston's Civil War Naval battlefield*)⁸⁷ through and the study of German WWII U-boats in the Atlantic. Areas of potential engagement have been approximated using tidal reconstruction (= avenues of approach), while the range of guns, both from the shore and from ships, has been used to establish potential sinking positions (= observation and fields-of-fire), successfully identifying a number of naval conflicts (Babits *et al.* 2011). A review of the potential for KOCOA in locating 'lost' battlefields from the early medieval to early modern periods has suggested that, with enough contextual knowledge about warfare in a particular period, the methodology can suggest likely battlefield areas within a limited region, particularly when assessed alongside chance artefact finds (McNutt

⁸⁵ "Mission, Enemy, Troops Available, Terrain, Time". "Terrain" often encompasses KOCOA analysis.

⁸⁶ "Key Terrain, Observation and Fields of Fire, Cover and Concealment, Obstacles, Avenues of Approach".

⁸⁷ <http://www.sc.edu/news/newsarticle.php?nid=4460#.VfPPYEiFPIU>, accessed 20/09/2015).

2014). However, it has already been suggested that a sufficient level of objective contextual knowledge about the operation of armies in antiquity in regards to terrain may not, at this time, be available. This does not mean however, that there is no evidence for the location of ancient battlefields in their wider conflict landscapes.

3.4: Ancient battlefields and conflict landscape analysis

Although military terrain studies based on strategic analysis of a campaign may be problematic for antiquity at this time, there are still alternative archaeology-based methods which can be used to identify evidence of conflict in a landscape, and therefore, locate potential study areas for battlefields which are suitably sized for preliminary survey. Battlefields from any period are not independent sites, but exist within a contextual landscape which they were affected by, and in turn impacted. In viewing a battlefield as the focal point of a much wider conflict landscape, a greater range of archaeological material can be used independently to identify potential battlefields or other conflict sites. This approach takes advantage in particular of the fact that the archaeological evidence of conflict in antiquity was not always restricted to the core battlefield, nor to the assemblage directly deposited by fighting. Coulston (2001: 43-44) has previously argued for a focus on conflict landscapes in studying Roman warfare. Rather than a focus on battlefields as the only important archaeological sites, he suggested that sites of skirmish and settlement destruction would be of equal importance for understanding the Roman army at war. The ultimate purpose would be to understand how conflict affected provincial history in a particular period more generally, through regional study, without necessarily examining individual conflict episodes - battles, skirmishes, etc - within the narrative in any particular detail. However, taking a more holistic view of the conflict landscape may marginalise the actual instances of conflict, leaving archaeologists still reliant on generalised impressions of battle and warfare derived from the literary record and weaponry studies. Coulston (2001: 44-45) does not seem particularly convinced that many Roman battlefields survive in the archaeological record, suggesting that only significant defeats, such as Kalkriese and, hypothetically, battles such as Adrianople, can have left any identifiable trace.

A methodology has been developed in C20th conflict studies to address problems of battlefield location in the era of industrialised mechanical warfare. Although the location of a conflict zone is usually well-documented, establishing the actual epicentre of the battle - in reality rather than on a theoretical plan or military despatch - often relies on identifying the physical evidence of battle within the conflict landscape. Modern battle, like its ancient counterpart (and, in all probability, that of the Medieval and Early Modern periods), does not leave an easily defined physical boundary, indicating which areas of the landscape were part of the battlefield - or rather, part of the areas involved in fighting - and which were not. A much wider region than just the direct position of fighting is materially impacted by battle, and the locations of activity conducted both before and after this phase are considered of equal importance to understanding the event entirely (Woodward 2014: 41-47). The physical evidence comes from military and civilian contexts, and can include features created some time after the battle, particularly monuments. The battle-related archaeology will gradually intensify towards the core battlefield area, with an increasing spatial density (if not necessarily even absolute numerical increase), independently identifying the conflict epicentre (Schofield 2005: 17-20). Towards the battlefield core, there is likely to be a shift in the assemblage from material associated with pre- and post-battle activities to direct evidence of fighting, predominantly of primary deposition, and the spatial density will (hypothetically) increase within the central area.

For antiquity, and the Roman period in particular, there are three main archaeological indicators of conflict and/or battle in the wider landscape. One is temporary/marching camps, created to billet soldiers on campaign, with the certain presence of one or more camps close to the battlefield. These camps may form a continuous chain a significant distance from the battlefield, meaning that the general route of advance may be identifiable. Second are concentrations of military, potentially battle-related, artefacts, ranging from secondary depositions in native settlements or, more rarely hoards or votive deposits, to primary deposits on both the battlefield core and in the

surrounding landscape.⁸⁸ Third is the presence of battle-related memorials and battle-casualty graves, which are most likely to be found in closer proximity to the battlefield itself. Hypothetically, all three identifiers should be found in increasing spatial density towards a battlefield, if not in greater absolute quantity, and the presence of all three within a limited conflict area, delineated by the literary record or from route reconstruction, would be strong grounds to suggest the close proximity of a battlefield site. In identifying a shortlist of candidate sites for preliminary study, those with at least two, if not three, of these verifiers would be recommended for initial survey and consideration, as addressed in the following section.

3.5: Campaign route reconstruction

Route reconstruction has been used since the 1940s by archaeologists, and some historians, to establish potential battlefield locations, particularly in the Roman world. The introduction of aerial archaeology, and its impact on the identification of Roman military installations, has proved a particularly significant development. Attempts have been made in the past to identify battlefield locations, particularly in the Roman world, from route reconstruction based on information given by the literary record. However, they have led to little more than confirmation of a general area of operation, due in no small part to inaccurate or uncertain distance figures, uncertainties in calculating a day's march, and the consistent lack of movement direction. Even Caesar's campaigns are difficult to reconstruct into a physical route, despite his frequent citation of distance or days marched. The reliability of Caesarian route reconstruction is undermined by historiographical errors such as the distance of the battlefield of Vosges from the Rhine, which is variously placed between 5 and 50 miles from the river by the different sources (Caes. *Bell. Gall.* 1.53; Plut. *Caes.* 19.11; Orosius 6.7.10; cf. Pelling 1981: 753-758). As such, literary route reconstruction rarely leads to a more accurate location than identifying a battlefield as lying in the same tribal territories as the wider narrative itself often suggests. However, archaeology-based

⁸⁸ Although distinguishing "battle-related" from general military artefacts (and indeed, from civilian use) is not particularly easy. In the case of battle-related artefacts, they will represent a much more valuable diagnostic tool in the case of areas without significant contemporaneous civilian/background use of Roman military material culture (see 4.2.2).

methods have been attempted previously in a range of campaign contexts. A geological team has examined the passes through the Alps to establish which would have been navigable at the time of Hannibal's crossing, and, rather more speculatively, which satisfy the description of the landscape, particularly with regard to a rock-fall and explosion (Mahaney 2004; Mahaney *et al.* 2008a, 2009b; *cf.* Polyb. 3.54.7-56.1; Livy 21.36-37).⁸⁹ Hydrographic evidence has been brought into the debate over the landing position of Claudius' invasions of Britain and consequently the geographic range of the land advance, although the reconstruction is undermined by the lack of certainty regarding the departure position (Grainge 2002).

Issues of supply and logistics have also been incorporated following research calculating the daily needs of the Macedonian (Engels 1978), Roman (Roth 1999) and Cyrean (Lee 2007) armies. Breeze (1986/87) proposed a route reconstruction of Agricola's campaign in Caledonia based on food, fodder and supply needs, as did de Beer (1955) for Hannibal's route over the Alps. A logistics study has been made of the potential Boudican battlefields in England (Kaye 2011). However, these reconstructions are undermined by uncertainties over the actual number of troops on campaign, and how many camp-followers were associated with the army. It is unlikely that citation of the number of legions and/or *auxilia* involved in a campaign will always provide an accurate figure.⁹⁰ While calculations for the logistical requirements of an army of whatever size can be reliably calculated, it is also difficult to establish how reliant an army was on foraging rather than a supply-chain in an individual campaign. What is more tangible however, is the evidence of military operations stemming directly from the archaeological record in the form of military installations.

⁸⁹ Only Livy (21.37) documents a firing event, to clear the route ahead which had been blocked by a recent rockfall. Polybius suggests that multiple previous rockfalls had sheared away the path, making it too narrow for the army to pass, rather than blocking it, and that that the Carthaginian army cleared the debris to create a route past the cliff (Polyb. 3.55.6). Walbank (1957i: 391) suggested that Livy misunderstood Polybius 3.54.7. In later articles, the team subsequently acknowledged that the firing event may not be true, but did not dismiss it as a possibility (Mahaney *et al.* 2008a: 42-44).

⁹⁰ For example, the fact that three legions and their *auxilia* were supposedly involved in the *clades Variana* suggests casualty figures upwards of 15-20,000 men, but Rost and Wilbers-Rost (2010: 119) suggested that a maximum of c.10,000-15,000 would have filled the conflict landscape at Kalkriese. Clearly these legions were not therefore manned to maximum strength, although whether the lower figures represented the operational strength, or they were moving as split forces (see below) through the landscape, with the other divisions attacked elsewhere, is uncertain.

3.5.1: Temporary camps.

Route reconstruction to locate 'lost' battlefields is not a methodology that seems immediately applicable to Greek battlefield archaeology. In the previous chapter, it was observed that the majority of ancient battlefields in Greece known from the historical record can be identified to a general locale by toponyms associated with them in the text. The exact location of the site, relative to the toponymic feature, is less clear, and may be identified by reference to temporary camps in the vicinity (4.5.2), but the overall location does not need to be inferred through the approach route taken. However, route reconstruction could provide more insight into the exact location of the battlefield, in establishing, for example, on which side of a toponymic feature the battle may have taken place. More importantly perhaps is the potential to identify conflict areas, and indeed battlefields, which were not documented by the historical record.

Unfortunately, there is little evidence, literary or archaeological, to suggest that Greek military temporary camps were fortified, and therefore would have left a significant identifiable trace in the landscape. There is limited evidence to suggest that Greek overnight camps were defended by any constructed features, particularly when they were not in the known vicinity of the enemy. Xenophon (*Lac. Pol.* 12) suggested that the Spartan army rarely fortified its camps in the field, relying instead on making the camp area circular and keeping watch, although Anderson (1970: 60) suggested that even the Spartans would build defences when necessary.⁹¹ There is no evidence that the Hellenistic armies fortified their overnight camps (Anderson 1970: 63-66). Xenophon (*Cyrop.* 3.3.26-27) noted that Persian forces by contrast often did fortify their positions, but put this down to the necessity of enclosing and controlling the cavalry's horses, particularly in the case of a night attack. In Bithynia, a Greek guard-force struggled to defend a palisaded camp from attack, eventually breaking down the defences themselves to fight in the open (*Xen. Hell.* 3.2.3), which Tuplin (1993: 150, n.10) suggested might support a Greek unfamiliarity with defending palisaded positions. The fact that the proclivity of the Athenian general Iphicrates for always fortifying

⁹¹ By contrast, Pritchett (1974-1991ii: 141) implies that despite Xenophon's clear omission of a palisade or defences of any kind, that they must have existed anyway because it is inconceivable that they did not, particularly in the circular camp described.

his position in the field was deemed worthy of note by Polyaeus (3.9.17) has been taken to imply that his activity was not representative of common practice (*cf.* Anderson 1970: 59-60; Tuplin 1993: 150, n.10). Anderson (1970: 61-62) suggested that the climate of Greece would make it relatively easy to camp outdoors on campaign, without the need for tents or other shelter, although Polyaeus (2.1.21) noted that the army of Agesilaus in Boeotia cut down local timber around each new camp to make tents.

The physical effort required to construct defences at every overnight stop may not have been considered worth the trouble. Polybius (6.42.2-4) suggested that the Greek reluctance to construct camp defences was down to laziness, although a comment in Xenophon (*Cyrop.* 3.3.26) suggests that it may have been a more pragmatic issue of manpower, as he says that Asiatic armies were able to construct ditches around their camps due to their sheer manpower. The overall impression from the ancient literary record is that Greek temporary camps are likely to have had very little impact on the landscape, and in most cases would not involved the construction of any defences or shelters. The archaeological survival of any traces of these camps is, therefore, unsurprisingly minimal. As such, although the location of temporary camps within the wider Greek conflict landscape might have been able to shed light on both the location of historically-documented battlefields, and perhaps identified engagements which lie outside the extant record, it is unlikely that the features will be identifiable.

Roman temporary camps are quite the opposite and left a significant trace behind in the form of the earthworks constructed as defences even on overnight stops, and which have been recognised as evidence for route reconstruction for almost three centuries. As early as the 1720s, antiquarians in Scotland were using the position of identified Roman military installations to reconstruct the campaign route of Agricola and the location of Mons Graupius (see Maxwell 1990; Sweet 2004: 167-182). However, it was with the introduction of widespread aerial survey in Europe during and following WWII that there was an intensification of identifications, prompting a new wave of route reconstruction studies based on the position of Roman military installations. A number of publications soon emerged documenting previously unknown Roman military installations (Crawford 1949; Nash Williams 1969; Frere & St Joseph 1983; *cf.* Jones 2011: 19-24). The majority of known

temporary camps in the Roman provinces were initially identified through aerial photography. The methodology has proved highly effective in identifying sites in Britain, particularly Scotland, where 82% of currently-known Roman temporary camps have been identified through aerial survey (Jones 2011: 1-3).⁹² Thanks to these surveys, it is now known that a Roman army, probably in the Flavian period, campaigned up the north-western curve of Caledonia as far north as Moray (see e.g. Hanson 1987). Likewise the progress of two battle groups led by Septimius Severus and his son Caracalla in the early C3rd into the same region has been defined by a sequence of camps.

Many of the temporary camps have been tentatively associated with these historically-documented campaigns, with chains of them linked by similarities in size and form, as well as by their geographic clustering. Approximate dates have been established for many camps with test-pit excavation, although in many cases this has served more to verify the identification of the earthwork as a Roman camp than to interrogate its depth or chronology in any depth. The ancient sources provide a historical context for the military installations discovered through aerial photography and excavation, without which their military purpose would be less secure. The spatial distribution of the Flavian camps is far more significant when associated with the campaigns of Agricola, particularly in noting how far north the army advanced over the course of the various seasons (e.g. Maxwell 1981). In battlefield terms, the chain of camps identified in Scotland have been used in attempts to identify the site of Mons Graupius, with the chain along the north-east coast in particular being used to support suggestions of a more northerly battlefield than had previously been imagined, particularly at Bennachie, Aberdeenshire (e.g. St Joseph 1978). However, Hanson (1987: 20) cautioned that in some cases inference on campaign location based on identification on temporary camps can become circular. He noted that the fact that Roman forts were found in Caledonia was taken as proof of Tacitus' veracity regarding the campaigns of Agricola, but many have only been associated with Agricola, rather than general C1st AD activity, because Tacitus said that Agricola was active in the area.

⁹² For the categorisation of temporary camps (marching, practice, siege, construction etc) see R. Jones (2011: 6-12). I follow Jones in not making a distinction between the various categories in terms of route reconstruction, although battlefield camps are dealt with separately in a later section.

In the case of the Severan campaign identification of the camps in particular has further illuminated the operational status of the Roman army on campaign as well, in that a large single force could break up into several smaller forces, taking different routes, before meeting up together at a later stage. Although it is hinted on some occasions in the literary that the Roman army did split into smaller units on certain occasions, often when dealing with a provincial force fighting a guerrilla-style campaign, as Tacfarinas in Africa (Tac. *Ann.* 3.74) and Calcagus in Caledonia (Tac. *Agric.* 25), archaeological confirmation of this would prove an interesting addition to knowledge about the operation of the Roman army in the field. Similar studies have been made of marching camps in Wales. Extant examples cluster along the English borderlands and in the northern territory, although the chronology and identification of the Welsh campaigns with which the camps were associated has not been as successfully established (Davies & Jones 2006: 1-66). Identification of individual campaign routes has been hampered by the lack of historical narrative, and the incompleteness of the archaeological record, with the archaeological trace of many camps having been destroyed by subsequent land-use (Davies & Jones 2006: 7-10).

In other Roman provinces, progress in the identification of temporary camps has been more limited. In some ways, this reflects less application of aerial survey in these areas, an increase of which now is proving important in identifying new camps, particularly from the Eastern European provinces such as in the modern Czech Republic and Slovakia (Jones 2011: 29). The widespread accessibility of satellite imagery, particularly Google Earth, is making it easier than ever before for archaeological researchers to identify Roman military installations remotely, particularly where a range of images taken at different times of the year are available in a backdated archive (see Hanson & Oltean 2013). However, there are still difficulties with identifying temporary camps in some provinces. In some parts of the Empire it has been and remains difficult to obtain private pilot licences, which has in turn hindered the emergence of aerial archaeology. Modern security restrictions and limitations continue in what would be attractive regions to explore: south-east Europe, parts of eastern Turkey, Syria and North Africa. The potential of applying such techniques can be seen in Kennedy and Bewley's (2004) recent programme of flying in Jordan.

The most common methodological problem has been a lack of suitable underlying conditions in the terrain, whether through the level and type of cultivation, subsequent land-use, or other obscuration. For example, attempts to locate camps associated with the course of the progress of Varus' army in the area around Kalkriese, particularly the immediate approach to the site and early phases of attack (as documented by Tacitus (*Ann.* 1.61) and Dio (56.21.1)), have proved ineffective to date. The terrain on and immediately around the battlefield was covered in the Late Medieval period by a layer of agricultural fertiliser, which is not conducive to aerial survey. It has been possible to identify camps elsewhere in the region which were cautiously associated with the campaign, particularly at Porta Westfalica where an installation was detected through aerial photography and suggested to be the easternmost of Varus' camps. Recent excavations have confirmed the camp dates to the early C1st AD, although proving that the camp is associated with Varus and not Germanicus' subsequent campaign in the same region may prove difficult. New methods of remote sensing may prove more able to identify these installations than aerial or satellite survey. Light Detection and Ranging (LIDAR) survey, in particular, is proving adept in identifying temporary camps in landscapes not suited to traditional aerial analysis, including a range of practice camps near Xanten (Böedecker 2014). Although no examples (known to be) directly associated with a documented battle or campaign have been identified with LIDAR thus far, the technology and its impact on identifying Roman temporary camps can only be positive in battlefield studies, although the impact on identifying, as opposed to confirming, camps may remain somewhat limited for some time.

Identifying and dating the position of military installations, particularly Roman, in the archaeological record demonstrates where the army was operating in a given period, and this can often be tied in with the extant historical record to provide a context for the conflict. Not all camps will have survived, meaning that there will be an incomplete picture of the scale of operations, as the area encompassed by the camps may represent only the minimum conflict landscape. Battlefields may have been located beyond the area indicated by the presence of surviving camps. However, one reasonable certainty, particularly in the Roman world, is that a camp was constructed in close spatial association with each battlefield. It may not survive in the archaeological record, but there may be value

nonetheless in establishing that there was a viable location where a camp could have been located in the short-listing of potential battlefields for preliminary survey.

3.5.2: Greek battle(field) camps

Although overnight temporary camps appear not to have been fortified by Greek armies, it is probable that camps occupied on a medium-to-long term basis, in the vicinity of the enemy army and in expectation of battle, were more protected (Anderson 1970: 60). It is the fortified camp that is more likely to be found in the vicinity of a Greek battlefield, as opposed to the undefended examples used on the march. Polybius (6.42.2-4) contrasted the form of Greek fortified camps with contemporary Roman examples, observing in particular that the Greeks preferred either to defend their camp with a wooden palisade alone, without constructing bank and ditch entrenchments as a further line of defence, or to rely on the surrounding terrain to protect the structure. Xenophon (*Hell.* 6.4.14) described a ditch in front of the Spartan camp at Leuctra as there by chance. The Macedonians were an exception, according to Polybius (5.2.5), and did construct ditches around their temporary camps, although he did not discuss the issue in his digression on the difference between Greek and Roman examples (*cf.* Arr. *Anab. Alex.* 3.9.1). In a study of Greek temporary camps, Pritchett (1974-1991ii: 133-146) appeared to verify Polybius' description, observing that wooden palisades are by far the most common form of Greek camp defence mentioned in the literary record, adding that the presence of surrounding ditches is also implied. Pritchett did not refer to the construction of banks as being constructed from the material removed to create the ditches, nor has this been considered in any other discussion of Greek camp fortifications, despite the obvious fact that the creation of ditches would have displaced a significant amount of turf. Roman-period writers saw a danger in relying on a palisade alone, and recommended that camps were defended with a palisade and ditch (Polyb. 18.18.1-18; Livy 33.5.5-12; *cf.* Onas. *The General* 8.1), but there are few comparable references from Classical or Hellenistic Greek writers, and indeed, as mentioned previously, Xenophon (*Hell.* 3.2.3) implies that Greek armies may have found it a hindrance to fight from behind a palisade. There are several instances where natural features or pre-existing

defences such as city walls were used to defend Greek field-camps, as suggested by Xenophon (*Hell.* 6.4.14, 7.5.8). The literary record also documents Greek armies encamping within the enclosures of religious sanctuaries (see 2.7).

Calculating the spatial position and tactical role of the Greek temporary camp in a battlefield situation is somewhat difficult. Very few of the Greek sources provide any evidence for the distance between the camp occupied immediately prior to battle and the area of fighting. At Gaugamela, Arrian (*Anab. Alex.* 3.9.4) states that the camp was 30 *stades* (c.5.5km) from the actual battlefield, although this is not necessarily a typical distance as Arrian suggested that a greater caution than usual was taken in the approach to the battlefield, expecting traps. The fortified camp does not appear to have lain a significant distance from the battlefield. The fact that camps were fortified in the presence of an enemy army suggests that there were more concerns about attack than when armies were in the general field, although this may be associated with the campaign booty which was stored within (e.g. Xen. *Hell.* 3.2.3). Fortified camps may also have been used as a defensive retreat position in the aftermath of a defeat on the battlefield, and potentially a location for conducting post-battle diplomacy. Although van Wees (2004: 191) has argued that Greek armies did not typically rally following the collapse of their battle-line and flight, the literary record does document the battlefield camp being used as a site of refuge and, admittedly relatively infrequently, a position of attempted rallying. At Leuctra, the defeated Spartan army is described by Xenophon (*Hell.* 6.4.14) as retreating back to their camp, where some of the soldiers proposed to return to the battlefield to recover their battle-dead by fighting for them, although the scale of casualties already sustained prevented them from doing so

While Greek temporary camps along the approach to a battlefield were not fortified and are unlikely to be visible archaeologically, the same is not necessarily true of camps in the vicinity of the battlefield. These positions, occupied on a longer-term basis, featured ditch entrenchments, presumably also banks, and palisade defences, which may have left a more significant archaeological trace in the record. It may be possible to model their position from the terrain around a conflict area, if the sources are correct in suggesting that they would use natural defences in the terrain as much as possible, although identifying these features would require consideration of the historic terrain. The camps are unlikely to

lie any significant distance away from the battlefield. The literary record suggests that there may have been a tactical purpose to the camps beyond enclosing an area for soldiers to sleep in. As well as functioning as a storage depot for campaign booty, they provided a refuge for defeated soldiers after battle, although there is little evidence to suggest that they were used as positions from which to rally back to the battlefield.

3.5.3: Roman battle(field) camps

Roman battlefield camps, and temporary/field camps more generally, are far better documented both archaeologically and historically than their Greek counterparts, and are frequently documented in battle narratives. Although suitable locations were evidently assessed by scouts in advance of the main force (e.g. Polyb. 6.41.1-2), battlefield camps have been typically viewed as the last over-night position adopted by the army before coming in to proximity of the enemy and the battlefield. In the conventional literature Roman camps are characterised as over-night or slightly longer semi-fortified dormitories either for units on the move or campaigning in the summer (as *aestiva*) or else as a temporary season length bases such as winter quarters (*hiberna*). In either case up until the 3rd AD when the tactical use of the army started to shift, camps are regarded as akin to adjuncts to the tactical role of the army, one that was designed and meant to pursue its enemy and to fight in the open. The prescribed layout of the camps in order to facilitate the mobilisation of units at short notice into battle array and the relatively insubstantial nature of the defences provided along with the poor protection offered to the gates would seem to support this interpretation of camps as part of the offensive nature of the army.

There are grounds however, for suggesting that camps had a far more tactical function, not least in the preliminaries to battle. In instances of pitched battle, camps would have been constructed knowing that an engagement was, or could be, imminent, although in the case of more surprise attacks, constructions might have to be more *ad hoc* responses. In many pitched battle narratives, both sides are often described as constructing battlefield camps, with the actual fighting taking place somewhere between the two. Goldsworthy

(1996: 143) suggests, largely based on Caesar, that camps would typically lie two Roman miles (c.3km) apart, although distances of up to six Roman miles (c.9km) were not unknown. Distances of two and three Roman miles (c.3-5km) are typical in the written sources overall (e.g. Polyb. 15.6.2; Front. *Strat.* 2.1.4). If camps belonging to two different armies, or indeed just two camps spaced roughly 3-5km apart, could be identified in a potential battlefield area, the landscape lying between them should certainly be prioritised for archaeological survey. It is only at Baecula that a Roman temporary camp has been found in the environs of a verified battlefield, with an equivalent Carthaginian camp on the opposite side of the field. The Carthaginian camp was of a trapezoid rather than conventional playing-card, shape, showing indications of alteration to fit the local topography (Bellón *et al.* 2009: 260). A similar unusual shape can be seen in the Roman battlefield camp at Cynoscephalae, originally identified on the ground by Hammond (1988a: 81-82) at Zoodochos Pigi, and still visible in aerial images (Fig. 6).

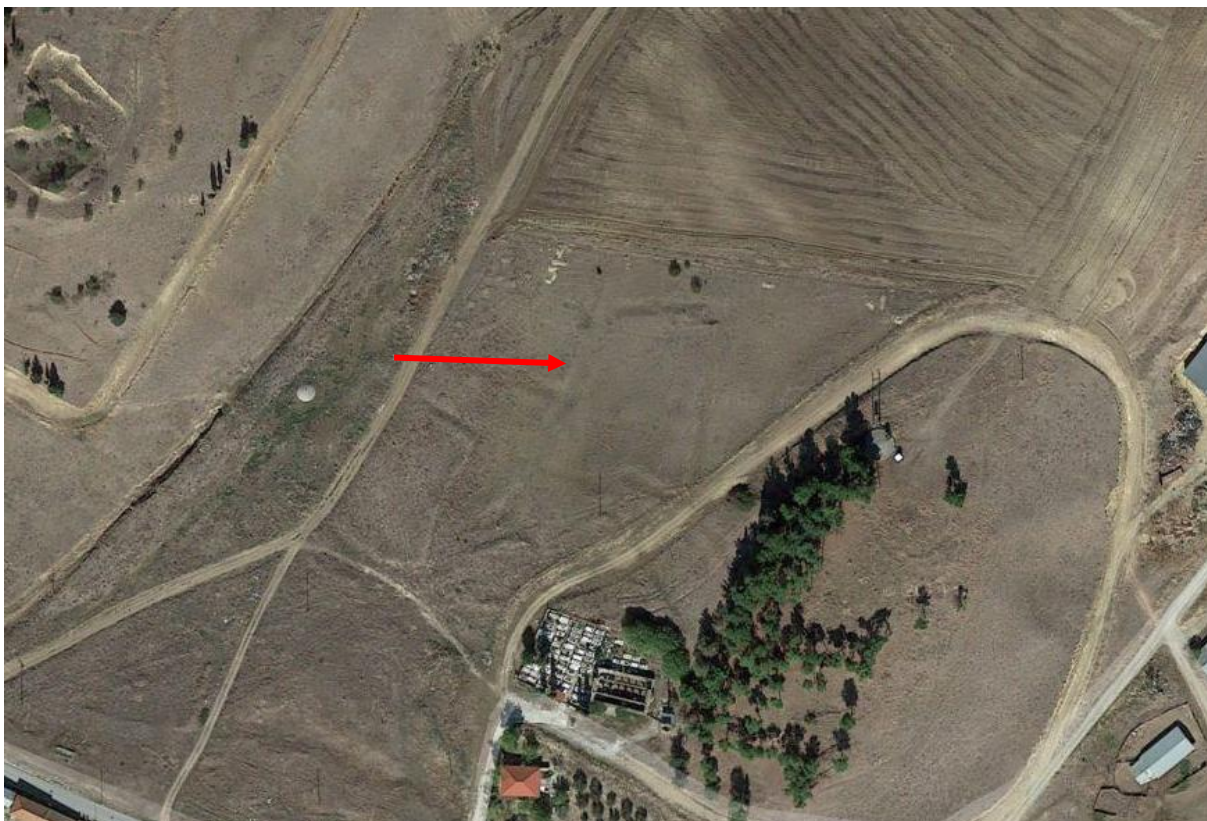


Figure 6: Hammond's Roman camp feature identified on Google Earth (March 2015).

The literary record in many instances suggests that the battlefield camp was far more than a logistical feature, but in fact served a vital tactical function to the Roman army. Battlefields may have been chosen not just for the terrain involved in the actual fighting element of the battle, or indeed the topography of the battlefield periphery, but also for the suitability of the surrounding topography for constructing a large, secure battlefield camp. Vegetius (*Epitome* 1.22) noted the importance of building any camp in a secure position, particularly avoiding high-ground from which it could be attacked. Sites with suitable fighting terrain *and* encampment areas nearby would therefore be more likely to be chosen as battlefields, where possible. The topography did not necessarily have to allow a conventionally-shaped camp, as illustrated by the terrain-based adaptations made at Baecula and Cynoscephalae, and more than one camp may have been required to contain the entire army.

The battlefield camp appears to have functioned as a withdrawal position during a battle, to which the Roman army could fall back to and defend if they began to lose in the open field, particularly by Livy (44.39.2-4) who described the battlefield camp as a secure location for any military emergency, from which on several occasions the army was able to rally and rejoin the battle. Capturing the battlefield camp could become a priority if only to prevent a routed army from rallying (e.g. Caes. *Bell. Gall.* 1.24, 2.24; *Bell. Civ.* 3.96–97; App. *Bell. Civ.* 1.82, 2.81). Livy (5.38) blamed the defeat at the Allia on the failure of the Roman consular tribunes to construct a camp or entrenchments on the battlefield; as there was no fortified position to withdraw to, the aftermath of the battle descended into panic and slaughter. On many occasions, both Roman (Polyb. 1.19.4; Dio 76.6) and non-Roman (Polyb. 1.10.14) soldiers were pursued back to the camp following defeat on the battlefield. In a battle exhortation, Polybius (3.64.6) had Scipio suggest that a Carthaginian cavalry unit fleeing to the refuge of the camp was a sign of their cowardice, although in general this appears to have been a conventional tactical decision. Withdrawing the usually much greater distance to the nearest settlement was portrayed as a last resort (Polyb. 1.34.11). The literary record contains several instances where the Roman army was ambushed by native provincials, with the attack evidently delayed until the entire force had departed from the previous temporary camp (and consequently, it had been deconstructed and would no longer function as a defensive position without reconstruction). A group of the

Eburones ambushed a Roman army departing from their winter-quarters in Gaul, waiting until they had advanced several miles (Caesar says two miles; c.3km) before attacking, allowing the Eburones to encircle the Romans and prevent them from retreating to the winter fortress, although some evidently tried (Caes. *Bell. Gall.* 5.32-35).

The function of the battlefield camp as defensive installation (where necessary) may partially explain why Roman armies under ambush attempted to construct them, most notably perhaps Varus in the Teutoburg who, according to Dio (56.21.2), encamped to prevent constant attack in the open, and chose the most suitable site (as far as was possible) to build the camp (*cf.* Tac. *Ann.* 1.61).⁹³ Tacitus (*Ann.* 2.21) elsewhere described men being drawn from the front ranks to build a battlefield camp during an engagement in Germania, emphasising the importance of the camp, although the distance of the battlefield from the previous' nights camp is not specified.

An issue relevant to battlefield identification is the spatial relationship between the temporary camp and the area of fighting. To a degree, this presupposes a degree of deliberate choice in the location of a battlefield, an issue discussed in the previous section. Where a battle was expected, the spatial relationship may have been as consistent as possible. In situations of unexpected battle, the distance may have been less controllable, but there is evidence that if the space was too great, an *ad hoc* camp would be constructed near to the field by reserve rankers. The ideal distance between the battlefield camp and the area of fighting may have varied depending on the size and deployment of the army. The Roman camp at Baecula lies c.4km south of the battlefield periphery, and is the only case where both the camp and battlefield have been excavated and verified. Vegetius (*Epitome.* 3.11) advised that an army should move only a small distance from their encampment to the battlefield due to the adverse effect of physical exhaustion from marching in fighting performance.⁹⁴ This is consistent with Goldsworthy's (1996: 143) observation that Caesar frequently built his camps no more than two (Roman) miles (c.3km)

⁹³ Vegetius (*Epitome* 1.25) discussed how to build a camp while under threat from the enemy, advising that the entire cavalry and half the infantry would draw up in battle-array to defend the remaining men while they built a camp behind. The existence of advice on how to build a camp in such circumstances suggests that they were not particularly unusual.

⁹⁴ *Cf.* Onasander (*The General* 6.9), although his advice was more concerned with the dangers of engaging with an enemy directly following a march to their position, advising a period of rest beforehand.

from the opposition, presumably therefore an even lesser distance to the battlefield, should it have fallen into the area between the two positions. As well as avoiding strenuous effort prior to battle, the Roman army would have benefitted from close proximity in the aftermath, in transporting the wounded and tired survivors back to the camp, along with any booty or prisoners taken. These logistical functions would require the battlefield camp to be located relatively close to the battlefield, but the exact spatial relationship could vary.

Clearly, Roman battlefield camps had a tactical importance which went beyond being places to billet troops before and after fighting. If Roman battlefield camps did function as pre-planned fall-back positions, as suggested by multiple examples in the written record, then the spatial relationship between the camp and the area of fighting is likely to have been relatively close. Certainly, the 4km between the Roman camp and the battlefield periphery at Baecula may be typically representative. The implications for battlefield location would be profound. If a secure, protected battlefield camp was a tactical necessity of comparable importance to the operational terrain of the battlefield, which had to lie within c.4km of the area of fighting, the number of potential battlefield sites might be greatly reduced. By contrast, surprise ambush attacks by native forces might be deliberately targeted on the Roman army when it passed through terrain without such suitable sites, reducing the possibility that the Romans could barricade themselves into a secure defensive position.

3.6: Battle-related assemblages and features in the wider conflict landscape

Aside from the presence of military installations in the vicinity of the battlefield, the positions of which are likely to have been decided in the pre-battle period, the archaeological record suggests that post-battle activity also left a permanent mark on the landscape around the battlefield. If identifiable, these artefacts and constructed features can serve as independent archaeological indicators of regions of conflict and more specific battlefield locations. In the past, conflict zones from antiquity have been identified through evidence of settlement destruction or abandonment, which can be associated with

historically-documented periods of warfare. The landscape range of Boudica's rebellion has been confirmed by the contemporaneous destruction levels located at Colchester, London, and St Albans (Webster 1978: 89-106). Destruction may not be evident in the record however, as demonstrated by the lack of verified settlement evidence in the territory of the Sequani in Gaul, described by Caesar (*Bell. Gall.* 1.5) as being subject to widespread destruction, yet with very little archaeological evidence (Walser 1998: 44-45). Breeze (2005) noted in the context of Hadrian's Wall that evidence of burning and abandonment should not be automatically associated with destruction, arguing that there are a number of other causes, including intentional and accidental destruction, which may also account for the destruction of a settlement or military installation. This section considers alternative archaeological evidence for conflict and battlefield location, focusing on dispersed assemblages located on the periphery and surrounding landscape of a battlefield, including native settlements, and post-battle constructed features and monuments.

3.6.1: Hoards and battlefield booty

Archaeological evidence of the intensification of conflict within a landscape potentially associated with battle may be indicated by a concentration of Roman military finds or of high-value hoarded material. It is nothing new to observe that hoards are associated with areas of conflict, most notably those of civilian populations attempting to obscure their valuables, although there are other possible ritual motivations in some circumstances (see Reece 1988; Johns 1996). However, other archaeological material deposited as a direct result of battle may also identify conflict landscapes with a battlefield at the epicentre. Suggestions have been made that Roman soldiers occasionally hoarded high-value material in the vicinity of a battlefield before going in to battle, such as the 34 gold coins from Bredgar (Kent), which have been associated with the first battle of the AD43 Roman invasion (Carson 1959).⁹⁵ However, the majority of battle-related archaeology in the landscape is related to the post-battle period, and thus far, to instances of Roman defeat. The battle-related assemblages from the conflict landscapes around Kalkriese and Abritus

⁹⁵ Although Hind (1989: 11) questioned how far in advance soldiers would be aware of imminent battle, particularly in this case where the battle was fought at British, rather than Roman, instigation.

illustrate the movement of battle-deposited material away from a battlefield. In both battles, the Roman army was comprehensively defeated, leaving provincial combatants and civilians as the main looters of the battlefield. This lay contrary to 'normal' circumstances where the Roman army were evidently victorious in the field, and thus would be the first to loot the site. Both sites had concentrations of high-value artefacts on the battlefield periphery, including weapons and coins, which appear to have been deliberate Roman attempts to hide the material when it became clear that a defeat was inevitable (Rost & Wilbers-Rost 2010: 133; Radoslavova *et al.* 2011). A comparable coin hoard was found at the Caesarian-period conflict site at Puigciutat in Spain, and has been cautiously associated with deposition around the time of the battle, although the illegal nature of the original find means that very few details have been publically disclosed (Ble *et al.* 2012).

At Kalkriese, the peripheral deposits were the first accurate indication of the battlefield location, when Mommsen (1885) observed that a large quantity of high-denomination early C1st AD coins was consistently being disturbed by agricultural activity, an inconsistency in an area with no known contemporaneous Roman settlement and/or economic activity. The area was subsequently prospected by Clunn (2005: 2-3) following Mommsen and identified as the battlefield periphery. Subsequently, weaponry and other military artefacts have been recovered from Germanic settlements west of the Oberesch, the site previously thought to mark the furthest limit of the battle-deposited material. Some of the iron artefacts showed evidence of post-battle reprocessing, turning iron weapons into items for everyday native use (Wilbers-Rost 2009a: 129); a supposed lack of Germanic expertise in working with iron was noted by Tacitus (*Germ.* 6).

Rost and Wilbers-Rost (2014) have subsequently suggested that some of the battle-related material in Germanic settlements to the west of the Oberesch may have been deposited by Roman soldiers fleeing in this direction. The material from the *clades Variana* however, appears to have moved much further than just the area directly around the battlefield. The Hildesheim Treasure has been associated with looting of the baggage-train from the battle, despite the site lying c.130km from the battlefield at Kalkriese (Storgaard

2003).⁹⁶ The identification remains active, if unverified. Even further afield, material from Denmark, particularly from both bog-sacrifices and grave goods from Hoby, on the south-west coast of Lolland, has been identified as booty taken from the battlefield (Storgaard 2003: 112). However, excavations of Germanic settlements around the battlefield have until recently not been a priority and are therefore in a relatively early stage. As they advance, the depositional pattern of battle-related material in the conflict landscape is likely to be further illuminated. The material recovered thus far suggests however, that it was not just high-value material that moved through the conflict landscape around the battlefield, but relatively mundane and functional items, including a potentially small quantity of (broken) weaponry.

The immediate conflict landscape around the battlefield at Abritus provides further illustration of the distribution of battle-related material through civilian settlements in the aftermath of a Roman army defeat. The looted assemblage extended in excess of 10km from the (probable) battlefield, and has been interpreted as the result of civilian looting or the presence of soldiers, either fleeing Romans or their victorious enemy (Radoslavova *et al.* 2011). Many of the artefacts were weapons and armour, in some cases in complete, immediately functional condition, providing evidence for their desirability among non-Roman populations and as implied by the literary sources.⁹⁷ Far more weapons and armour were recovered than non-weaponry finds, which were represented by two iron military tent pegs and a range of coins. Although further research is required, if Kalkriese and Abritus are typical, they suggest that whenever the Roman army was defeated in battle, metal artefacts, particularly weaponry, would move through the conflict landscape and be secondarily deposited in settlements beyond the battlefield periphery.

⁹⁶ Although the treasure was found in 1868, when the battle was commonly thought to have happened at Detmold, c.78km from Hildesheim, and the treasure was somewhat used to "verify" this identification (e.g. Lindemann 1967).

⁹⁷ Iron spear butts (9), bronze helmet rivets (23), stabilising bracing (9), and cheek-pieces (3), bronze *lorica squamata* plates (c.100), bronze (5) and iron (2) shield bosses, iron *spatha* blades (3), iron scabbard fragments (2), iron dagger-blade (1), iron spearheads (4), iron ballista bolt (1), and bronze *beneficiarius consularis* insignia (Radoslavova *et al.* 2011: 36-47).

3.6.2: Identifying battle-related material outside a battlefield context

Identifying these finds however, may prove difficult in the majority of Roman provinces. Distinguishing artefacts associated with military use from contemporaneous civilian use is often difficult, particularly in the case of kit fittings, which were used by combatant and non-combatant personnel and can be identical in form to clothing fittings in wider society. Allason-Jones (1988) has previously discussed the overlap between military and civilian material culture in the Roman world, suggesting that in many cases the use-identity of an artefact can only be determined from the context of its find (*cf.* James 2001: 82-84, Bishop 2011: 115). Iron nails found in forts (and possibly also at Kalkriese) have been identified as shield-nails when they come from a military find-context, however they can be almost identical in form to furniture nails from civilian contexts (Allison 2013: 90). Identifying battle-related artefacts independently of a known battlefield or even military context, against a background contamination of near-identical contemporaneous civilian material culture, may prove difficult in many of the Roman provinces. James (2001: 84) has noted that conceptions of Roman 'military' material culture are further complicated by the almost-certain presence of a range of non-combatant personnel and others in the military installations from which the characterisation has been drawn. Identification of military equipment is made more difficult by the lack of uniformity over time, and in the overlap between legionary and auxiliary equipment which is increasingly obvious in the archaeological record (see Haynes 2013: 241-249).⁹⁸

Against the background of a civilian population it may be difficult to distinguish artefacts indirectly deposited as a result of ancient battle, particularly those removed from a battlefield to a civilian settlement. Only in cases where there is an absence of contemporary Roman military culture among civilian populations have battle-related assemblages proved distinctive. Mommsen (1885) identified the Varus battle as the only reasonable explanation for the quantity of high-denomination coins uncovered by agricultural activity in the area around Kalkriese. The lack of Roman settlement in this period, or following the battle, is also why it has subsequently been possible to associate the entire assemblage with military

⁹⁸ The archaeological record suggests that a significant proportion of military equipment was produced on a localised level and conditioned by situational necessity and preference (e.g. Bishop & Coulston 2006: 266-267).

activity- there evidently was no background "contamination" from materially-indistinguishable civilian activity. Archaeological teams working on conflict sites associated with the Punic Wars in Spain have also found pottery to be a useful diagnostic indicator, if not necessarily of battle, then certainly of the presence of the Roman army. Large concentrations of Graeco-Roman pottery, particularly amphorae, have been found at numerous Roman military temporary camps. As similar concentrations are not known from contemporary civilian or trade contexts, the army is viewed as the most likely cause, particularly where artefacts such as projectiles or kit fragments are found in conjunction, providing an archaeologically diagnostic indicator of the location of the army.

From settled provinces such as Britain, such identification will prove more difficult, and it is usually only high-value or votive (particularly riverine) deposits, and some destruction levels, which have been associated with campaigning. Even for campaigns of conquest there can be problems, despite the fact that there should be (hypothetically) little background civilian use of military-type artefacts, the dating of these artefacts is rarely secure enough to say that they did not post-date a historically-documented territorial invasion, and secondly, because it is not impossible that these artefacts had entered local usage prior to military invasion or direct political control. In Britannia, all military-related archaeology has been automatically dated to post-AD43, interpreted exclusively as material introduced to the country following the Claudian invasion. Creighton (2006: 47-68) has argued that, by contrast, the early C1st material at Fishbourne, Gosbecks and Silchester was directly introduced by the Roman military prior to the invasion, suggesting that the army was stationed at these positions pre-AD43 as support for native leaders and elites.

If the material was introduced to Britannia before the invasion, then its presence at any point in the landscape is not necessarily indicative of military presence or action as a result of conflict. Furthermore, a movement of "Roman" material independently of territorial conquest or control is implied by the artefacts recovered from Caledonia, north of the contemporary frontiers. It is likely that the military involvement in the area was of a higher level than is documented by the historical record, particularly in the C2nd, and therefore the army may have been responsible for some of the background archaeology. However, the nature and quantity of the assemblages suggest that frontiers could be

flexible regarding the movement of material culture (e.g. Hunter 2001). As it is the degree to which these artefacts were ever viewed as “Roman” by the people who used them is open to debate.

Despite the problems associating casual and incidental finds with individual conflicts, any battlefield location project would benefit from the study of antiquarian reports, documenting caches of material (particularly weapons), and, in England, the annual Portable Antiquities Scheme reports which may contain evidence of previously unrecognised and unexplained artefact densities in the open field. Nevertheless there is still likely to be an impact on conflict landscape assemblages from incidental finds, as with the archaeological record more widely. Consultation of past reports may help to alleviate some of the problems. The main point is that Roman battle-related archaeology was not always confined to the battlefield, but could spread through a wider conflict landscape, including non-Roman settlements from the battlefield periphery outwards. The distribution of such artefacts may contribute to locating the battlefield lying at the epicentre of the dispersed assemblage.

3.6.3: Battle-related monuments: victory monuments

In modern combat archaeology, monuments and memorials are one of the key indicators of a conflict landscape epicentre, growing increasingly numerous and spatially concentrated closer to the area of most intensive activity (Schofield 2005: 19; Fig. 7). In most modern cases, monuments to battle, whatever their physical form, are spatially associated with the core battlefield area, but they can also be distributed, in lower numbers, in the wider landscape. Their identification, therefore, contributes to identifying the battlefield study area rather than the regional location. Battlefields have been marked by near-contemporary monuments for most of documented history, although their exact form is uncertain as very few survive (Foard & Morris 2012: 18-21). In some cases, they took the form of victory monuments, in others, mortuary monuments dedicated to the battle-dead.

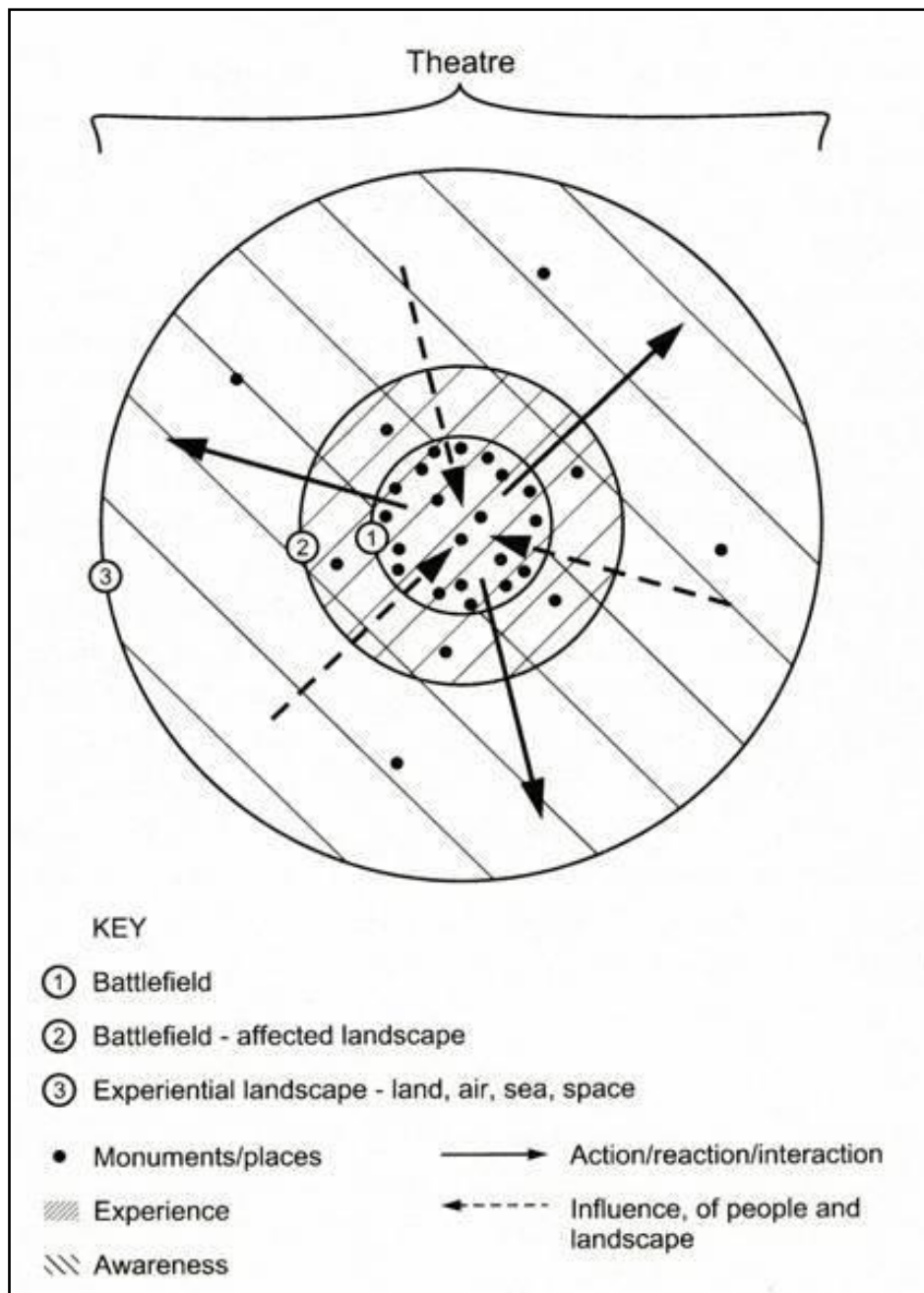


Figure 7: Modern conflict landscapes and theatres of war (from Schofield 2005: 19).

The ancient literary record suggests that battlefield monuments were neither common nor unknown features on ancient battlefields. On Greek battlefields, a quantity of arms and armour were evidently left as a victory trophy. Trophies are an almost ubiquitous feature of Greek post-battle narratives, constructed by the victors from the weaponry of the defeated in the immediate post-battle period (e.g. Thuc. 4.44.3, 4.97.1; Xen. *Hell.* 4.3.21,

7.2.15).⁹⁹ Thucydides' (1.105.6) description of an army caught in the middle of creating a trophy suggests that only part of the force would have engaged in this process. Pausanias (9.40.7) claimed that the Macedonians did not set up battlefield trophies, hence their absence from Hellenistic Greece, although Arrian (*Anab. Alex.* 1.16.4) claims that Alexander did construct a trophy on the Granicus battlefield. These trophies were evidently not intended to serve as permanent monuments, and ancient authors suggest that they would be allowed to fall into disrepair naturally over time (e.g. Plut. *Mor.* 273c-d; Diodorus 13.24.5-6).

More permanent marble or bronze memorials are rarer in the literary record, although references do exist. Pausanias (1.32.4-5) documented a marble victory monument at Marathon, and a separate memorial for Miltiades, the foundation of which may have been discovered in the north of the plain (Vanderpool 1966). However, victory monuments are more commonly associated with Pan-Hellenic religious sanctuaries, particularly Delphi. Pausanias (10.9.5-11.6) recorded a large number of battle victory monuments there, many in the form of human and deity sculptures, the majority of which were paid for from the victory booty. Monuments were also constructed in cities and settlements. Pausanias (3.12.9) described a shrine in Sparta dedicated to Maron and Alpheius, two casualties at Thermopylae, who were evidently recognised for their actions in the battle. Monuments to individuals, however, are less common than those to the battle itself or its collective casualties.

It is difficult to assess whether the construction of monuments was common on battlefields in the Roman world. The Roman army is not widely associated with the construction of battlefield trophies, as described in literary sources such as Cicero (*De Inventione* 2.23.69). However, a number are cited elsewhere. Pausanias (9.40.7) claims that Sulla constructed two trophies at Chaeronea following his victory over Mithridates. Drusus is said to have constructed a mound to serve as a trophy during his Germanic campaigns (Flor. *Epitome* 2.30.23), although it is not clear that it was located on a battlefield. Tacitus (*Ann.* 2.18; 2.22) refers to the construction of victory trophies in Germania, in the context of them

⁹⁹ For a full list of literary references to the dedication of Greek battlefield trophies, see Pritchett 1971-1991ii: 246-275.

being destroyed by the native population. Greek-style trophies are depicted on Roman coins commemorating victories, and sculpturally on Trajan's Column (Fig. 8), which has led Coulston (2001: 25) to suggest that they were not as uncommon in reality as they are in the literary record.



Figure 8: Tropaeum on Trajan's Column. Plate 78, scenes 204-206 (from www.trajanscolumn.org).

Excavators have suggested that a battlefield trophy was constructed by German warriors at Kalkriese in imitation of the Roman style (Achim Rost *pers. comm.* 19th September 2015), and which implies that this was a known convention in the Roman world. There is further evidence of a classical-style trophy having been constructed by Scandinavian mercenaries at Thorsbjerg Bog in Denmark in the early C1st AD (Storgaard 2003), again supporting the idea that these features were not exclusively Greek practice.

In the Roman-period literary sources, conflict monuments appear more commonly in cities or at key points of landscape visibility. A typical example is Augustus' *Tropaeum Augusti* at La Turbie built on a key access route between Italy and Gaul and commemorating victory over the Alpine tribes, all of whom were named on the monument (Pliny *NH.* 3.24) which was. Similarly, Claudius erected his triumphal arches to his conquest of Britain in Rome and Gaul, the latter at Gesoriacum (Boulogne), marking the most common port for travel to and from Britannia (Dio 60.22.1). Part of the inscription on the Rome version survives. Although it does not mention any individual battles, it focuses instead on the submission of eleven 'British' kings (*CIL* VI.40416 = VI.31203 = AE 1948.80 = ILS216; Barrett 1991). However, archaeological evidence has suggested that permanent victory monuments may have been more common both on battlefields and in military installations than is suggested by the written sources. At Adamklissi, a large mausoleum was constructed on a ridge close to the *Tropaeum Traiani*, overlooking an altar which records the name and town of origin of nearly 4000 casualties of war (see Richmond 1967).¹⁰⁰ Both Richmond (1967) and Frere and Lepper (1988: 299-304) suggest that the Adamklissi monuments are situated on a battlefield. Dio (68.8.2) does record Trajan dedicating an altar to his battle-dead in Dacia. The question that remains unanswered is whether Adamklissi, particularly if it does mark a battlefield and battle-dead burial, was the exception in Roman practice that it is in the archaeological record, or simply, the only recognised extant example of a more widespread practice. The fact that two permanent victory monuments were also erected at the battlefield of Chaeronea following Sulla's victory over Mithridates, one of which has been identified archaeologically (Camp *et al.* 1992), suggests it may not have been unusual practice.

Victory altars are also known from the Roman world, found archaeologically in military installations, which may have more informally recorded and commemorated battle on a more local level. An altar dedicated to Victoria was discovered c.400m outside the Roman city at Augsburg in Raetia, dated to AD260. The altar commemorated a victory of a Roman force over a Germanic war-band. No Roman units are named, although the commander, Marcus Simplicinius Genialis, is mentioned. This engagement, whatever its

¹⁰⁰ *Contra* to perceptions that casualty lists were not created in the Roman world; see Clark 2014: 26-29, *cf.* Hope 2001.

nature, was evidently part of the wider “Third Century Crisis” and no doubt linked to the temporary abandonment of the *limes* in Raetia between 259 and c.265, but the actual engagement itself is not documented by the historical record. It is likely to be an error to examine Roman battle commemoration only by looking for monumental or pan-Empire practices, with evidence of local practices of memorialisation becoming increasing in the archaeological record. These more informal practices are particularly useful where they commemorate engagements which are not known from the written sources.

Monuments to victory, and sometimes defeat, could be constructed on battlefields in both the Greek and Roman worlds, although the scale to which this happened is unclear from the ancient literary record alone. The potential problem is that they may not survive with any above-surface trace. Archaeological exploration of a potential conflict area may turn up evidence of the monuments, particularly foundations or inscriptions, and it seems probable that these features would have a close spatial association with a battlefield. However, there is less evidence for smaller-scale memorials and monuments in settlements surrounding the battlefield, contrary to later memorialisation practices where local interests are represented in the conflict landscape. This does not mean that they did not exist, but at the very least, they do not appear to have survived in sufficient quantity to allow any reconstruction of a battlefield area. Instead, monuments appear to have been constructed, in most cases, in places of visibility to the core population. In the Greek world, this took the form of cities and religious sanctuaries, in the Roman, in the major cities of the Empire and key route points such as mountain passes (e.g. the *Tropaeum Augusti*) or ports (Claudius’ triumphal arch at Gesoriacum). It is unlikely, therefore, that there will be any increasing spatial concentration of battle-related monuments approaching the battlefields of antiquity comparable to that of modern sites, and indeed, there may be few or none on the sites themselves. In antiquity, it is more likely that study areas relevant to Greek battlefields, rather than Roman, can be shortlisted by this methodology, not least because their general location is often already known from topographic references in the literary record. It appears from both archaeology and literature that Greek battlefields were more visible through monuments, both the marking of graves and, in the case of non-inter-Greek warfare, with commemorative monuments.

3.6.4: Battle-related mortuary monuments

Much of what is now known about the disposal of the Greek and Roman battle-dead comes not from their physical remains, but rather the processes of memorialisation which followed, both on the battlefields and in settlements and sanctuaries. Although it is difficult to know whether the Greek battle-dead were universally left on (or near) the battlefield, it does in most cases seem probable, although formal inhumation or cremation may not have been universal (see Chapter Five). Monuments appear to have been constructed to mark these burials, although physical traces of only a few have been identified. Some took the form of *tumuli*, as at Marathon, Thermopylae and Plataea, sculpture, as at Chaeronea, or inscribed casualty lists, more commonly known from the communal burials of the war-dead in the Athenian *Kerameikos*. The exact spatial relationship of the place of burial, and consequently of the mortuary monument(s), to the battlefield is unclear due to the lack of artefact excavation on Greek sites, although in practical terms the grave is unlikely to have lain any significant distance from the area of fighting. It may be the case that the above-surface monuments have largely disappeared, making the graves invisible from the surface. At Marathon, antiquarians travelling in the early C19th reported a second *tumulus* lying a short distance from the *Soros*, which was identified as the burial mound of the Plataeans and slaves (e.g. Leake 1841: 101).¹⁰¹ However, the second mound had evidently been lost by the time any cartographic or archaeological work was conducted on the site. For some time, two *tumuli* at Vrana, lying c.2.5km north of the *Soros*, were instead identified as the Plataean and slave burials (e.g. Hammond 1968), although this view has become less popular in recent years (see van der Veer 1982: 301-304). Pritchett (1974-1991iv: 128-129) suggested that the Vrana burials may be those of civilians killed by a Persian scouting party, although van der Veer (1982: 304) notes that the nature of the graves also makes this unlikely.

In the Roman world, it has been suggested that battlefield graves were not marked with any monuments, and that there were no casualty lists or informal memorials to (individual) casualties (see Clark 2014: 26-29). Pliny (*NH* 7.54) claimed that battlefield graves

¹⁰¹ Leake described the *tumulus* as "... a heap of earth and stones, not indeed of any considerable height, but having much the appearance of being artificial."

in the provinces were being disinterred and their remains despoiled, forcing the Roman army to adopt cremation as a form of disposal. It follows that efforts would not be made, if subsequent identification of the grave by hostile local populations was a concern, to mark it with monumentation. That said, an unmarked burial, even a cremation, would still be obvious from the surface in the immediate aftermath of the grave's creation, and declining to mark it with any constructed monuments would not decrease its visibility. Germanicus allegedly raised a *tumulus* over the Varian dead in AD15 when he 'rediscovered' the battlefield, although the monument was destroyed soon afterwards by the Germans (Tac. *Ann.* 1.61-2; 2.7). The idea of marking a battlefield grave with a monument was therefore not entirely unknown in the Roman world, for all that it appears to have been uncommon from the literary record alone. This is further confirmed by the casualty altar at Adamklissi. While there have been arguments that the inscription of soldier's names and place of origin is not a casualty list (e.g. Cooley 2012: 67-71), although very little has been offered by way of a viable alternative explanation. Human remains have not been found associated with Adamklissi, although this may not necessarily undermine the suggestion that the site marks an actual battlefield or battlefield grave. More informal or individual memorials to the dead may also be found in close association with battlefields and conflict landscapes, although very few epitaphs record a death in battle (Reuter 2005). The Caelius stone from Xanten (*CIL* 13.8648) commemorates a casualty of the Varian War (not necessarily the Teutoburg, although this seems most likely) in a more informal context. While one tombstone alone is not enough to argue for a change in the way that Roman battle memorialisation is viewed in contemporary scholarship, it does, along with Adamklissi, suggest that the process was more complex than it appears in the literary record. Whether any archaeological traces survive is less clear.

Even without above-surface monuments, graves may have been discovered on battlefields and can be used to identify potential study areas within a landscape. In the cases where the above-ground monuments have been lost from Greek battlefield graves, the reported discovery of human remains in the past would still prove a useful tool to battlefield identification. Returning to Marathon, in the late C19th numerous agricultural workers reported finding human remains on their land in the north of the plain, an area which had been marshland in antiquity. On investigating the reports, the German surveyor

von Eschenburg found a large quantity of human bone in a vineyard, and suggested that the area was that of the burial of the Persian casualties from the battle, which Pausanias (1.32.5) reported the Athenians had done in a non-specific manner (Pritchett 1965-1992ii: 1-11). Although not necessarily indicative of a formal burial, inasmuch as the historical record also implies that large numbers of Persians died through drowning by fleeing into the marsh (Paus. 1.32.7), the presence of potential battle-casualties on the site would support a hypothesis that a battle has taken place close by. Mass graves have been reported by Roman antiquarians engaged in looking for battlefields, particularly Mons Graupius (see Maxwell 1990). If they could be associated with conflict, mass graves in the Roman period would also strongly indicate a battlefield on or near the burial. While the lack of details and frequent loss of material from antiquarian discoveries of graves make it difficult to trust the reports, records of human remains in the landscape may still prove a useful desktop research tool in identifying potentially battlefield areas.

3.7: Battlefields and historical context

Discovering a battlefield within a landscape does not necessarily provide it with a historical context, particularly those from the Roman provinces. In many ways, the archaeological evidence relies on the ancient literary record, however problematic it is, to provide a historical context for any evidence of conflict in antiquity. The Flavian and Severan camps in Caledonia can be better understood because of the known campaigns of Agricola and Septimius Severus. In some cases, uncertainties in dating have meant it is difficult to distinguish which period of conflict a site is associated with. The Iron Age hill-forts at Hod Hill, Maiden Castle and South Cadbury, all show evidence of conflict in the mid-C1st AD, but it is not possible on the archaeology alone to conclusively link it to the AD43 invasion, the post-AD43 consolidation, or the Boudican Revolt. In some ways this does not necessarily matter, as pointed out in the case of South Cadbury, where it was observed in the context of a massacre that “...we are glimpsing the actions of people undertaken... in the aftermath of internecine conflict. The exact moment within the first century AD when this... occurred is not only unknowable; it is largely irrelevant” (Barrett *et al.* 2000: 116). In the case of

toponymically-identified battlefields, it may be thought of as simpler to associate any evidence of conflict with a historically documented battle associated with a site or area, although the possibility that additional, unattested battles may also have taken place should not necessarily be excluded.

In the Roman provinces however, it may be more difficult to identify the historical context of a battlefield, due to the vagueness of location and evident incompleteness of the documentation regarding conflict. If a battlefield was discovered in Caledonian territory, with a material culture consistent with the late C1st AD, it would be immediately tempting to identify it as Mons Graupius, when in reality, it could be associated with any number of conflicts which took place as part of the Agricolan campaigns. The issue of providing a historical context has been particularly problematic at Harzhorn. The coins from the site date it to between 225 and AD236, during which period the only historically documented campaign is that of Maximinus Thrax (Berger *et al.* 2013; *cf.* Herodian 7.2.1-9; SHA *Duo Max.* 12.1-5). The dating issue is complicated by the presence of a *dolabra* inscribed “*LEG IIII S A*”, identified as the mark of the *Legio IIII Flavia Severiana Alexandriana* (Fig 8; Wiegels *et al.* 2011). This legion was, at the time, stationed in Singidunum (modern Belgrade) in Moesia Superior, over 1000km from the battlefield (Farnum 2005). However, the excavators have not been able to state conclusively that the battle even involved the Roman army, rather than a Germanic force(s) using military kit also used contemporaneously by the Roman army (Meyer & Moosbauer 2013). Although it is clear that the army equipped with Roman-style weaponry won the battle, the historical context of the engagement is completely unknown, beyond a potential association with Maximinus Thrax. This does not however, remove anything from the narrative reconstruction of the battle which has been possible from the artefact distribution, which in turn makes this engagement, without a name, one of the best understood military engagements from antiquity.

Even archaeological battlefields which do synchronise with the known historical record may be subject to debate over their identification. The identification of the battlefield at Kalkriese has been subjected to numerous challenges which associate it instead with the campaigns of Germanicus, and a battle between the Germans and the Roman army under Caecina. Peter Kehne (2000) has been a particularly prominent objector

to the identification, arguing that a later date is far more plausible. In one article he (2003: 93-104) went so far as to accuse a “*Kalkriese-Kartell*”, keen to exploit the upcoming anniversary of the battle, of deliberately hiding finds which would support a later date for the site, including artefacts inscribed with references to the *Legio I* and *Legio V Alaudae*. However, as Wilbers-Rost (2003: 138) rightly observes, objections to the identification of Kalkriese as the Varian site are based largely on numismatic dating, while consideration of the entire assemblage makes it almost certain that the site is associated with the destruction of Varus’ army. Baecula has also been subjected to questioning about its identity, albeit on a much smaller scale, despite the close correlations of the site at Santo Tomé to the description of the battlefield in the historical record. There is no significant doubt that the site dates to the Second Punic War, but objections have been made that it was identified as Baecula for archaeological convenience on insufficient evidence (Canto 2011). However, the evidential basis for this is largely that the site does not fit the historical narrative of the conflict, rather than anything to do with the archaeology, and is unlikely to have any real substantiation. Given that one of the major aims of ancient battlefield archaeology should be to free the discipline from the constraints of a problematic written record, the fact that sites do not exactly fit an interpretation of the sources should not be a major issue. Although a known historical context is certainly a valuable interpretive tool, research at Harzhorn suggests that its absence is not an insurmountable problem. In some cases, the identification of battles and campaigns that are undocumented may be more valuable than locating a historically-attested site such as Mons Graupius.

3.8: Conclusion

Current archaeological research suggests that there may be evidence for ancient battlefield locations within the wider landscape around a site. If identified, this evidence can provide a narrower range of potential study area which can subsequently be subjected to more detailed survey. This may lead to identification both of historically documented sites and, potentially, also to sites whose existence is not noted in the ancient sources. The minimum extent of campaigning in the Roman provinces can be determined from the

presence of temporary installations, although a counterpart is unlikely to exist through the majority of Greek warfare. Both Greek and Roman armies, however, do appear to have constructed battlefield camps within a relatively close distance of the battlefield, no more than c.5km in documented cases, which may provide more accurate landscape identification. Battle in the Roman world has been shown through the conflict landscapes of Kalkriese and Abritus to have had a material impact not just on the battlefield, but in the surrounding area. Influxes of Roman military equipment, or indeed simply metal, into a civilian settlement may be indicative that the site lay within a conflict landscape, or was at least impacted by the presence of one elsewhere. Post-battle constructed features, including mortuary architecture and memorials, are unlikely to survive in the archaeological record to indicate the location of a battle. They were clearly originally extant on many sites, and it may be possible to identify their location through the remains of foundations, historic map and terrain regression, and antiquarian reports. The most important factor is the recognition that, just as in C20th conflict, the physical impact of battle in antiquity was not confined only to the battlefield, but spread into the surrounding area. As such, it may be possible to recognise this impact in the landscape, use it to establish the focal point, and in so doing, locate the battlefield.

Chapter Four: Artefact assemblages and battlefield looting¹⁰²

4.1: Introduction

The archaeology of ancient battle is defined by more than just weapons and armour, in some circumstances representing elements of the entire kit carried by soldiers on and around the battlefield. Establishing what form the archaeology of ancient battle takes in contemporary assemblages is central both to the recognition and identification of new sites, and narrative reinterpretation of individual engagements. Unlike post-blackpowder warfare, there is no single artefact category which defines ancient battlefield assemblages. Rather, they are characterised by a range of metal finds, predominantly small, low-value artefacts which would have been difficult to recover in the aftermath of battle. The survival and spatial distribution of the assemblages is impacted both by depositional processes before, during, and after the fighting, as well as post-battle recovery activity, most typically looting.

In this chapter, and Chapter Five, there is what might be considered a disproportionate focus on post-battle processes, looting and the disposal of the dead, including consideration of the ancient literary evidence. This focus reflects the fact that there has been little serious engagement with the concepts of ancient post-battle processing on a general level, only an acknowledgment that looting and disposal happened and will affect the archaeology in some way. An in-depth consideration is necessary of post-battle activity, inclusive of the written evidence, to understand not just site formation processes on ancient battlefields and the consequent assemblages, but also why they

¹⁰² For the purposes here, the term "looting" is used in a non-perjorative way to describe the recovery of any material from a battlefield, regardless of its original ownership. The material itself is correspondingly referred to as "loot". In modern conflict studies "looting" is typically characterised as a process of economic appropriation for individual, as opposed to state, enrichment (see Azam & Hoeffler 2002; Mac Ginty 2004, 857-859) but can be employed in a battlefield context. In this thesis, the term is used in part for consistency with the difference in terminology used in classical antiquity to refer to battlefield recovery as opposed to other military contexts (see 4.4.2), and to avoid confusion in changing terminology dependent on which army was conducting the activity. It also reflects that many of the artefacts taken on to ancient battlefields were private, rather than institutional, possessions. The term "looting" should not be taken to imply that the process was a non-legitimate process nor that judgement is being passed on the moralistic qualities of the activity in either antiquity or the modern day.

manifest in one particular way over another. Archaeological methodology can then be targeted towards the archaeology which will survive on these sites.

Looting is one of the major site formation factors on battlefields from any period, severely reducing the assemblage which survives in the archaeological record. The process not only reduces the absolute quantity of material, but can also distort the spatial distribution of the assemblage, particularly by reducing the density of artefacts in the core battlefield. The ancient literary record together with archaeological evidence from military installations suggests that the majority of weapons and armour deposited during ancient battle was recovered in the aftermath of fighting by looting. The weapons assemblages recovered from military installations, which in some cases can be substantial, was unlikely to have been incidentally located in these positions, but transported as part of the wider process for the recycling of military kit within the Roman army (see Bishop 1985). Very few finds of military equipment from inside installations are likely to have been incidentally located there, and survive in context only because circumstances prevented their removal, often rapid abandonment or surprise destruction. However, the assemblages from a number of battlefields have indicated that a far wider range of small projectiles, fragments and non-weaponry artefacts were also deposited by battle and, in some cases, by the process of looting itself. It is these artefacts which survive on ancient battlefields in diagnostically significant quantities, and which define the archaeology of later battle. However, it is improbable that these artefacts were deliberately rejected, particularly by subsequent civilian looting, but rather survived because their physical size made them difficult to see.

By studying the looting process in any historical period, particularly extrapolating backwards from identified battlefields, it becomes possible to model both the probable assemblage nature and distribution for comparable sites. This modelling may prove particularly useful for battlefield studies in the Greek and Roman world where recognition of battle-related material within the wider landscape is a research priority. This chapter examines the deposition of artefacts during the process of ancient battle and the subsequent battlefield looting process in detail, and the consequent nature of ancient battlefield archaeology in the modern day. It suggests that the signature archaeology of

ancient battle may not be defined by single artefact categories, as on later battlefields, but rather by the close spatial proximity of a relatively high quantity of different military-related artefact categories.

4.2: The archaeology of ancient battle

The “archaeology of ancient battle” has traditionally been envisioned, certainly in the period of battle, as being almost identical to the “archaeology of ancient military equipment”, but represented by a larger quantity of broken pieces. Along with the bodies of the dead, weaponry and armour are almost exclusively the only artefacts mentioned in the post-battle narratives of the literary sources (e.g. Polyb. 15.14.1-2; Sall. *Bell. Jug.* 101.11 Tac. *Agric.* 37; *Ann.* 2.18; 14.37; Dio 76.7).¹⁰³ The literary sources, particularly Roman period ones, frequently describe the spatial deposition of weaponry, armour and the dead as being extensive across the battlefield. Assemblages are described as extending over several miles (e.g. Plut. *Caes.* 19.11; Tac. *Agric.* 37, *Ann.* 2.18; Sall. *Bell. Jug.* 101.11). In other cases, they are portrayed as large heaps on the battlefield (e.g. Polyb. 15.14.1-2; Caes. *Bell. Gall.* 2.27; Tac. *Ann.* 14.37, *Hist.* 4.20; Plut. *Aemilius* 21.5, *Caes.* 20.5). In ancient battlefield studies, assemblages have commonly been characterised as containing weaponry, typically projectiles and swords, and armour, including shields, body-armour, and greaves. What appears to have been forgotten, in many cases, is that weapons and armour were in reality a composite creation made from multiple different fittings and pieces bound together, which could be fragmented under physical stress.

However, a far wider range of artefacts were actually taken on to the battlefield by individual soldiers, and this is reflected in the surviving assemblages from sites, including coins, brooches and pins,, fittings, buckles and studs. The archaeology of ancient battle also contains cavalry equipment, particularly fittings from bridles and harnesses, also deposited during or after the period of fighting. The Kalkriese and Harzhorn assemblages also contained *dolabra*, part of the entrenchment equipment Vegetius (*Epitome* 2.18, 2.25) said

¹⁰³ See Hanson (1989: 197-203) for literary descriptions of post-conflict Greek battlefields.

the Roman soldier carried on the march, and which could evidently be used on the battlefield (*cf.* Tac. *Hist.* 2.45). Items which were not typically fastened to or carried by soldiers are less common on battlefields, although they occur in great quantity at Kalkriese as a result of the looting of the Roman baggage-train. The Kalkriese assemblage includes a range of what are defined as “camp goods” in later conflict archaeology, typically deposited when an armed force moving between military installations was attacked and destroyed on the march. A comparable assemblage to that at Kalkriese, including cooking-ware, furniture and decorative features along with jewellery was recovered from the Sand Creek Massacre site, but is uncommon in most battlefield contexts (Greene & Scott 2006: 89). Similar assemblages were not recovered from Baecula or Harzhorn and yet the assemblages from both did contain non-weaponry artefacts and potentially personal possessions, as on many later battlefields such as the Little Bighorn (Scott *et al.* 1989). It is clear that the concept of ancient battlefield archaeology as characterised only by weapons and armour is an oversimplification of the reality.

4.2.1: Depositional processes

The assemblages deposited by ancient battle are substantial both in nature and spatial distribution. Although the majority of artefacts are usually located in the core area of the battlefield, where the main fighting was concentrated, some are found in the periphery in areas associated with advance, rout, and retreat. The landscape at Kalkriese is perhaps the most substantial, covering an extended area almost 15km in length, with a concentration at a central site at the Oberesch, and a small extension of material 2km to the north-west which may represent fleeing soldiers (Fig. 9). The assemblage from the Harzhorn battlefield also extends over a large landscape area, with multiple concentrations of material which have been identified as ‘hot spots’ of activity (Fig. 10). At Baecula, the only pitched battlefield explored to date, transect survey revealed high levels of deposition in the core battlefield (Fig. 11).

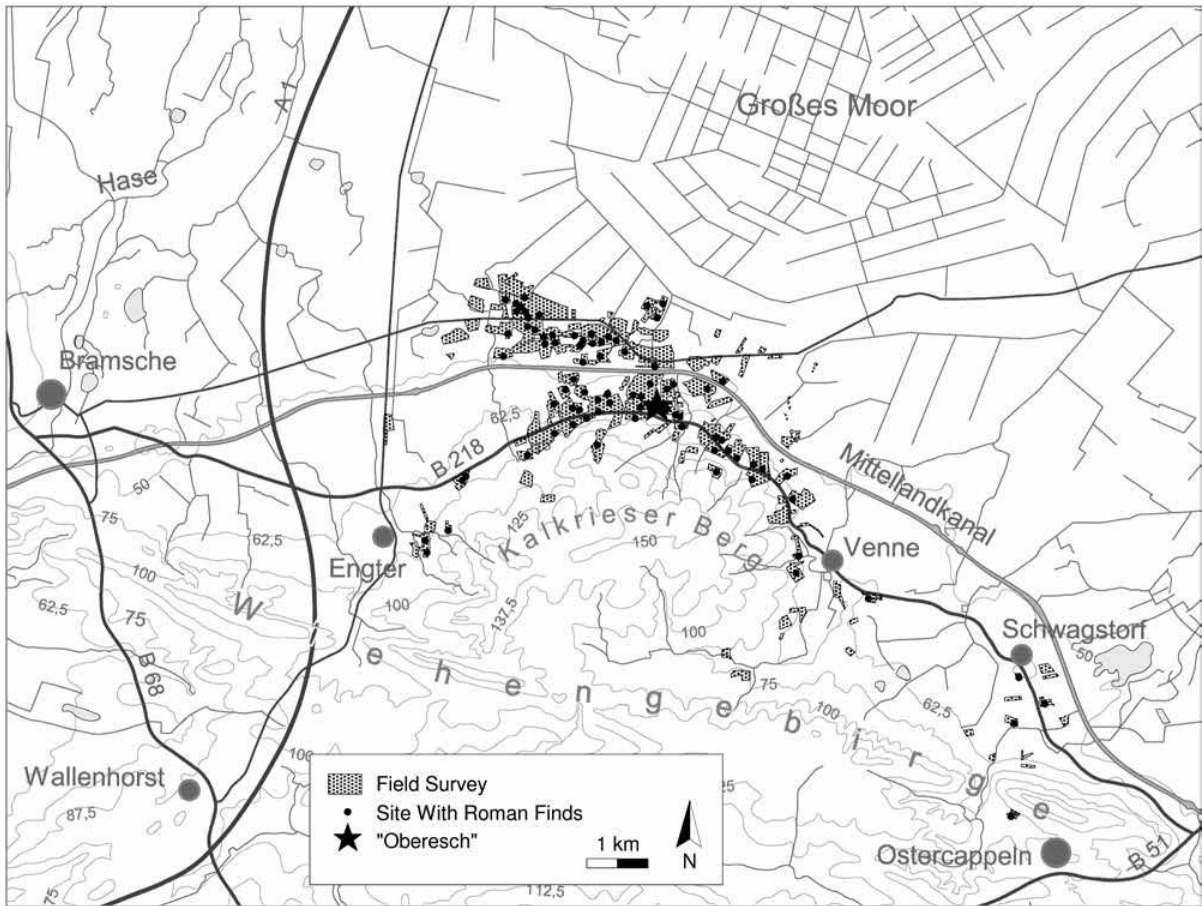


Figure 9: Distribution of Roman finds in the Kalkrieser conflict landscape (from Rost & Wilbers-Rost 2010: 118).

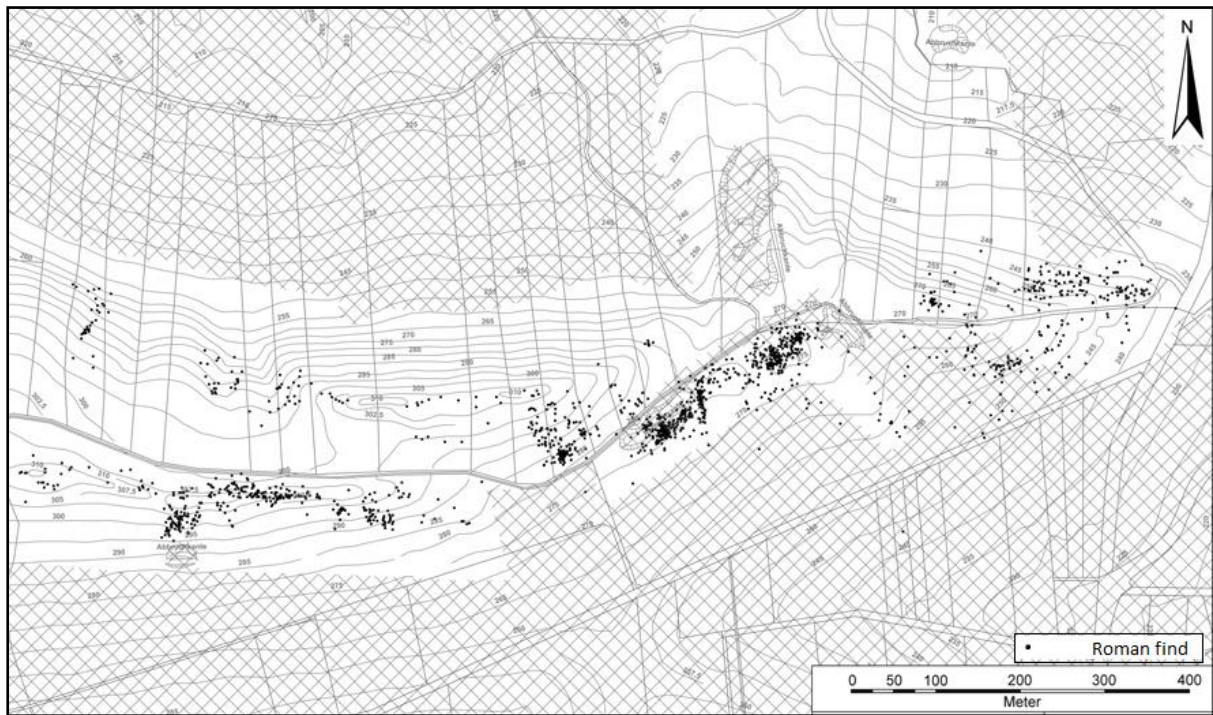


Figure 10: Distribution of Roman finds at Harzhorn (from Berger et al. 2010/13: 321).



Figure 11: Transect survey of the core battlefield at Baecula (from Bellón Ruiz *et al.* 2012).

Battle-period deposition is an unusual archaeological phenomenon. Unlike most sites, the assemblage recovered does not represent an extended period of occupation, during which it may be difficult to identify individual instances beyond general layers of stratification. Rather, the temporal range is usually limited to days, even hours, making most battlefields single-occupation sites. As such, the depositional process has typically been defined as “battle”. Although the rates of battle-period deposition are unlikely to match the quantity of individual munitions used on post-blackpowder sites, particularly sites such as Gettysburg where thousands of rounds of munitions were deposited, the assemblage left on the battlefield is likely to have been substantial by the end of the fighting. Hundreds, if not thousands, of items of weapons and armour would have lain on the surface, and many more projectiles, ranging from large *pila* heads to small lead *glandes* to arrowheads, all of which are common finds on ancient conflict sites (see 1.5).

Unlike most military situations, particularly in the Roman world, accidental loss – of a kind – is accepted as a probable cause of deposition for military artefacts on a battlefield. In other circumstances, it is argued that accidental loss is an improbable cause of deposition, particularly for larger objects such as weapons and armour, because their size made them difficult to lose (Bishop & Coulston 2006: 24-25). However, the situation seems somewhat different in the context of a battlefield, where incidental loss was common, at least according to the literary sources, and it is rather the failure to recover these artefacts later which was the more problematic factor. A large number of projectiles were evidently lost during the battle, and it is likely that only a small proportion actually became embedded in a soldier or enemy shield (Pritchett 1974-1991v: 56-61; Goldsworthy 1996: 183-190). Sim and Ridge (2002: 78-79) calculate that a force of 100 archers and 100 ballista operators could deposit 6000 arrows and 1100 bolts in the space of five minutes, representing a substantial deposition on the battlefield.

It might also be expected that at least one sword and shield (or equivalent weapon and armour) would be deposited for each casualty during the battle. Depending on the army sizes involved, this could be represent hundreds, even thousands of artefacts deposited as a result of casualty loss during the battle. Unlike modern munitions, it may not be possible to distinguish fired from unfired projectiles, as no obvious trace was left by the propulsion process. Unfired munitions and projectiles can represent a number of factors, from being dropped or lost in battle before firing, falling from the bodies of the battle-dead as they were being moved, as at Palo Alto (Haecker & Mauck 2009), and, as documented in numerous instances from the American Civil War, being confiscated from captured soldiers to prevent them from being used in a rallying attack (Lawrence Babits *pers. comm.* January 2015).

Greek and Roman sources also record deliberate discarding of weaponry, often to facilitate escape from the battlefield, although on some occasions as a gesture of surrender (e.g. Thuc. 7.45.2; Polyb. 15.14.2; Caes. *Bell. Civ.* 3.95; Diony. Hali. *Antiq.* 5.47.1; Plut. *Flaminius* 8.4; Dio 56.22.1). Hanson (1989: 181-184) implied that intentional abandonment played a minor role in battlefield deposition, as very few soldiers would deliberately discard weaponry to flee as it would pose more of a tactical risk than carrying it. However, during

the end-stages of the Varian battle, Dio (40.24.3) documented Roman soldiers deliberately discarding their weaponry in a process comparable to the combat disintegration seen in the late stages of the Little Bighorn (Fox 1993: 48-49) and, to a lesser degree, the First Manassas (Reeves 2010). It is probable that deliberate discarding of weaponry did take place on ancient battlefields, regardless of the measured tactical risks, although it may be down to archaeology to establish to what degree this happened. Substantial depositions of *caligae* nails have been identified at Baecula and Harzhorn, evidently themselves the overall consequences of accidental loss during battle. Spatial analysis indicates that they are concentrated in areas of rough terrain and/or intensive manoeuvring on the battlefield, particularly associated with engagement with the enemy. The distribution therefore suggests that the deposition of *caligae* was not even across the battlefield, but rather, concentrated in particular areas of activity or terrain.

The impact of hand-to-hand fighting on the deposition of artefacts on a battlefield has not been dealt with in particular depth by later battlefield archaeology. The introduction of blackpowder guns into battle reduced the period spent in direct contact with the enemy, although battlefield archaeology is increasingly indicating that periods of hand-to-hand skirmishing were common on the periphery of battlefields through to at least the C19th. Identification of these incidents has suggested that the scale of deposition resulting from close-quarter fighting can be substantial, if often inconsistent. At Towton, non-weapon artefacts were found in a number of clusters on the battlefield, evidently associated with hand-to-hand fighting, but at Bosworth, fought only 14 years later, almost no non-weaponry artefacts have been recovered (Foard & Curry 2013: 191-192). At Culloden, a concentration of military kit fittings from the battlefield periphery appears to have been deposited by hand-to-hand engagement, including buttons, buckles, and insignia (Pollard 2009b). In antiquity, far more of the battle would have been fought at close-quarter, with a greater number of combatants and wider range of metal-based equipment in use by individual soldiers. The depositional rate of damaged weapon and armour fragments should, therefore, be both higher and more widely distributed on sites from the Classical world. A number of kit fittings were recovered from the battlefields at Baecula and Harzhorn which showed evidence of deposition due to damage in fighting. A far higher quantity has been recovered from Kalkriese, but in this particular circumstance the majority of the deposition

appears to have been the result of post-battle stripping of the Roman dead, rather than damage in battle (see Rost 2009a, 2009b; Rost & Wilbers-Rost 2010, 2012). Kalkriese raises the possibility that some of the deposition at a battlefield may directly result from the post-battle period, suggesting that the theory of single-cause deposition – fighting – may in some cases be an oversimplification.

4.2.2: Recognising ancient battlefield archaeology

Modern battlefield archaeology has suggested that the discipline requires a site to display “unique depositional patterning” (Scott & McFeaters 2011: 107) in the distribution and nature of the assemblage. Diagnostically-relevant “signature” artefacts have been identified in many later periods, and are in most cases associated with weaponry. Post-blackpowder sites are typically recognised through the presence of musket or pistol balls, canister shot or other munitions, while medieval sites such as Towton and Bosworth can be recognised through the presence of iron arrowheads. This focus is not because other non-weaponry artefact categories are never recovered from sites, as buckles, buttons, insignia, cavalry fittings, and coins are frequently found on battlefields from all periods (Foard & Morris 2012: 23). However, it can be difficult to associate the deposition of these artefacts firmly with battle, as opposed to any other loss mechanism (Foard 2012: 36; *cf.* Pratt 2009). Although the non-weaponry finds may be used as a supplementary source of evidence in reconstructing the battle, particularly phases of hand-to-hand skirmishing, they are not often used in a diagnostic manner to identify the location or physical extent of a battlefield.

By contrast, the large assemblages of munitions and projectiles deposited by more modern conflict are more distinctive and can be identified as resulting from battle even when they are found unexpectedly. At Megiddo in Israel, a team of biblical archaeologists with no experience of conflict archaeology were able to identify an assemblage from a battle of the 1948 Arab-Israeli War, which was discovered when they cleared topsoil above previously excavated Neo-Assyrian remains (Cline & Sutter 2011). At Harzhorn, the excavators have had trouble even distinguishing Roman material from later artefacts in the

assemblage. This has not concerned the weaponry as much as the military kit, particularly *caligae* nails, the form of which in the Roman period is often indistinguishable from examples used through the medieval, and even early modern period (Berger *et al.* 2010/13). The dating of c.950 artefacts remains uncertain because of this overlap in typological form.

However, identifying the assemblage from an ancient battle may be difficult in some contexts, particularly when a site is identified independently from an associated toponym. There is a range of artefact types, predominantly weaponry and armour, which can be firmly associated with the presence of combatants, and often, from find-context, with conflict more specifically. Deposition of weaponry, particularly projectiles, is often evidence of fighting, although Breeze (2011) noted in the case of Burnswark, and therefore potentially other sites, that a projectile assemblage might also be left by military training exercises. Weapons and armour were, as noted by Bishop (2011: 115-117), far less vulnerable to accidental loss than smaller non-weaponry fittings, and it is likely that any substantial assemblage would represent deliberate activity. However, weaponry and armour are only part of ancient (Roman) battlefield assemblages. As argued later in this chapter, it is not just the density and distribution of weaponry which is diagnostically significant to ancient battlefields, but also a range of non-weaponry finds, particularly kit fittings, horse fittings, coins and *caligae* nails (Roman).

Some of these artefact categories can be associated, often predominantly, with the presence of the military in general, although there is little possible distinction between combatant and non-combatant users (see Allison 2013: 65-108). Ancient battle-related assemblages are characterised not just by one artefact type, although certain artefacts such as weapons are more diagnostically significant than pottery. Rather, they are characterised by location of several different types of artefact, some of which may be exclusively located with the military and others not, in a spatially limited context. Identification is particularly assisted if the material stands out from any civilian background, often associated with Roman material in an area of no known Roman settlement, as at Kalkriese. Spanish archaeologists working on identifying sites from the Punic War in northern Spain have recently found that concentrations of Graeco-Roman pottery have proved diagnostically

significant, if not of a battlefield, then of areas of Roman military activity, as these artefacts are not known from contemporaneous civilian settlements.

As the assemblages of ancient battlefields may well be characterised not just by the presence of weaponry but also non-weaponry artefacts, it may prove a challenge to recognise these assemblages in the archaeological record, particularly when they emerge incidentally. There is a question of how such artefacts can be diagnostic of battlefields when the prior identification of the area as a military site is necessary to associate them with the army at all. Marginalising the non-weaponry assemblage is unlikely to be particularly helpful, however, as it has an important role to play in both identifying/verifying and interpreting battlefield sites. However, it may prove difficult first to identify the non-weaponry assemblage as being associated with a battle, prior to any corroborating weaponry and armour finds, and secondly, to be certain that the artefacts were deposited as a direct result of battle, rather than subsequent land-use. At Baecula, Kalkriese, and Harzhorn, the identification of the assemblages did not face the latter problem, as none of the areas appear to have had high levels of subsequent civilian occupation or land-use. This issue may prove a greater problem in other provinces.

The problem with recognising ancient battlefield assemblages is that the surviving archaeology is not characterised or dominated by the same artefact categories as the original battle-period deposition was. In considering the survival of ancient battlefield assemblages, it is not the initial deposition of material which has been protested by historians (e.g. Hanson 1989: 204) as much as the survival of the assemblage. This is typically not in terms of the general survival of any element of the archaeological record, dependent on taphonomic processes and chemical conditions, but rather, predicated on the assumption that the entire battle-deposited assemblage would have been cleared by the victorious army following the battle (e.g. Webster 1993: 100). To some degree, Webster is correct. The quantity of weaponry and armour which survives, if any, is a very minimal proportion of what was originally deposited, with the majority of the assemblage removed at an earlier point, in all probability very soon after the fighting had finished. However, the fact that assemblages survive at Baecula, Kalkriese and Harzhorn, as well as at other ancient conflict sites, demonstrates that looting did not universally clear a battlefield of all artefacts.

The fate of the other artefacts, such as clothing fittings, cavalry equipment or coins, deposited on the battlefield is less clear. They are not discussed by the ancient sources, and as a result, have largely not been recognised by ancient battlefield studies. To understand the survival of ancient battlefield assemblages, it is necessary to attempt to reconstruct the battlefield looting process based on the archaeological remains, to determine what artefacts were recovered in the aftermath of battle, and which were not. It could be argued that Baecula, Kalkriese and Harzhorn are aberrations and are not representative of ancient battlefields as a whole. While this argument has commonly been used to explain Kalkriese, where the circumstances of the battle are admittedly unusual (e.g. Coulston 2001; Sabin 2007; Whitby 2007) it is less clear what unique circumstances affected Baecula and Harzhorn, particularly the latter which was a typical pitched battle. If battlefield looting was so effective at clearing battlefields, then how did these assemblages survive and what other sites might therefore also have done?

4.3: Battlefield looting in historical context

Battlefield looting has a significant impact on the archaeology of battle in any period, and understanding the level of looting/relic hunting, and targeted areas, has made an important contribution to understanding the impact of the process on the spatial distribution of the assemblages. Exploring the historical phenomenon of battlefield looting may provide a contextual framework with which to interpret the processes evident on ancient sites. Battlefield looting can be a multi-staged process, beginning in the immediate aftermath of battle, and sometimes continuing for months, even years, often with local civilian involvement in later phases. In the initial post-battle period, there appears to have been a definite selection bias towards functional weaponry and munitions, either for immediate reuse or general military supply, and even damaged weapons could be recovered to “cannibalise” for parts, or scrap and reprocess (Babits 2011). Few firearms have been recovered from any excavated battlefield, and even fragmented pieces are rare.¹⁰⁴ Munitions and projectiles were evidently also recovered in substantial number in the

¹⁰⁴ Sites with firearm fragments include Culloden (Pollard 2009b); Pea Ridge (Carlson-Drexler *et al.* 2008: 52-54); and the Little Bighorn (Scott *et al.* 1989: 186).

aftermath of battle. Foard and Morris (2012: 63) suggest that iron arrowheads were systematically collected from medieval battlefields, although those which had broken with the points embedded in the topsoil could easily be missed. On blackpowder battlefields, munitions were collected by soldiers and civilians in the aftermath of battle, particularly in the core area of the site. The only weapons, munitions or indeed any metal artefacts, which escaped recovery are likely to have done so because they were physically obscured on the battlefield, often because of their small size. Before the widespread use of metal detectors, archaeological surveyors faced comparable problems identifying munitions during field-walking, although later surveys have indicated that the majority of the assemblage was in the topsoil (Foard & Morris 2012: 67).

In both immediate and subsequent battlefield looting there was evidently a spatial concentration on the core battlefield, the area of most intensive fighting. This has created a distributional effect visible on multiple sites in the United States which has been informally named the “donut effect”.¹⁰⁵ The “donut effect” is created by the concentration of post-battle looting in areas of high artefact deposition (i.e. heavy battle-period activity) at the expense of more peripheral areas of lower deposition (Legg *et al.* 2005: 70). The higher recovery rate of artefacts from the areas of highest original deposition artificially reduces the proportional discrepancy between the central and peripheral battlefield areas. In extreme circumstances, this could lead to the almost complete stripping of artefacts from the central area of a battlefield. Although areas of high deposition may still have numerically superior artefact quantities overall in comparison to the periphery, the scatter represents a far lower proportion of the original assemblage.

As such, it would be expected that material, whatever the proportion, will survive across the entire extent of a battlefield – in central areas, because the original density was of sufficient quantity that elements survive despite intensive looting, on the periphery because, despite lower overall depositional rates, less of the assemblage was removed by looting. Spatial interpretation of any battlefield assemblage must always consider the phenomenon of post-battle looting and its impact on the extant archaeology, particularly in

¹⁰⁵ Thanks to Professor Lawrence Babits and Dr. Steven Smith for this term.

associating particular areas of the site with particular intensity levels in fighting. Although weapons and munitions were of the most prominent interest to looters, it is evident that almost anything would have been taken as being of value to someone, however low its innate value. The extant assemblages are unlikely to represent rejected material, but rather, the portion of the assemblage which was not visible during post-battle activity.

4.3.1: The purpose of battlefield looting

Political theory recognises four pre-requisites to looting in any violent context: the availability of (potential) looters, the availability of 'lootable' material, the absence of restraint, and a permissible socio-cultural environment (Mac Ginty 2004: 861-866).¹⁰⁶ In most cases, the ultimate purpose of looting is one of economic acquisition, whether on an institutional or individual basis, although there are isolated instances of both looting as a process of resource denial, and for destructive purposes (see Azam & Hoeffler 2002; Ball 2015: 311-313). The artefacts which are of greatest priority to recover, and were therefore taken earlier in the process, were those of the highest value, either in terms of their immediate functional use, or longer-term economic value. Modern social studies of looting make a distinction between legitimate and sanctioned military recovery of battle-deposited material (mainly weapons), and the predatory economic appropriation of material resources, including personal belongings, for individual, rather than institutional, benefit (Mac Ginty 2004: 857-59).

However, contemporary ideas on the legitimacy (or otherwise) of looting are based on modern military logistics, where soldiers are equipped centrally from state resources. A distinction can therefore be drawn between weaponry and military kit, which can in most cases be legally recovered or looted, and personal possessions, the taking of which is

¹⁰⁶ "Lootable" can refer either to the value of the material and the consequent worth of taking it, or to its physical availability, particularly regarding onward transportation. Large, bulky items in particular will only be lootable, whatever their innate value, when the possibility exists of moving them; in cases where it is not possible, more valuable elements may instead represent the lootable worth, and be stripped from the larger object.

prohibited by the majority of modern armies.¹⁰⁷ This distinction is perhaps not as clear-cut in antiquity, since soldiers paid for and owned their own military equipment, making it their own personal property and not that of the institutional army or state. Xenophon (*Hell.* 4.2.5) describes Hellenistic commanders offering financial incentives to units for supplying themselves with proper equipment, and elsewhere documents soldiers individually selling their arms when necessary (Xen. *Anab.* 7.2.3). The process of equipping soldiers in the Roman Republic is unclear, with regards to whether there was state supply of equipment or merely general supervision of the suitability of privately-sourced kit, although in either case soldiers eventually paid for their own equipment. In the permanent standing army of the Empire kit was often supplied or facilitated by the army and paid for in a series of regular deductions from wages (Bishop & Coulston 2006: 262-263), although this does not necessarily imply uniformity. The distinction between institutional and personal resources in antiquity is therefore less clear than in modern concepts of military looting.

Many of the artefacts looted from battlefields of any period may have gone back into military circulation, particularly munitions in later conflicts, easing the economic and logistical pressure of constant resupply. Civilians frequently became involved in efforts to loot battlefields, particularly during long-running conflicts which had impacted their own economic prospects. A memoir written after Sherman's campaign in Georgia in 1864 documents local populations combing the battlefields searching for munitions which they could sell back to the army in exchange for food and clothing (Gay 1894: 249-252). The *New York Evening Post* (July 10th 1863) had previously reported mass looting from the battlefield at Gettysburg by entrepreneurial civilians, who were alleged to be collecting thousands of dollars worth of munitions every day. It was not just munitions that were of interest, however, as observed at Waterloo by one combatant who noted that a sale of clothing stripped from the battle-dead was organised soon after the battle by Lord Edward Somerset (Mercer 1870: 62). The process of battlefield looting at Waterloo was extensive and varied, affecting far more artefact categories than weapons, armour, and military kit (see O'Keefe 2014: 57-67). During WWI, many soldiers on the Western Front informally supplemented their kit from artefacts taken directly from casualties, also functioning as a form of resource

¹⁰⁷ See Harrison (2008) for legal issues and looting of personal possessions during conflict.

supplementation (Fraser & Brown 2007). Similar practices occurred in WWII, although there was found to be a blurred boundary between resource supplementation and theft in the battles fought in the Pacific theatre. One case study of American soldiers suggested that personal belongings were left alone on the European and African battlefields, but frequently stolen in the Oriental campaigns, and taken as souvenirs of war, particularly those belonging to Japanese casualties, despite official prohibition (Harrison 2008). Subsequent battlefield looting activity, often after the end of a conflict, still focused on the recovery of munitions, but the market shifted from the contemporary institutional military to individual antiquarians. Battlefields could be combed for souvenirs to sell to interested tourists, particularly at famous sites such as Waterloo (Semmel 2000; O'Keefe 2014: 57-67) and Gettysburg (Reardon & Vossler 2013: 753), and later, the battlefields of the Western Front (Lloyd 1998: 23). Relic hunting has become such a problem since the widespread availability of metal detectors that it is likely that almost all known battlefields in the United States have already been stripped of most of their assemblages (Legg & Smith 2009: 227).

4.4: Battlefield looting in antiquity

Battlefield looting as a process is almost universally referred to in the historical record relating to conflict, but is not necessarily a well-understood process. Although there have been common characteristics, particularly the retrieval of weaponry and booty for either state resource supplementation or individual economic acquisition (see below), the actual functioning of the process has varied between periods. In some cases the ancient literary record does make reference to the looting of a battlefield, although often very few details are given. There is no real doubt that the process took place almost universally on ancient battlefield sites in the aftermath of conflict, as it has done on counterparts throughout later history. However, the mechanics of battlefield looting in antiquity are little understood, and most of what is known has been extrapolated from literary descriptions of military looting in other contexts, particularly the sacking of captured cities. Without understanding the process however, both how it was carried out and why, it is difficult to reconstruct the impact of looting on ancient battlefield assemblages, and thereby, the

original processes of deposition. The question of whether there was a selection bias towards weaponry and armour in antiquity, either in the literary sources or the archaeological record, has not been previously considered, largely as it has been commonly assumed that these were the only artefacts to have been present on battlefields during the looting process.

4.4.1: Textual descriptions of campaign looting

Campaign looting is presented by the literature as a common, even integral, part of warfare in both the Greek and Roman worlds, which was not subject to any wider societal constraints. In fact, it was portrayed by several ancient authors as widely accepted even by defeated populations (e.g. Xen. *Cyrop.* 7.4.73; Livy 31.30.2-4).¹⁰⁸ The sources fail to give any detailed descriptions of the process, with the only extended looting narrative coming from Polybius' (10.16.10-10.17.5) description of the sack of Carthago Nova in 209BC. In Polybius' account a group of soldiers, numbering no more than half the available force, would collect the booty while the others remained on guard. The booty would be centrally gathered and then evenly distributed, in kind or in sales profit, between the soldiers who had collected it and those who had guarded them. In other instances of looting, particularly of a baggage-train, the sources simply record that it happened, without any extended descriptions of the process. Limits might be imposed on individual occasions for strategic or disciplinary reasons, but instances are rare in the literary record.¹⁰⁹

Much of this activity was state-sanctioned and, to a degree, facilitated the operation of ancient armies in the field. Greek *poleis*, it has been argued, may even have gone to war in order to acquire booty for the purpose of state enrichment, some of which was dedicated

¹⁰⁸ See Mac Ginty (2004: 861-866) for the necessity of a permissive socio-cultural environment in longer-term military looting.

¹⁰⁹ Roth (1999: 148-150) states that non-sanctioned looting ('pillaging') would have been strongly punished by the Roman military authorities, who could impose harsh sentences on soldiers found guilty of doing so (*cf.* Front. *Strat.* 4.1.6). Although, Mac Ginty (2004) observed that while consistent severe punishment can prevent soldiers from non-sanctioned looting, such a regime can rarely be implemented during conflict. Onasander (*The General* 10.2.7) advised that members of foraging parties who engaged in unauthorised looting should be punished, although the concern seems mainly strategic – that they were vulnerable to surprise attack while preoccupied with raiding.

as votive offerings (Pritchett 1974-1991i: 74-75; Gabrielsen 2007). Looting provided a way to supply armies on campaign, whilst also serving to weaken enemy provisioning (Roth 1999: 150-153), and Xenophon (*Hell.* 2.1.1-5) suggested that under-provisioned soldiers might undertake unsanctioned attacks to loot supplies. In the Roman literary record, booty was used to motivate soldiers to enlist and fight (Caes. *Bell. Civ.* 2.39; *Bell. Gall.* 7.28; Dio 64.9.4; Polyb. 10.17.1; Sall. *Bell. Jug.* 54.1; 68.3; 84.4; Tac. *Hist.* 3.26)¹¹⁰ and to win their loyalty (Plut. *Caes.* 23.4). Looting was a tactical tool used to force enemy armies to fight or withdraw (App. *Hann.* 3.17; Polyb. 3.111.3-5; 5.51.10-11; cf. Roth 1999: 306-309) and subdue hostile populations (Sall. *Bell. Jug.* 54.5).

In neither the Greek nor Roman worlds were armies legally obliged to offer a share of campaign booty to soldiers. Nevertheless, they often appear to have done so. Pritchett (1974-1991v: 375-389) argued that Greek soldiers received a share of booty distributed in the field, either in goods or as a share of the collective sales profit, but that anything which was not given in the field became the property of the state (Pritchett 1971-1991i: 85-92). Pritchett (1974-1991iii: 56) also suggested that soldiers could be sent out on foray missions after which they were allowed to keep whatever they found. Roman campaign booty could be distributed as a share of material goods (Caes. *Bell. Gall.* 7.89; Polyb. 9.27.11; Dio 11.11) or their collective sales profit (Polyb. 10.16.4-6). On several occasions soldiers were allowed to keep whatever they personally recovered (Polyb. 9.27.11; Dio 11.11). Failure to distribute fairly a share of the booty to soldiers was criticised by some ancient authors (App. *Bell. Ib.* 60; Cato *De Sumptu Suo* 51.169; Sall. *Bell. Jug.* 41.7), while a general prohibition of looting, for whatever reason, could lead to immediate military discontent (Dio 41.26.1; 74.8.1; Plut. *Luc.* 14.2).

However, over-eager or premature looting collection could be a tactical problem, leaving armies vulnerable to surprise or rallied attacks, observed in both Roman (Caes. *Bell. Gall.* 7.45; Onas. *The General* 10.2.7) and non-Roman (Tac. *Ann.* 1.65; 14.33) contexts. Polybius (10.16.2-8) advised that no more than half the army should be allowed to actively

¹¹⁰ Although Brunt (1971: 411-412) and Roth (1999: 301-305) argue that under the Empire booty alone was not sufficient financial grounds for recruitment, being too dependent on the goodwill of commanders and/or emperors, and generally of insufficient worth to motivate men to enlist for length service periods.

collect booty at any one time. Several ancient authors record thefts from the common store of booty, particularly by those involved in its collection (e.g. Dio 27.90; Polyb. 10.17.1-2; Plut. *Marius* 21), and Lee (2007: 123-124) suggested that valuable artefacts small enough to carry in a soldier's pack would frequently have been stolen from the battlefield. The literary record suggests that any surplus campaign loot which could not be immediately transported or sold would be burned to avoid it falling into enemy control (Livy 23.46.6; Plut. *Marius* 22.1; Polyb. 5.8.8-9; Tac. *Ann.* 14.32).¹¹¹

4.4.2: Textual descriptions of battlefield looting

The ancient literary record almost exclusively refers to looting as a process focused on the collection of weapons and armour from the battlefield. Aside from noting that in many cases a period of battlefield looting, most of the ancient literary sources provide very little detail on the actual process, including who was involved, how long the process took, what artefacts were taken, or whether the assemblage was collected centrally or not. Although these details might not be seen as particularly relevant to military historians, who need only to know that the process took place, understanding the process is vital to interpreting the site formation processes. It is not clear exactly who carried out the collection, as in post-battle activity the sources predominantly refer to the army as a collective entity, not the activity of individuals.

In most cases it is implied that soldiers were the main gatherers of battlefield material, as they were following the capture of cities or enemy baggage (Veget. *Epitome* 3.25; cf. Polyb. 10.16.1-10.17.5). Vegetius (*Epitome* 3.25) claims that soldiers referred to their looting activity as to "collect the field" ("*colligat campum*"), although this colloquial phase is otherwise unknown from the literary record (Milner 1993: 114 n.7). The literary record does not always exclude other parties being involved, although they may have been involved in secondary phases of looting following initial military activity. Xenophon (*Hell.*

¹¹¹ Florus (*Epitome* 2.24.9) appears to confirm that the usual practice of destroying surplus booty was to burn it; however, in the instance he is describing, it is instead thrown into a river, evidently for symbolic reasons, suggesting that the method of destruction was less important than its occurrence.

3.4.22) implies that in the Hellenistic period there were civilian camp-followers who positioned themselves around battlefields in the hope of plundering them, but it is not clear whether they were officially sanctioned or not. Roth (1999: 91-115) suggested that in the Roman world there were also camp-followers involved in battlefield looting, although their main role was as middle-men merchants who bought booty from Roman soldiers. Polybius (18.27.3-5) implies that Roman soldiers were more interested in looting the enemy camp or baggage than the battlefield in his description of the aftermath of Cynoscephalae (197BC), in which the majority of soldiers went to loot the Greek camp; they only looted the battlefield when the camp was declared off-limits.

Greek sources particularly refer to the stripping of the dead rather than just the collection of dropped weaponry and armour (e.g. Thuc. 4.44.3), and it is not clear whether there was a process of central collection. There is more obvious reference to centralised collection in the Roman sources, with Livy's (27.2.9) description of the central gathering of booty from the battlefield of Numistro while the dead were being collected for cremation, and Plutarch's (*Marius* 27.4) of the collection of artefacts from the battlefield at Vercellae in the battlefield camp of the co-commander Lutatius Catulus.¹¹² There are no obvious Roman references to the piling of loot on the battlefield, which at the Allia Livy (5.39.1) seems to identify as a Gallic practice, although this does not necessarily mean it was restricted to them, or was not practiced by Roman troops. None of the sources mention the deliberate abandonment of material on the battlefield by the Romans, although there are literary references to the re-emergence of damaged weaponry and armour at Chaeronea (Plut. *Sulla* 21.4) and Philippi (Verg. *Georg.* 1.493-97). Tacitus (*Ann.* 1.61) described the Varus battlefield when Germanicus returned six years later. The field was still littered with broken Roman weaponry and armour, although this description may reflect literary motive rather than reality (see Pagán 1999).

The literary terminology of the Greek and Roman texts suggests that at some point a distinction was drawn between booty taken on the battlefield and in wider campaigning, although Pritchett (1974-1991v: 72) cautions that the vocabulary used to describe military

¹¹² See Polybius (6.31.13) on the central collection and storage of campaign booty within the camp (cf. Polyb. 14.10.2).

looting may have become generalised over time, and appears to draw a finer distinction than was intended. In Greek texts, while a range of words are used to describe campaign booty, *skyla* (σκυλα) is most frequently used to describe battlefield booty, typically arms and armour and the religious dedication of the artefacts (Pritchett 1974-1991i: 54-58).¹¹³ Later Greek-language authors, particularly Plutarch, used a variety of terms to refer to battlefield booty, but *skyla* was never used in a generalised looting context, and in all extant texts refers exclusively to captured arms and armour (Pritchett 1974-1991v: 132-148).

There is no obvious literary reference to artefacts which were not weaponry or armour, either to their presence on the field or subsequent recovery/abandonment. However, Xenophon (*Hell.* 3.2.5) suggests that the dead may also have been stripped of their clothing in addition to their armour, noting on one occasion that the bodies of casualties were naked, on another in moderate surprise that they had been left with tunics on (*Hell.* 2.4.19), although in most sources the clothing of the dead is not mentioned. Roman authors made a comparable distinction between booty recovered on campaign, *praeda* and *manubiae*,¹¹⁴ and material recovered from the battlefield, *spolia*. While the former referred to anything recovered in campaign looting,¹¹⁵ *spolia* is only used to describe weaponry and armour recovered from a battlefield (Bradford Churchill 1999: 87). Most sources suggest (surplus) *spolia* was destroyed, although Shatzman (1972) argued that it could form part of the general's *manubiae* if required (cf. Plut. *Marius* 22.1, Marius taking the *spolia* from Aquae Sextiae for use in his triumph).

Non-weaponry military ephemera collected from a battlefield, such as standards and signalling trumpets, are mentioned in addition to *spolia* and not as part of it (App. *Bell. Civ.* 1.41; Sall. *Bell. Jug.* 74.3; Plut. *Marius* 27.4). No other non-weaponry artefacts are mentioned in the context of Roman battlefields. As with *skyla*, it seem probable that at some point a distinction was drawn between *praeda* and *spolia* both in terms of recovery

¹¹³ See Pritchett 1974-1991v: 73-152 for discussion of literary terms.

¹¹⁴ Aulus Gellius (*Noctes Atticae* 13.25) elaborated that *praeda* was booty directly taken from the enemy, while *manubiae* was the monetary proceeds from sold booty, which could be given to the state and used, in part, to dedicate monuments to the victory and other votives. Cicero (*De Lege Agraria* 1.12) made a similar distinction, as cited by Gellius. Gellius has been rejected by Shatzman (1972), suggesting that *manubiae* represented the general's individual share of the campaign booty rather than a distinction between goods and money.

¹¹⁵ E.g. Slaves and livestock (Caes. *Bell. Gall.* 6.3; Livy 31.30; Plut. *Lucullus* 14.1); precious metal and coins (Plut. *Lucullus* 17.6-7; Tac. *Hist.* 3.33); grain (Caes. *Bell. Civ.* 3.42); household items (Plut. *Pompey* 4.1).

context and range of material; however, the impact that this had on the manifestation of battlefield looting in reality is unclear. In neither the Greek nor Roman sources can the artefact categories mentioned serve as evidence of a selection bias towards weaponry and armour, as such, due to the complete failure to mention other types of material. Prioritisation of recovery however, is certainly implied. The recovery process is certainly portrayed as one of complete field-stripping which left no visible weaponry or armour behind – leading to the question, which will be dealt with later in the chapter, of what happened to the non-visible assemblage?

4.4.3: Ritual dedication of battlefield booty

The literary descriptions and non-battlefield archaeological sites, particularly military installations and religious sanctuaries, certainly suggest that there was a selection bias directed towards the recovery of weapons and armour. The purpose of battlefield looting is not openly discussed in the extant literary sources, nor consequently is where the artefacts recovered were later distributed. But descriptions of the use of material in a ritual context do exist. Some weaponry and armour was left on Greek battlefields in the form of a trophy (see 3.6.3), although the quantity is unspecific in most cases. Iconographic depictions of Greek battlefield trophies typically suggest only a small amount was used in this way, often only a single panoply, although there is no way of knowing whether this represents an artistic convention rather than reality. The remaining weaponry and armour appears to have been removed, although none of the Greek sources explicitly state that the battlefield was cleared of all battle-related material. Arms and armour were dedicated as votives in Pan-Hellenic religious sanctuaries, where they would evidently be openly and publically displayed (Jackson 1991: 233; Pritchett 1974-1991iii: 240-276).¹¹⁶ Captured equipment might also be sent to *polis* sanctuaries. Demosthenes is said to have sent 300 panoplies to the sanctuaries of Athens as a dedication (Thuc. 3.114.1), as apparently did Alexander (Arrian *Anab. Alex.* 1.16). If Plutarch (*Mor.* 224 B, F) is to be believed, the Spartans were an exception in choosing not to dedicate captured arms and armour, to which Pritchett (1974-

¹¹⁶ Thuc. 3.57.1; 4.134.1.

1991iii: 292-293) could not find any literary contradiction. Thucydides suggests that battlefield booty was counted towards the annual income of a *polis* (Thuc. 2.13.4), but there is no reference in Greek sources to systematic reuse or reprocessing of battlefield equipment.

There is no mention of deliberate later attempts to recover material from battlefields, for monetary gain or as souvenirs of battle, although the on-going religious activity at the Persian War battlefields in particular (*cf.* Chaniotis 1991) may have increased rates of later (incidental) artefact recovery. Pritchett (1974-1991v: 132) noted numerous literary accounts of battlefield booty being displayed in the victorious *polis*, a process which appears to have become more common from the later 5th BC onwards (Jackson 1991: 243-247). Earlier, weaponry and armour was also dedicated at religious sanctuaries, some of which was inscribed with the name of a battle, although it is difficult to interpret the context of many of these dedications, the origins of the artefact, or the nature of the dedication (Pritchett 1974-1991iii: 249-271).

Although references in Roman sources to the use of battlefield booty to construct trophies are not entirely unknown (see 3.6.3), the literary record implies a greater use of this material for use elsewhere. In terms of public display, the most common method appears to have been a military triumph. Weaponry and armour appear to have been used in triumphs from the 3rd BC onwards (Beard 2007: 147-153), although it may not be possible to distinguish between booty from a battlefield and that taken more widely on campaign. Even where Plutarch (*Marcellus* 21.2) cites the triumphal display of barbarian weaponry and blood-stained spoils, it is hard to say that these artefacts originated on a battlefield. Elsewhere Plutarch (*Marius* 22.1) implies that only a small amount of weaponry and armour from a battlefield would be fit for display in a triumph.

Bishop and Coulston (2006: 30-33) suggest that depositions of Roman military equipment, particularly in water, may represent votive offerings by individual soldiers, rather than the incidental loss to which they were often previously associated. In the light of the severe penalties for losing equipment, they suggest that soldiers may have secured a replacement before dedicating their offerings. The replacements may have come from

battlefield booty. Jørgensen (2001) suggested that a similar practice of votive dedication of battlefield spoils can be seen in the weaponry-sacrifices in Danish bogs in the first five centuries AD, from nearby battles and/or troops returning from service in the Roman Empire. He noted a lack of non-weaponry finds among the assemblages, such as tools, harness/wagon fittings or household items, leading to the suggestion that weaponry was prioritised by the recovery and/or transportation process (Jørgensen 2001: 15). Kaul (2003: 37) argued that in some cases the bog-depositions may not have been made for ritual reasons but with the intention of later recovering the material. Denial of the material to the enemy in the short-term, with the intention of recovering it at a later time, may also have been a factor in bog depositions.

4.4.4: Recycling battlefield booty

A more pragmatic element to battlefield looting is suggested by the concept of economic and resource supplementation, recovering the material because it was needed rather than wanted for display. In this context, weapons and armour can be highlighted as particular priorities for recovery. In good condition, they represented immediately functional, and therefore valuable, artefacts which could be immediately returned into military supply, and perhaps more importantly, had to be denied as a resource to the enemy. As broken pieces, they still represented a valuable source of metal which could be mended or recycled, reducing demand for new sources of raw material. However, the ancient sources do not mention recovered equipment being reused or reprocessed, aside from one limited occasion when battle-recovered weaponry was used to equip a new legion during the Second Punic War (Livy 23.14.4).¹¹⁷ Caesar (*Bell. Gall.* 2.27) and Livy (Livy 38.22.6) do suggest, however, that projectiles could be reused during the same engagement. By contrast, *pila* are characterised as being impossible to re-use on the battlefield due to bending on impact (Caes. *Bell. Gall.* 1.25; cf. Bishop & Coulston 2006: 50-52). That said Polybius (6.25.6-9) noted that Greek and later Roman spears had an iron butt-spike which

¹¹⁷ By contrast, non-Roman armies did make use of Roman equipment taken if they had won the battle, particularly Hannibal (Polyb. 3.87.3; 3.114.1), Hamilcar (Polyb. 1.78.13) and later, Arminius (Tac. *Ann.* 2.25) and Tacfarinas (Tac. *Ann.* 2.52).

meant that they could be reused on the battlefield even if the point had broken or bent (*cf.* Bishop & Coulston 2006: 53-54). Tacitus (*Ann.* 2.5) believed that the Roman army was vulnerable to the loss of weapons in battle, which had a negative impact on the morale of soldiers. In most sources, battlefield loot, just as campaign surplus, is described as being destroyed rather than distributed to soldiers or sold (*App. Bell. Pun.* 20.133; *Livy* 1.37.5; 23.46.5; *Plut. Marius* 22.1; *Florus Epitome* 2.24.9).¹¹⁸

Despite the absence of references in the ancient literary record, it is clear that damaged weapons and armour were recovered and re-used, certainly in the Roman world, and in all probability, also the Greek. The reuse and recycling of metal military equipment is well-known in the Roman period (Bishop & Coulston 2006: 27-30), but less attested in a Greek context. Hanson (1989: 204) has suggested that Greek soldiers could be rearmed from battlefield booty or its sales profits, although he offers no archaeological (or literary) basis for this assertion, and it is unclear whether reprocessing of damaged kit was included in his statement. By contrast, Pritchett (1974-1991v: 132-133) argued that Greek battlefield-recovered material was never resold or redistributed, particularly by the Spartans, although concedes that it is likely that this custom was ignored when necessary.

Bishop and Coulston (2006: 27-30) have commented on the Roman proclivity for recovering and recycling as much metal as possible from military sites, battlefields included. Bishop (1985) argues that the metal resources of the Roman army represented a “universal stock”, constantly recycled, into which genuinely new pieces were only infrequently introduced. The economic pressure which could result from loss of even a modest quantity of weaponry and armour in battle could be significant, with substantial effort required to both source new metal and manufacture replacement pieces (Sim & Ridge 2002: 113-115). As such, the recovery of any weaponry, armour and other metal artefacts from a battlefield would have been a priority in the looting period, to enable their replacement back into the military supply chain. Bishop and Coulston (2006: 25) suggested that the reports of the destruction of weapons and armour on the battlefield in the ancient sources had been misunderstood, and applied only to the burning of the wooden elements following the

¹¹⁸ Appian (*Bell. Pun.* 20.133) describes the Roman custom that arms, siege-engines and ships should be burnt as victory votives to Mars and Minerva, whatever happened to the remaining spoils.

removal of any metal pieces. Hoards of (battle) damaged weaponry and armour have been recovered from a number of military sites including Colchester (Hawkes & Hull 1947), Corbridge (Allason-Jones & Bishop 1988) and Grad near Šmihel (Slovenia; Horvat 2002), suggesting that damaged metal was put back into economic circulation from at least the Late Republic. Some elements of the Corbridge Hoard show evidence of “cannibalisation”, particularly the armour, where functional or undamaged elements of irreparable kit had been taken to patch up other pieces before the remainder was recast (Bishop 2014: 82).

Comparably, pieces of Roman military equipment showing evidence of previous repair have been recovered from the C1st AD conflict context at South Cadbury, demonstrating the use of this kit in the army (Barrett *et al.* 2000: 116). Recent excavations at the Second Punic War Roman campaign camp at La Palma, Spain, have suggested that a wide range of lead artefacts, including domestic artefacts such as fishing weights, were collected by the Roman army during the conflict for processing into lead projectiles (Guillén 2009; Ble *et al.* 2011). The camp is interpreted as a logistical hub for the collection of booty and the resupply of the campaigning army, with a certain level of manufacturing and reprocessing within the camp.¹¹⁹ However, whether it would have been considered worthwhile to collect the smallest projectiles is a different issue. While there was clearly a policy of metal recycling in the Roman army, the chance of easily recovering many of the projectiles fired, particularly *glandes*, would have been low in the aftermath of battle. Projectiles may to some degree have been seen as 'one-use' weapons, particularly *glandes* and arrowheads, taking only a short time to replace (Sim & Ridge 2002: 113-115).

The archaeological evidence from Roman military installations suggests, therefore, that weaponry and armour was not always abandoned or destroyed on the battlefield, but could be removed by the centralised military to go back into circulation. This would imply a selection bias targeted towards the most valuable material at the expense of smaller, less valuable, non-weapon artefacts. With the exception of the lead pieces at La Palma camp, there is less evidence for non-weaponry artefacts being removed in great quantity to military installations. It is possible that this absence reflects a more comprehensive recycling

¹¹⁹ Cf. Polybius (14.10.2) for transfer of booty from smaller camps to semi-permanent campaign installations.

system in the case of smaller artefacts. There may also be issues in associating non-weaponry artefacts removed from a battlefield, in a military context or outside of one, as associated with battle, as there is no real distinction between buckles, brooches, or *caligae* nails which were used in the context of battle and those which were not. Although it seems probable that there was a prioritisation of weapons and armour which equates largely to a selection bias, the degree to which this occurred may appear disproportionate due to the problems recognising the recovery of other artefacts. There is nothing however, in the recognition of a recycling process for military equipment and other metals, which suggests that the looting process would necessarily have recovered every artefact from a battlefield.

4.4.5: Abandonment of metal resources

None of the ancient literary sources openly document the deliberate abandoning of material on the battlefield. It is argued by Bishop & Coulston (2006: 27-30) that the economic and logistical cost of metals in antiquity made it unlikely that metal was ever voluntarily abandoned from any military context. However, a number of hoards from military installations suggest that it was recognised that in some circumstances the abandonment of metal artefacts was in reality unavoidable, and therefore, a small amount of loss was acceptable. When doing so however, there were evidently conventions to limit the economic impact of the abandonment, both by leaving the least useful artefacts behind, and doing as much as possible to prevent non-Roman recovery of the material at a later date. The archaeological record suggests that the Roman army attempted to deny local populations access to military metal supplies, even those they were not using themselves. This is particularly evident in the deep burial of abandoned hoards during the site closure of Roman military installations (Bishop 2011: 22). Large quantities of metal were only left behind on Roman military sites in limited circumstances, and may have been associated with military situations where transportation of such bulk was logistically disadvantageous. Manning (1972: 46) suggested that the Inchtuthil and Newstead hoards were left because transporting such large quantities of metal through the hostile landscape of Caledonia was

inadvisable in both circumstances.¹²⁰ Taking into account the physical burden which ancient soldiers already had with their military kit,¹²¹ it may be improbable that surplus weaponry and armour could have been transported any real distance, even in the hope of profiting from it later.¹²² In such situations, although the loss of the metal resources may have been an economic disadvantage, it was outweighed by the risk of trying to transport it to another military installation.

Native populations may have been able to recover these metal resources and eventually use them to advantage, but this process, if it happened at all, would not necessarily have posed an immediate threat, particularly if non-functional material was left. In later military contexts, material did on certain occasions have to be deliberately abandoned, particularly following an ambush attack. During the American-Indian Wars, abandoned material at conflict sites, including settlements, was frequently destroyed by the US army to prevent it from being of any immediate re-supply use, often simply being smashed to pieces and discarded (Greene & Scott 2006: 92).

The assemblages of artefacts which were left behind, whether on a battlefield or in a military installation, typically appear to have represented less (immediately) functional or valuable pieces, suggesting that when abandonment of some metal was unavoidable, non-weaponry artefacts, damaged kit, and base metals were more likely to be abandoned. Attempts to keep the most valuable artefacts and metals from enemy capture can be seen at a number of conflict sites. Deliberate attempts were made to hoard valuable weapon fittings and high-denomination coin hoards at Puigciutat, Kalkriese and Abritus (Ble *et al.* 2012; Rost & Wilbers-Rost 2010: 133; Radoslavova *et al.* 2011), although whether this reflects official Roman military policy or simply individual decisions made on the spot is uncertain. Whether this was a more widespread practice in reality, but in many cases failed,

¹²⁰ See multiple instances in Tacitus (*Ann.* 1.51; 1.65; 2.5) of the vulnerability of baggage-trains in Germany

¹²¹ Average physical burdens for ancient armies: Greek hoplite c.9kg light-armed, 14-21kg full panoply (Krentz 2013: 135); Cyrean/Hellenistic c.31kg (Lee 2007: 126); Macedonian c.36kg (Engels 1978: 17); Roman c.43kg (Junkelmann 1986).

¹²² Rost & Wilbers-Rost (2014a: 503-504) suggest that the Germans at Kalkriese may have used captured Roman baggage-wagons to transport their booty from a battle; this would be an effective solution.

is unattested archaeologically, as the evidence would be, unfortunately, an absence of hoarded material.¹²³

There is no archaeological evidence as yet for the cremation of excess *spolia* on Roman battlefields, as documented by the historical record, although magnetometry survey may reveal some evidence for this in the future (see Chapter Six). The general Roman attitude to the abandonment of metal in a military context appears to have accepted it when there was no viable alternative, and if the amount of immediate functional weaponry and armour could be kept to a minimum. Any material which was left behind would be obscured, often by burial, where possible. This therefore does not exclude the possibility that metal artefacts were left on a battlefield by the looting process, if the abandoned assemblage was of minimal functional value and, perhaps more importantly, if it was obscured enough to escape the Roman looting process, then it may have been considered acceptably hidden from the enemy.

4.5: Ancient battlefield assemblages: the archaeological evidence

It is from the actual assemblages recovered from battlefields that the processes of deposition and recovery can be best understood. In some ways, the assemblages broadly support elements of the looting process as described in the ancient literary record or extrapolated from the archaeological evidence in Roman military installations, religious sanctuaries, and settlements. However, they also reflect elements of the looting process which are consistent with those from later periods, suggesting that evidence can also be extrapolated from consideration of looting as a more general process. Complete weapons and armour are almost entirely absent from the archaeology of ancient battle, as on most battlefields from any period, although evidently projectiles were no easier to completely remove from the site than they were in later warfare. The remaining assemblages are

¹²³ See also Carson (1959) for the Bredgar hoard as a deliberate burial of high-denomination coins by a Roman officer during the invasion of Britain (AD43), although Hind (1989: 11) questions whether the logistics of the campaign would have led any soldier to feel at such particular and imminent risk. To this could be added the question of how the officer concerned would have hoped to recover it, given the level of contemporary geographic and topographic understanding of Britannia.

substantial, both in absolute terms and in comparison to those recovered from some modern sites. At least 2000 artefacts have been identified at each Roman battlefield, comparing favourably with assemblages from more modern sites, albeit that the latter may often have been heavily collected. The analysis of Edgehill, for example, was based on an assemblage of 1125 battle-related artefacts, predominantly lead bullets (Foard 2012: 154-155).

Other surveys have resulted in far fewer artefacts, particularly when limited to a small area of a battlefield or on a site which has been previously collected, as demonstrated at Culloden where field seasons in 2000 and 2005 resulted in just 228 bullets being recovered (Pollard 2009b: 144-149). There are several mitigating factors for the Culloden excavation, including extensive previous looting, some immediately prior to the excavations, and limitation of the excavation to National Trust for Scotland property, when it was known that adjacent areas of the site produced a far more prolific assemblage. However, the relatively limited assemblage from this area could still be used to reconstruct a narrative of the battle in this area (Pollard 2009b), suggesting that there is no methodological reason why the assemblages from ancient battlefields are not of sufficient quantity to facilitate a similar application.

4.5.1: Greek battlefield assemblages

The verifiable archaeological evidence from Greek battlefields is, to date, unfortunately sparse. There have been no major excavations on Greek battlefields, aside from the mass graves at Marathon, Thermopylae and Chaeronea, and few of the incidental finds reported from these sites can be verified with regards to their provenance. Early antiquarian visitors to Marathon reported finding bronze and iron arrowheads in the *Soros* (Gell 1827: 59; Leake 1841: 100), while one traveller also reported finding inscribed lead shot in the area around the *tumulus* (Dodwell 1819ii: 159-160). Collections of arrowheads allegedly recovered from Marathon and Thermopylae are now on display in the British

Museum, the Pitt Rivers Museum, the Karlsruhe collections (all Marathon) and the National Archaeological Museum of Athens (Thermopylae; Fig. 12).



Figure 12: Arrowheads from Thermopylae in the National Museum of Archaeology, Athens (author's own).

Larger weapons and armour pieces have been allegedly recovered from Greek battlefields. The Royal Ontario Museum contains two bronze Corinthian-type helmets 'found' by the politician George Nugent in the 1830s: one from Marathon plain (including a skull said to have been found in the helmet; ROM no.926.19.3) and the other, this time without skull, at Thermopylae (ROM no.926.19.4). If no excavation has been formally conducted on open battlefields in the Greek world, the assemblage from the urban battle at Olynthos in 348BC suggests that a substantial projectile assemblage was left by Greek battle (Lee 2001), which can be used to reconstruct the narrative of individual battles.

4.5.2: Roman battlefield assemblages

The Kalkriese assemblage contains in excess of 5000 individual finds, c.90% from the Oberesch, where 4000 metal artefacts and 400 coins were found (Harnecker & Franzius 2008; Harnecker & Mylo 2011). An additional 400 artefacts and 1000 coins have been recovered from the wider battlefield landscape (Wilbers-Rost 2009a: 129). Much of the assemblage from the Oberesch was preserved below a German rampart constructed immediately prior to the battle, parts of which appear to have collapsed soon after, preserving below a partially-looted assemblage. Some 3073 artefacts have been recovered to date from Harzhorn, of which 338 are definitely non-Roman, c.950 are undated but c.1740 are Roman (Berger *et al.* 2010/13: 334). From Baecula, 6123 metal artefacts have been identified to date (Cárdenas Anguita *et al.* 2011: 921), although it has not been possible to identify what larger artefacts all the fragments belonged to (Bellón Ruiz *et al.* 2012: 359). A complete catalogue has not yet been published. On all three battlefields the assemblage is densest at the central part of the site, gradually decreasing towards the peripheral areas of the battlefield, with periodic concentrations of artefacts identified as representational of intensive activity.

With the exception of projectiles, there is little evidence for weaponry at any of the battlefields. Only projectiles have been recovered from Baecula and Harzhorn, while even at Kalkriese there is only one small sword tip fragment (Harnecker & Franzius 2008: 5). This is contrast to the 20 scabbard fitting-pieces (38 individual fragments) which were probably deposited by stripping the metal edging during the looting process (Rost & Wilbers-Rost 2012). At Baecula and Harzhorn armour is equally rare, with none as yet reported from the former and only 28 fragments of body-worn equipment¹²⁴ found at the latter and including iron chain mail and bronze armour fragments and a small number of iron belt fittings and buckles (Berger *et al.* 2010/13: 334-337). A greater quantity of armour fragments has been recovered from the Kalkriese Oberesch. Eighty individual shield pieces have been identified, from 363 individual fragments (Harnecker & Franzius 2008: 5-8, fn. 36-91; 2011: 24-5, fn. 2078-2101), as well as fragments of mail (9) and *lorica* (36). Excavation also identified a

¹²⁴ “Am Körper getragene Ausrüstung”; inclusive of kit fittings, buckles, brooches etc.

number of helmet fragments (23), predominantly joint fittings but also a substantial iron cheek-piece (Harnecker & Franzius 2008: 8-10, fn. 92-117) and a cavalry mask iron base (Harnecker & Mylo 2011: 25-6, fn. 2102-2138). None of the armour fittings were complete, and many had been broken into several fragments.

The only weaponry found in any quantity on the battlefield sites is projectile, mainly small shorter-range examples. At Baecula, arrowheads, 27 lead *glandes* (none inscribed) and over 200 *plumbatae* were recovered from the lower, peripheral slopes of the battlefield, most likely marking the Roman assault route. Towards the Carthaginian position a smaller quantity of large, shorter-range projectiles were recovered, including 10 *pila*-heads at the summit (Atwood 2014: 34-35). At Harzhorn the assemblage is equally dominated by longer-range projectiles. To date 214 have been identified, including arrowheads, *pila*-heads and lead *glandes*, although the most numerous category is catapult-bolts, of which 131 have thus far been excavated, concentrated along the lower slopes of the battlefield (Berger *et al.* 2010/13: 334-335). The projectiles recovered from Harzhorn are mostly complete and of considerable size, rather than fragmented pieces (Fig. 13).



Figure 13: Projectile point from Harzhorn (author's own).

The projectile assemblage from the Oberesch differs somewhat. Very few small, longer-range projectiles were recovered from the site, arrowheads (3) and miscellaneous projectiles (17), although more were recovered from the wider conflict zone, including 3 lead *glandes* from the area north of the Oberesch first prospected by Clunn (2005). The longer-range projectiles were significantly outnumbered by the number of large, shorter-range range *pila* (37) and spear (26) elements, including one lance-head with a partial fragment of wooden shaft *in situ* measuring 31.6cms in total (24.3cms lance-head alone; Harnecker & Franzius 2008: 4, fn. 7). Several attachments between the iron projectile element and the wooden shaft have been recovered, which are likely to reflect the looting process and the removal of the head from the useless wooden element (see Rost & Wilbers-Rost 2012). The distribution and lack of *glandes* may suggest that in this instance, the longer-range projectiles may have been used as hand-held weapons rather than as projectiles, in this late stage of running battle.¹²⁵

It is probable that the projectile assemblages from these battlefields represent a limited proportion of the original deposition. *Glandes* are the most common projectile find, recovered from all battlefields and a number of other Greek and Roman conflict sites (see 1.5; cf. Rihll 2009), although there is a general assemblage bias towards smaller projectiles which did not have any attached wooden elements. *Glandes* have been recovered from a number of Roman conflict sites which have not been formally excavated, most notably from La Lantejuela in southern Spain, which has been identified as the Punic and Caesarian battlefield of Munda from the inscriptions on the projectiles (see Grünewald & Richter 2006). A total of 59 *glandes* has thus far been recovered, many of which were inscribed in either Punic or Latin script. They measure between 2.8 and 5.6cm with the majority in a heavily corroded condition (Grünewald & Richter 2006).

Similarly inscribed *glandes*, in this case *T.LABI*, were recovered from Alise-Sainte-Reine during the C19th excavations on the supposed site of Alésia. The inscription has been associated with Titus Labienus, one of Caesar's commanding officers in Gaul (e.g. Caes. *Bell.*

¹²⁵ For use of the spear as a hand-held weapon in for Greek warfare see Schwartz (2009: 86-92; although his use-analysis of spears is partially based on artistic iconographic evidence); for Roman, see Bishop & Coulston (2006: 53-54).

Gall. 5.8), as similar examples have been found in the Roman camp at Sens, likely used as a campaign base by Labienus (Fields 2014: 86). Their discovery at Alise-Sainte-Reine suggests a direct link with Caesarian-period conflict, if not alone of the site being that of Alésia. *Glandes* provided evidence for the Frisian attack on the Roman fort at Velsen during the AD28 revolt and were the primary conflict-related artefact find from this site (Bosman 1999). Lead shot is also the most common diagnostic find at Puigciutat, evidently mapping the route of assault during this otherwise unknown conflict (Ble *et al.* 2012).

It seemed at first that lead *glandes* were likely to be a significant diagnostic indicator of Roman (and indeed, due to comparable use, Greek) battlefields. However, the failure to-date to identify whether the site of Burnswark marks a conflict or military training site demonstrates that even a substantial assemblage of *glandes* may not be sufficient to identify a battlefield (see Campbell 2003; Breeze 2011). Standard works on Roman warfare suggest that projectile discharge typically only occurred once during open field battle, before the physical meeting of the battle-lines (e.g. Goldsworthy 1996). First the longer-range projectiles such as *glandes* or arrows would be despatched, followed by a wave of shorter-range projectiles, such as *pila*, immediately before the armies clashed.¹²⁶ As such, projectiles would be expected to be deposited more towards the periphery of the battlefield, with the longer-range projectiles further away than the shorter-range from the physical centre.¹²⁷ Coulston (2001: 30) suggested that projectiles may also have been used in the late stages of battle on small groups of soldiers attempting a 'last stand' as their army fled as, he argues, at Kalkriese.

Concentrations of projectile deposition would be expected to dominate in areas fired upon, but this would vary within each battle. At Harzhorn the physical distribution of projectiles is difficult to assess because the conflict appears to have been an ambush rather than a field battle. At Baecula the spatial distribution of *glandes* is most dense in the Carthaginian lines (marking areas fired upon), with a secondary concentration in the Roman lines (Fig. 14). A smaller quantity was distributed in the area between the lines. With one

¹²⁶ See Rihll (2009: 160-167) for a recent suggestion that *glandes* may have primarily been catapult ammunition rather than used by hand-slingers.

¹²⁷ See Thorne (2007: 219-220) for a suggestion that multiple phases of projectile use were employed during Roman battle as armies withdrew and re-clashed.

exception, all *glandes* were found in the central axis of the battlefield. Concentrations were separated by a distance of c.300m, the approximate range of the projectile-type (Bellón Ruiz *et al.* 2012: 366-367).

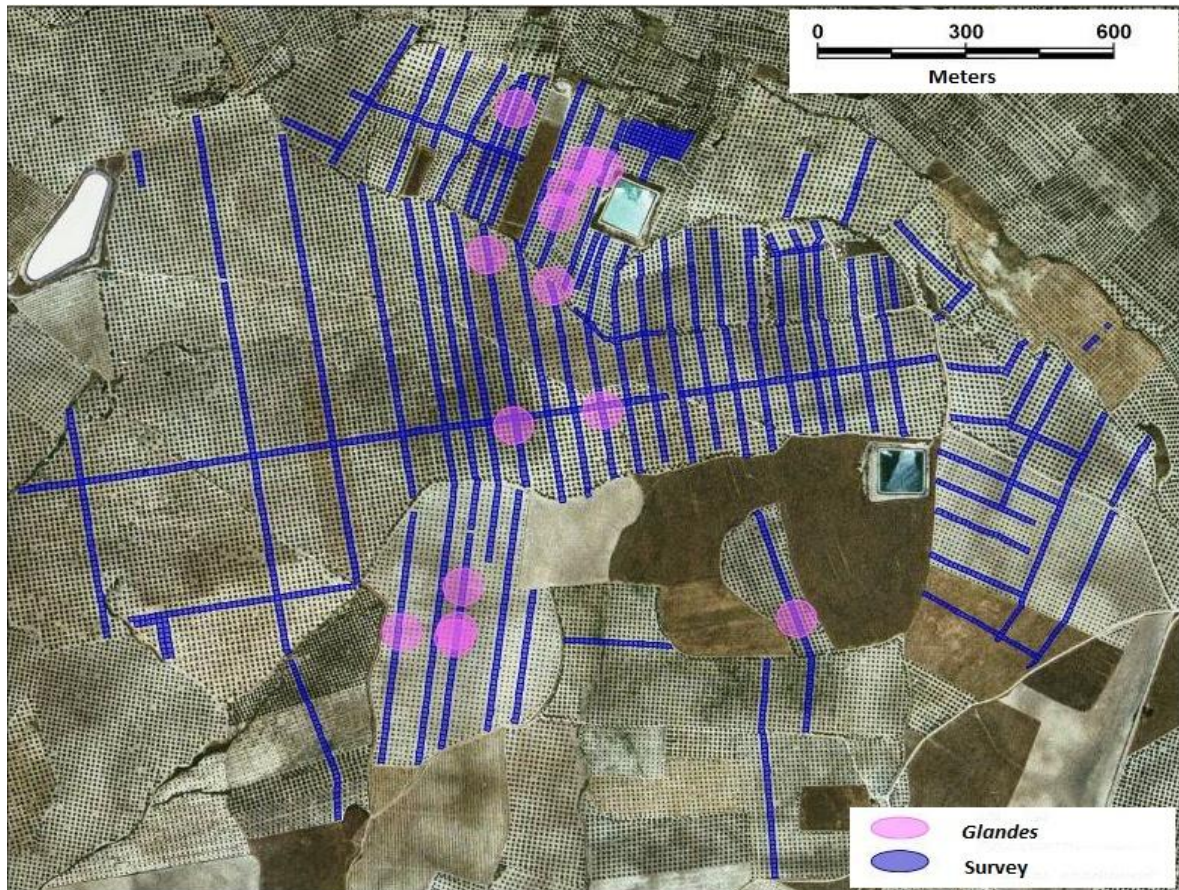


Figure 14: Distribution of lead *glandes* at Baecula (after Bellón Ruiz *et al.* 2012: 367).

The hypothetical probability of archaeological survival for longer-distance projectiles is reasonable on battlefields, as they were small, low-value and deposited in both the core and periphery, and were often made of lead. The presence of *glandes* in any quantity almost certainly illustrates a military presence on any site, even if their deposition was due to logistical necessities rather than the actual occurrence of conflict (Rihll 2009: 148). *Glandes* in particular could provide a key diagnostic indicator for an ancient battlefield, if they can be recognised and recovered. The difficulty comes with sites such as Kalkriese and the Oberesch, where long-range projectiles are outnumbered by short-range, and by many

other artefact categories as well. The explanation for this may be that the Oberesch represents an end-phase conflict area, the assemblage of which was created late into the battle, when long-range projectiles had already been expended, leaving only shorter-range *pila* and hand-held weapons with which to fight. While long-range projectiles are certainly useful as a diagnostic indicator of battle, based on current evidence they may not survive in quantities comparable to munition remains from later historic battlefields.

The non-projectile assemblage is dominated by small, low value non-weaponry artefacts. The biggest single artefact category from the Roman battlefields by far is *caligae* nails. Just under 700 were recovered from Baecula (Bellón Ruiz *et al.* 2012: 366-71), and over 1400 from Harzhorn, making up nearly 80% of the assemblage securely identified as Roman (Berger *et al.* 2010/13: 334). On both sites, the nails were concentrated in areas of rough, hard terrain, evidently marking formal tactical manoeuvres and movement which caused stress on the footwear and for nails to work loose.¹²⁸ At Kalkriese the number of shoe-nails is far smaller, with 36 shoe-related finds (64 individual fragments), including a partially-preserved leather sole with 3 nails in place (Harnecker & Franzius 2008: 12, fn. 172), which may be a result of the physical terrain, the manoeuvres, or the absence of shoes by this point. *Caligae* nails have also been identified at the Caesarian-period conflict site (the exact nature of the site has not yet been established) at Puigciutat in north-eastern Spain, evidently spatially corresponding with areas of approach to the fortified upper area of the site, and typically also an area of rough terrain (Ble *et al.* 2012). Based on the conflict sites thus far excavated, *caligae* nails may be one of the key diagnostic artefacts on, at least, Roman battlefield sites, particularly those with rough terrain.

Personal effects have been recovered from each battlefield, in the greatest quantity from Kalkriese. A small number of amulets, buckles, brooches and jewellery have been reported from Baecula (Atwood 2014: 34), while from Harzhorn, a small quantity of jewellery has been recovered, including a Taunus-Wetterau-type *fibula*, and two bronze finger-rings (Berger *et al.* 2010/13: 335). From Kalkriese however, the overall non-weaponry

¹²⁸ Although accidental loss is no longer a popular explanation for the deposition of military kit (Bishop & Coulston 2006: 24-25), it is generally accepted that small, non-vital fittings such as *caligae* nails may have been deposited by this mechanism.

assemblage is both larger and more diverse than the others, including a range of *fibulae* (81), belt buckles and fittings (76), decorative plates (9) and nails (33) which can be linked with the military through their presence on a Roman army site (Harnecker & Franzius 2008: 14-16; 26-36; Harnecker & Mylo 2011: 7-9; 14-17). So too for the range of 'administrative' artefacts including *styli* and plumbobs, and the tools, scissors, *dolabra*, rings, decorative plates, and furniture fittings, including bed fragments and glass-eyed statues, which were also recovered from the Oberesch (Harnecker & Franzius 2008; Harnecker & Mylo 2011). The wide range of artefacts attests to the capture and looting of a baggage-train.

No mule or cavalry equipment has been recovered from Baecula, but 16 fragments, including the fittings from an abandoned wagon and several iron horseshoes, have been excavated at Harzhorn (Berger *et al.* 2010/13: 343-47). A further 124 horse and mule fittings were recovered from Kalkriese, including the bridle fittings and decoration from a mule partially covered by the collapsed rampart (Harnecker & Franzius 2008: 17-19, in particular fn. 249-252). *Dolabra* heads were recovered from both Kalkriese and Harzhorn. However, in the case of almost all the non-weaponry artefacts, it might prove difficult to identify their military association from the find alone, due to the significant crossover between contemporary military and civilian finds, potentially limiting the diagnostic potential of these finds on sites which had not already been identified as a battlefield and/or corroborated by other artefacts.

Few non-Roman artefacts have been identified. A number of arrowheads, coins and pottery fragments from Baecula are of Carthaginian type, and are primarily associated with the Carthaginian position towards the north of the battlefield (Bellón Ruiz *et al.* 2012, 366-69; Atwood 2014: 35).¹²⁹ There is a lack of Germanic material from Kalkriese, originally attributed to the ability of these combatants to clear the site of their remains (Rost 2009a: 53). Rost and Wilbers-Rost (2010: 134) subsequently suggested the assemblage reflects the use of 'Roman-style' weaponry and armour by the Germanic combatants, some of whom may have been serving, or have served, in the Roman *auxilia*. At Harzhorn a small number of artefacts have been cautiously identified as Germanic, although this is unverified (Berger *et*

¹²⁹ See Bishop & Coulston (2006: 48-50) for the problems identifying 'Roman' weaponry and armour in the Punic War period.

al. 2010/13: 349-53), and it has been suggested that, as at Kalkriese, the Germans may have used equipment indistinguishable from that in contemporary Roman use (Meyer & Moosbauer 2013).¹³⁰

At Kalkriese the assemblage is a composition of the kit which might belong to each individual soldier and a baggage-train. The published artefact catalogues, representing the finds which can be identified, illustrate the range of material, although the assemblage composition is likely to be representative of large-scale (Roman) defeat rather than ancient battle in general. To date the assemblage from the Oberesch represents 90% of the c.5000 total finds thus far recovered from the conflict area. In the catalogues to date, 1627 individual identified artefacts have been published, several from within the same context (Harnecker & Franzius 2008; Harnecker & Mylo 2011).



Figure 15: Unidentified fragments from the Oberesch (author's own).

¹³⁰ Although there has been discussion over military and civilian use of the same non-weaponry artefacts (Allason-Jones 1988; James 2001; Allison 2013) there has been limited publication on the use of Roman weaponry and armour by non-Roman forces – if, indeed, the concept of ‘Roman’ is applicable or relevant in this context.

Many artefacts were fragmented, some of which could be associated with a common artefact in post-excavation analysis. If it was possible to identify multiple fragments from the same artefact, in the published catalogue were grouped under a single find number, with each individual piece distinguished by a different alphabet letter. A total of 2343 individual find numbers have been published from the Oberesch.¹³¹ Many of these artefacts are in a heavily fragmented condition, particularly the pieces of shield-binding, and individual pieces can be of very small size and impossible to identify as a particular artefact type (Fig. 15).

Most of the artefacts deposited on the battlefield would have been in the baggage-train during the battle and would not be expected on battlefields where the Roman army had not been defeated, although the presence of a collapsed wagon at Harzhorn (see below) suggests that elements of the train caught on the move might have been vulnerable even in the case of a Roman victory. The vast majority of these artefacts would not have been identified as associated with a Roman army had the site not already been identified as a battlefield, although this was made easier, as previously mentioned, by the lack of Roman civilian activity in this area at the time of the battle. Many of the artefacts discovered at the Oberesch are there because of the presence, and looting, of the Roman baggage train. Much of the artefact range, particularly non-functional items such as furniture, represent the 'camp goods' of a campaign, suggesting that either the baggage was captured and looted at the Oberesch, or was transported here for processing.

The range and nature of the baggage-related assemblage from Kalkriese has many similarities with the contemporaneous assemblage from Haltern, a fort possibly destroyed in an attack soon after the Teutoburg battle (see Harnecker 1997; Müller 2002). The Kalkriese assemblage reflects the range of material carried by the baggage-train, possibly only when conflict was unexpected, and so a similar range should not be expected in circumstances where a comparable baggage was not captured and/or destroyed. The interpretation of the assemblage has largely excluded coins, although the hoarding of high-

¹³¹ This thesis has taken ranged find numbers (e.g. 23407A-E) as five entries, following excavator precedent. To reflect artefact proportions recovered, tables referring to the Oberesch finds will include both the artefact entry quantities and the individual (fragment) find number quantities.

denomination coins is discussed in the context of deliberate obscuration processes as, like much of the non-functional assemblage, the coins are likely to be present only because of the baggage-train.¹³²

The published artefact catalogues record 771 individual identified artefacts associated with the weapons, armour and dress of Roman soldiers and the cavalry/mules (Table 3). Many are in a fragmented condition, with the consequence that the 771 artefacts are made up of 1004 individual fragments, mostly found in close spatial relationship with the artefact grouping. The military finds make up less than half the overall assemblage from the Oberesch, with the rest comprising artefacts associated with the baggage-train. Within this assemblage, offensive weapons are dominated by short-range projectiles and spears, but represent only 11-14% of the total military assemblage, and only 5% of that from the whole site. Long-range projectiles are almost completely absent, represented by only three arrowheads. No *glances* were found at the Oberesch, although a small number have been recovered from the wider conflict landscape. Only one sword element survives, although several scabbard fittings have also been recovered.

The defensive equipment makes up almost half of the entire military assemblage (by fragments), dominated by shield fitting fragments, which represent over two-fifths of the total military assemblage and one-fifth of the total fragment assemblage from the Oberesch, supplemented by a small quantity of helmet and body-armour pieces, few of which had fragmented into multiple pieces. 2/5th of the military fragment assemblage and just under 1/5th of the total assemblage were made up of miscellaneous military kit, including body-worn kit (belt-fittings, *phalerae*, and decorative rivets/studs), fibulae, *caligae* nails, and horse/mule equipment. Each category makes up 3.5-4.5% of the total fragment assemblage from the site. *Caligae* nails are not as dominant in the assemblage from the Oberesch as at Harzhorn, which may reflect differences in terrain or manoeuvring.

¹³² For discussion of the coin assemblage see Berger 1996.

Artefact type	Individual artefact quantity ¹³³	% of individual military catalogue (771)	% of total individual catalogue (1620)
Projectiles	90	11.5%	5.5%
- <i>pila</i>	32	4.1%	2%
- <i>lance/spear</i>	55	7%	3.4%
- <i>arrowheads</i>	3	0.4%	0.1%
Sword	1	0.10%	0.05%
Scabbard	20	2.4%	1.3%
OFFENSIVE	111	14%	6.85%
Shield	296	38%	18.3%
Helmet	20	2.5%	1.2%
Body armour	44	5.5%	2.7%
DEFENSIVE	360	47%	22.2%
Miscellaneous body-worn kit	90	11.5%	5.5%
Fibulae	81	10.5%	5%
<i>Caligae</i>	52	7%	3.2%
Horse & mule kit	77	10%	4.75%
OTHER¹³⁴	300	39%	18.45%
TOTAL			47.5%

Table 3: Military artefacts at the Oberesch based on individual find numbers (figures from Harnecker & Franzius 2008, Harnecker & Mylo 2011).

¹³³ Inclusive of separate find numbers but not multiple fragments of same artefact (e.g. 100A-E as one, not five). Includes identifiable artefacts only.

¹³⁴ Categories included because their presence on the battlefield at the Oberesch cannot be put down purely to the Germanic capture of the Roman baggage-train.

Artefact type	Total artefact fragment quantity ¹³⁵	% of total military fragments (1004)	% of total fragment assemblage (2343)
Projectiles	90	9%	4%
- <i>pila</i>	32	3.2%	1.5%
- <i>lance/spear</i>	55	5.5%	2.35%
- <i>arrowheads</i>	3	0.3%	0.15%
Sword	1	0.1%	0.05%
Scabbard	20	1.9%	0.95%
OFFENSIVE	111	11%	5%
Shield	420	42%	18%
Helmet	28	2.5%	1.2%
Body armour	44	4.5%	1.8%
DEFENSIVE	492	49%	21%
Miscellaneous body-worn kit	108	11%	4.5%
Fibulae	82	8%	3.5%
<i>Caligae</i>	104	10%	4.5%
Horse & mule kit	107	11%	4.5%
OTHER	401	40%	17%
TOTAL			43%

Table 4: Military artefacts at the Oberesch based on total fragment quantities (figures from Harnecker & Franzius 2008; Harnecker & Mylo 2011).

¹³⁵ Inclusive of all metal elements, including multiple fragments of same artefact (e.g. 100A-E as five fragments). Includes identifiable artefacts only.

The data illustrate that just under half of the assemblage from the Oberesch can be directly associated with the military. Many of the artefacts are highly fragmented, although in many cases more than one piece can be identified as belonging to a single artefact. Table 4 indicates that while the military artefacts were in most cases fragmented, this was no more common than among the non-weaponry assemblage. The proportions remain close to evenly balanced between military and non-specific artefacts across the Oberesch. The creation of so many fragments suggests that, in certain circumstances, the looting process was itself a cause of artefact deposition. The presence of a large quantity of defensive equipment fragments is almost certainly reflective of post-battle reprocessing, rather than battle-period deposition as a result of fighting. In particular, the shield-binding was evidently ripped from the wooden bases for easier transportation, depositing small fragments nearby. Several pieces recovered from below the collapsed rampart had been crumpled into balls to further aid this process (Rost 2012/13: 103). Under logistical pressure, therefore, a system emerged where artefacts which were valuable as a whole were removed as such from the field, while those which were not, such as shields which were, in essence, a piece of wood overlaid by a small quantity of metal, were broken down and only the desired elements taken.

Both Rost (2009a: 53-56) and Wilbers-Rost (2009b: 1341-1342; see also Rost & Wilbers-Rost 2012) have observed differences in the distribution of projectiles, which are almost exclusively recovered from below the collapsed rampart, and fragmented pieces of military armour and kit, which are almost exclusively found away from the rampart. They suggest that the nature and spatial distribution of the assemblage does not necessarily reflect battle-period deposition, but subsequent battlefield activity. They suggest that the overall assemblage at the Oberesch was increased by the abandonment of Roman casualties, wounded and dead, who had been transported as far as this point, but who could no longer be moved due to intensification of the battle (Rost & Wilbers-Rost 2010: 133). The assemblage left behind represents the *in situ* stripping of the bodies on the battlefield, with a certain degree of violence (Rost 2009a: 52-54). Wilbers-Rost (2009a: 126) suggests that prioritised and valuable artefacts – weaponry, armour, and precious metals – were collected along the line of the rampart, particularly around the access-points, serving as a storage point from which material could be taken away, and were lost unintentionally when the

rampart collapsed. As such, even the find-spots of *pila* and other short-range projectiles may not represent their original conflict-period deposition, as they may have been moved prior to being lost; they are all found in close spatial association with the collapsed rampart. Rost and Wilbers-Rost (2010: 130; 2012) suggest that the concentration of shield fragments in front of the rampart is the result of shields being collected centrally from across the battlefield and stripped of their metal in this single area.

The overall caution is that the intensive deposition of artefacts at the Oberesch does not necessarily correspond to an equally intensive period of fighting, and may instead document the spatial distribution of post-battle activity. Rost (2009a: 55-56) has identified a pattern of “inverse spatial proportion” between assemblage deposition and survival in the core and periphery areas of the Oberesch, comparable to the phenomenon observed on C19th battlefields in the United States, informally known as the ‘donut effect’ (see 4.3). He suggests that this phenomenon is visible in the Oberesch assemblage, with a greater proportion of the large and/or valuable artefacts surviving on the battlefield periphery where looting is likely to have been least intensive. He cites the successful deliberate obscuration of high-denomination coins and a silver scabbard on the periphery of the battlefield as evidence that the fringe areas of a battlefield were not looted as intensively as the central areas.

In comparison to the Oberesch, a very limited range of artefacts has been recovered from the Harzhorn battlefield, reflecting the fact that a Roman baggage-train was evidently not captured as a result of this engagement. There have been problems identifying some of the metal elements recovered, some are as-yet undated, but an assemblage of 1740 artefacts has been identified and dated. The assemblage is entirely dominated by *caligae* nails, which represent over 4/5th of the total assemblage, and are distributed across the entire battlefield. Long-distance projectiles comprise just over a 1/10th of the remaining assemblage, themselves dominated by catapult bolts which make up 60% of the total. Body equipment, including armour and non-armour elements (separated at the Oberesch) and horse/mule fittings. represent a fraction of the total assemblage, as do tools and coinage. The dominance of the *caligae* nails in the assemblage actually has a fairly negative impact

on statistical analysis of the rest of the assemblage – in Table 5, the assemblage proportions have been considered both including and excluding *caligae* from the figures.

Artefact type	Quantity	% of total assemblage	% of non- <i>caligae</i> assemblage
<i>Caligae</i>	1417	81%	-
Projectiles	214	12.3%	66.2%
- <i>catapult bolts</i>	131	7.5%	40%
Body-worn items	28	1.6%	8.7%
Horse/mule fittings	30	1.7%	9.3%
Tools	16	0.9%	4.9%
Coins	11	0.6%	3.5%
Miscellaneous	24	1.3%	7.4%

Table 5: Artefact proportions at Harzhorn (from figures in Berger *et al.* 2010/13: 334-335).

There are far fewer examples of defensive weaponry or armour fragments from Harzhorn, which is likely to reflect the lack of severe looting at the site; indeed, the lack of reprocessing fragments is one of the reasons that the site has been identified as that of a Roman, not Germanic, victory. Evidently, none of the stripping processes evident at Kalkriese took place at Harzhorn – or, if they did, the resulting fragments of shield-binding and kit pins were very effectively cleared from the site. As such, it is difficult to attribute the presence of the extant assemblage to the looting process, rather than battle.

The excavators suggest, in contrast to Kalkriese, the spatial distribution of the Harzhorn assemblage reflects to a much greater degree the original conflict-period deposition, particularly in regards to projectiles (Berger *et al.* 2010/13). The lack of swords, shields and helmets suggests that there was, as would be expected, a process for clearing the battlefield at some point; without knowing the original deposition density, it is difficult

to know how effective this was. Evidently a number of projectiles were missed – what proportion is unknown – but there is nothing to suggest that they had been moved in the post-conflict period, particularly those which were located on the slopes of the Harz. The excavators suggest that the lack of body-worn kit fragments reflects the recovery of the Roman dead from this battlefield (Berger *et al.* 2010/13: 332). There is no evidence comparable to the Oberesch that the (Roman) dead were brutally stripped while on the battlefield, although difficulties would be presented if they had not been removed from their armour fairly soon after the battle. However, a concentration of kit fittings in “hotspot 1” has led to the suggestion that the Romans suffered a small defeat in this particular zone of the battlefield, with kit fittings deposited through looting, as at the Oberesch, although the good condition of the finds does not quite match this hypothesis (Berger *et al.* 2010/13: 384-385). The rest of the assemblage was left behind after the initial recovery of weaponry and armour. The excavators suggest that the large size of many of the artefacts left, and their relative visibility, indicates that there was no subsidiary looting for scrap metal (Berger *et al.* 2010/13: 332).

The difference in the assemblage composition between Kalkriese and Harzhorn has been attributed to the varying nature of the battles. At the latter, the Roman army was victorious and therefore in control of the post-battle recovery of material and the battle-dead, whereas at Kalkriese they were routed by a Germanic force that thereafter directed the post-battle activity. The stripping of the Roman battle-dead, in particular, appears to have varied significantly between the instances of victory and defeat. Harzhorn has allowed the understanding of assemblage deposition to be somewhat refined at least. Initially, it had been suggested that a substantial assemblage would only be left by the defeat of the Roman army in battle (e.g. Coulston 2001: 44). However, Rost (2009a: 51) has since suggested that any large army with a metal military material culture may leave behind a battlefield assemblage. The interpretation of the assemblage from Harzhorn suggests that this is not entirely accurate. While it is possible that both sides were armed in Roman-style kit and therefore the presence of Roman, rather than Germanic, kit could be indicative of the defeated army, it is clear from the distribution of the artefacts that the victorious army is represented in the assemblage, particularly in the distribution of the *caligae* nails and the catapult bolts. The lack of a published artefact catalogue from Baecula makes it difficult to

assess at this stage how closely it resembles the assemblage from Kalkriese or Harzhorn, although the reported finds thus far – *caligae*, arrows, *glantes* – suggest the latter. Baecula does however, clearly indicate once again that assemblages can survive on battlefields where the Roman army were victorious, as well as when they were defeated, as at Kalkriese.

4.6: Site formation and assemblage survival

The nature of the assemblages at Kalkriese and Harzhorn certainly appear to confirm the selection bias towards weaponry and armour suggested by the literature. Although Baecula is, as yet, less thoroughly published, early indications from the site do not suggest any discrepancy emerging from this site. No non-projectile weapons or armour have been recovered from any of the excavated Roman battlefields, seeming to confirm the recovery of these artefacts in the earliest phases of looting. From Kalkriese, it can be observed that the weaponry and armour must have been removed during one of the early phases of looting, as none has been recovered from below the rampart which collapsed during or soon after the battle.¹³⁶ This would certainly seem to confirm the prioritisation of weaponry and armour in the immediate period after battle, alongside valuable metals (such as the silver plating on the cavalry mask), which is what would be expected. However, the assemblages make it clear that a wider range of artefacts were deposited during ancient battle, and were evidently available for looting in the post-battle period. Given that the extant assemblages may only reflect a small proportion of the original deposition, are there any other factors beyond selection bias which have impacted the quantity, nature, and distribution of battlefield assemblages?

¹³⁶ A mule skeleton was entirely articulated and showed no signs of predator damage or other surface-exposure, suggesting that the rampart had collapsed to cover it shortly after the battle, if not during it (Rost & Wilbers-Rost 2014a: 499).

4.6.1: Phases of looting

In the case of Kalkriese, although it is probable that the same is applicable to any battlefield, the evidence suggests that there were multiple phases of looting: the first conducted by the victorious army in the immediate aftermath, followed by subsequent looting, including by local populations. The first stage prioritised weaponry and armour at the expense of the other battlefield ephemera, which was usually smaller, more difficult to find, and of lower value. The partial collapse of the Germanic rampart at Kalkriese preserved part of the battlefield before it had been completely looted, allowing the difference in artefact density and nature to be compared with areas which were more thoroughly looted. Based on the nature and spatial distribution of the finds, Rost (2009a, 2009b; *cf.* Rost & Wilbers-Rost 2012) suggests that there was a hurried initial looting period which prioritised weaponry, armour, and portable valuables, most of which would have been found in close spatial conjunction with the bodies of the dead. During this phase, the remaining assemblage was not necessarily permanently rejected, but found to be of insufficient value to be worth recovering as a priority.

A second phase of (Germanic) looting conducted several weeks or months later was more thorough, although by this time some battle-related material had been covered by the collapsed rampart.¹³⁷ During this phase, and any subsequent looting activity, some battle-related material was left unrecovered in accessible areas of the battlefield. Although these pieces may have been deliberately rejected, it is more probable that they survived as the result of physical obscuration by topsoil or surface vegetation. With a few exceptions, the surviving assemblages are made up of small, non-functional, low-value artefacts that, in many cases, were fragments from a larger artefact. They were, as Rost (2009a: 51) described, "...scattered widely and were too small and worthless to expend search time". Material recovered from a Republican campaign camp at La Palma in north-east Spain suggests that metal was frequently prioritised for collection by the Roman military for reprocessing, represented at this camp by a large quantity of bronze non-military artefacts

¹³⁷ A phase of Roman looting may have taken place alongside the disposal of the skeletal remains, by Germanicus or otherwise, two to ten years after the battle, but this depends on the verification of the Oberesch bone-pits as Roman activity.

and weights (Noguera 2012: 275-277). Despite the innate value of any metal in antiquity, and the evidence from La Palma that almost any artefact would be collected by the Roman military for reprocessing if it was readily available, the actual time which could be dedicated to the collection of such artefacts was limited, certainly in the initial stages of looting.

4.6.2: Natural obscuration

The physical size of artefacts from the battlefields is relatively small. Although there are some exceptions, most finds are certainly within the parameters of having become lost in the topsoil or surface vegetation. The projectiles lost at Harzhorn are certainly not of insubstantial size and would not be easily missed during the looting process had they been lying on the surface. There certainly are several examples of large artefacts being left on the battlefield, most notable the *dolabra* heads from the Oberesch and Harzhorn. The former is 53cm long, certainly of a size to be visible. However, multiple larger objects were preserved on the battlefield because they were obscured by the collapsed rampart, and it may not be possible to read too much into the survival of the *dolabra* at the Oberesch.



Figure 16: Inscribed *dolabra* from Harzhorn (from Geschwinde & Lönne 2013: 279).

More relevant perhaps is the *dolabra* excavated at Harzhorn in 2010, of comparable form to the Kalkriese example and measuring 44.5cm (Wiegels *et al.* 2011; Fig. 16). Attention was immediately drawn by the inscription 'LEG III SA', seemingly identifying one of the legions involved in the battle.¹³⁸ Presumably it would have been considered an artefact of value and would have been recovered if possible, and the failure to do so was evidently not because of its small size. Rather, it may be that the artefact, and many comparable others from the smallest items upwards, were not recovered because they were not visible on the surface of the battlefield.

Surface visibility appears to play a role more widely in the survival of battlefield assemblages, to the degree that obscuration by surface vegetation or topsoil embedding is likely to be one of the key factors in the survival of assemblages. The physical impact of battle on the surface of the battlefield causes many artefacts deposited during the fighting to be re-deposited in the topsoil, often while the conflict continued. As a result, many smaller artefacts originally deposited on the site surface during the actual battle were below the surface at the end of it. Larger artefacts would have been less vulnerable to this process, particularly those, as Rost (2009a: 51-52) observes, which were attached to the bodies of casualties or, presumably, in close spatial association with them. Post-battle looting may have been somewhat of a field-walking exercise, picking up artefacts which were obvious to the naked eye but perhaps not speculatively digging in the topsoil.

The effort which would have been expended in recovering the artefacts would have outstripped the value they actually had. As such, this may explain the failure of the literary sources to refer to the deliberate abandonment of the fragmented finds on the battlefield. The Roman army would have been unable to see them, and were potentially entirely unaware of their existence, certainly to a degree that would have been transmitted to the writers of ancient sources. It should be expected that surviving assemblages will overwhelmingly be dominated by small, low-value artefacts which could easily have become

¹³⁸ Inscribed objects are thus far rare on Roman battlefields. Only three have been recovered from Kalkriese: a scabbard fragment from the Oberesch had an inscription reconstructed as 'T. Vibi(i) (centuria) Tadi(i) l(egionis) P(rimae) A(ugustae) X LX' (Harnecker & Franzius 2008: 5, fn. 26); an armour fitting inscribed 'M. Aii (cohort) I (centuria) Fab(ricii) (Harnecker & Franzius 2008: 9, fn. 114); and a plumbob inscribed 'CHOI' (c(o)ho(rtis) I) (Harnecker & Franzius 2008: 20, fn. 315).

obscured by the topsoil. Wilbers-Rost (2009a: 125) notes that environmental analysis of the Kalkriese battlefield suggests large areas of the eastern portion were covered by thick surface vegetation, in contrast to the western portion in front of the rampart which were open pasture, and suggests that more artefacts would have been more easily obscured in the wooden eastern area of the site. Similarly at Harzhorn, environmental analysis suggests that the battlefield area was wooded at the time of the battle (Berger *et al.* 2010/13: 379), which would again present issues with visibility during any looting activity.

Some artefacts, particularly projectiles, may have been made less visible by embedding in the topsoil, even allowing for the substantial size of some of the recovered material. The projectile quantities at Harzhorn suggest that projectiles without (e.g. *glandes*) or with small (e.g. catapult bolts, some arrows) wooden elements may have been more likely to go unrecovered than those with, which would, unless broken, presumably have been more noticeable. Sim and Ridge (2002: 90) suggest that projectiles were in many cases seen as a temporary weapon - they term them “disposable” - which might only be used once or twice, in part due to the high potential for damage, but also reflecting the uncertainties in terms of recovery. The production method for the smaller long-range projectiles was fairly rapid, less than a minute for individual arrowheads, as contrasted to ten hours for a *pilum*, and most of the ‘disposable’ projectiles would not be fire hardened (Sim & Ridge 2002: 78-90). While the extant assemblages show that relatively few projectiles (in comparison to probable deposition) have survived through to the modern day, it is as yet difficult to quantify how much of the recovered assemblage was taken in the immediate aftermath of battle, and how much in the subsequent two millennia of site occupation which followed.

4.6.3: Later looting and relic-hunting

It is probable that the majority of subsequent looting phases were conducted by local populations who may also have uncovered artefacts as a result of subsequent land-use. Abandoning smaller, non-weaponry artefacts posed little immediate tactical threat to

the victorious army, certainly less than an extended delay on the battlefield might prove to be, and would not represent a huge economic loss to the institutional army. No doubt subsequent looting-phases would have recovered the artefacts had they proved visible; however, the value and interest of a scatter of *caligae* nails or a broken *fibula* may have been limited even soon after the battle. The assemblage at Kalkriese was protected by the medieval-period deposition of a layer of fertiliser (*Esch*) across the site, which minimised the impact of agricultural activity on the assemblage. Despite the subsequent land-use of the area, both the artefacts and rampart remains were preserved.

Civilian involvement in Roman-period battlefield looting can be extrapolated from the presence of material in local settlements around of Kalkriese and Abritus, although in both cases the material may have been deposited by soldiers, either fleeing Romans or victorious provincials. In both instances the Roman army had been defeated, after which it might be expected that local populations would be more involved in battlefield looting than in the instance of a Roman victory. Added to this is the problem previously referred to of identifying military artefacts in civilian contexts, and the additional issue that any reprocessing of the metal into other artefacts would make it impossible to identify the battlefield-looting origins of the piece. As a future project, it could prove illuminating to model civilian involvement in battlefield looting by measuring economic changes in the vicinity of conflict sites consistent with a sudden influx of metal, which may provide compelling evidence for civilian acquisition of material from a battlefield. The Abritus landscape assemblage does, however, provide compelling evidence for the involvement of civilian populations in battlefield looting, at least in the case of Roman defeat, and the prioritised recovery of functional weaponry in particular.

Although the assemblage at Kalkriese was afforded protection firstly by the collapse of the rampart, and secondly by the medieval deposition of the *Esch*, the assemblages from Baecula and Harzhorn illustrate that these features are not absolutely necessary for the preservation of a battlefield assemblage. If these battlefields were not protected by the deposition of an *Esch*-type layer, then there must be other mechanisms which protected battlefield assemblages in the longer term, particularly low settlement/population density and minimal or non-invasive subsequent land-use. The German civilian population around

Kalkriese and the Oberesch is still largely invisible, although recent archaeological work has been carried out in native settlements within the surrounding conflict landscape (Rost & Wilbers-Rost 2014b), and excavation on the Oberesch itself has recovered a quantity of pottery which suggests a reasonable level of pre- and peri-battle settlement occupation. The population density around Baecula is, as yet, not well documented; however, it can be observed that (a) the immediate hinterland had a number of named *oppida* at the time of the battle and (b) that from other areas of Spain that there was dramatic depopulation and abandonment of pre-Roman settlements at the end of the 3rd BC, associated both with the end of the Second Punic War and a series of indigenous revolts which were brutally suppressed (Noguera *et al.* 2014: 59).

Harzhorn was an under-populated region in the 3rd AD. Although the region was subject to agricultural activity and covered by a road network, the battlefield itself was not intensively settled. There was a relatively dense population in the south-western Harz region until c.AD300, but evidence of depopulation in the period after (Berger *et al.* 2010/13: 373-374) and, the excavators have suggested that there may have been no secondary phase of looting due to an absence of local population. Little Roman material has emerged subsequently in the area, but it has not been sought. Until the discovery of the Harzhorn battlefield, there was little evidence, particularly historical, for a Roman presence in this area of Germania in the 3rd AD. There has been minimal agricultural activity on most of the Harzhorn area more recently due to the poor quality of the soil, and areas of it appear to have been given over to forestry in the 19th, offering some protection to the assemblage. Few to no artefacts have been recovered from the areas which were agriculturally managed in later periods (Berger *et al.* 2010/13: 329-330). The assemblage at Harzhorn may have been further protected by the geology of the area, particularly the presence of limestone, which naturally preserved many of the iron artefacts; many of the iron artefact hotspots from Harzhorn overlap with areas of limestone (Berger *et al.* 2010/13: 327; 356). The physical survival of the battle artefacts in the ground will, of course, be impacted by general degradation process dependent on the chemical content of the soil and the artefact. However, it is notable that many iron artefacts have emerged from Roman battlefields, not just the copper-alloy fittings or lead projectiles which might have been expected based on the artefact profiles of later battlefields.

Subsequent looting by relic hunters is a difficult issue in the context of Roman battlefields. Unlike their later counterparts, it is difficult to say that these sites have been deliberately targeted as battlefields due to the lack of identification of most sites, although the concentration of artefacts associated with battle may contribute to sites being targeted in general. Areas which have been identified as a potential battlefield may have been prospected by surveyors attempting to verify the location. Rihll (2009: 147-150) noted that *glandes*, which as discussed are likely to be key to identifying and studying ancient battlefields, are commonly targeted by detectorists, who (in most countries) have no legal obligation to record or report the finds.¹³⁹ Most end up in private collections or are put up for sale; many may come from battlefields which have been looted without the detectorists even realising this is what they are actually doing. At Harzhorn, the original (illegal) detectorist prospection in the early 2000s was intended to look for material related to the Second World War, not the Roman period (Berger *et al.* 2010/13: 314). Nevertheless, the removal of material constituted Roman battlefield looting, regardless of intent, highlighting the importance of recognising conflict-related material when it emerges incidentally. At Baecula too, it was recognised that the battlefield had been covered by metal detecting relic hunters in the 1980s, albeit again without realising that they were looting a battlefield (Bellón Ruiz *et al.* 2012: 359). Although unintentional, these activities may significantly impact the surviving archaeology and need to be factored in to spatial analyses of the remaining assemblages.

4.7: Theorising Greek battlefield archaeology

Without venturing too far into groundless speculation, it should be considered how far the archaeology from Roman battlefields will also be seen on Greek sites. In many ways this issue is difficult to address without archaeological work on a number of Greek battlefields, providing insights into the similarities between the assemblages recovered from them and their Roman counterparts. It is worth considering the potential range of methodological cross-over between sites and assemblages and the hypothetical applicability

¹³⁹ “*Glandes* are likely to have been deposited on battlefields (the kind of environment that detectorists frequent but archaeologists do not)” (Rihll 2009: 147-148).

of the above considerations. There is cause for optimism about the survival of archaeology on these sites. As discussed in the Roman context, the presence of any army with a metal-based material culture on a battlefield creates the potential for significant archaeological deposition during the overall battle period, particularly in terms of the weapons and armour of the dead, projectiles and kit-fittings. A battlefield in the aftermath of conflict in the Greek world, therefore, is likely to have had more than a passing resemblance to its Roman counterpart, resulting in a commonality in at least the initial stages of the battlefield site formation process.

The Greek literary sources imply a similar process of selection bias in the early phases of battlefield looting, which is verified by the presence of battle-recovered weaponry and armour in religious sanctuaries. The larger-piece weaponry, particularly swords, helmets, shields and greaves, would not be expected to survive on Greek battlefields any more than they would on Roman. Many antiquarian reports of weapons and armour discovered on Greek battlefields are of dubious provenance and cannot be taken as evidence for the presence of this material in the genuine archaeological record. Although what happened to the recovered material aside from votive dedication is less certain, and there are likely to be *polis*- and circumstance-based variations, it is probable that the only large-piece weaponry and armour left on a Greek battlefield was a limited quantity deliberately left as a battlefield trophy. The process of natural obscuration, as discussed above, does not in most cases affect large artefacts, particularly those which would be spatially associated with the bodies of the battle-dead. It can be broadly accepted that a large quantity of projectiles would have been deposited on Greek battlefields. As on Roman sites, the deposition of projectiles might be expected to be concentrated in the areas at which they were fired. Smaller projectiles would have been as vulnerable as all their later counterparts, from Roman battlefields through to the C19th, to embedding in the topsoil and surface obscuration, and a number of examples, albeit also of dubious provenance, have been discovered on Greek battlefield sites.

However, it has to be considered whether these artefacts, which largely correspond to what the literary sources document, represent the entire range of Greek battlefield deposition or whether, as evidenced in the Roman world, Greek battle deposited a much

wider range of artefacts. Such consideration is, of course, entirely speculative at this stage, pending further archaeological study. Nevertheless, is it necessary to consider what the assemblage range might have been before any conclusions can be drawn regarding the concurrence (or otherwise) between Greek and Roman exploratory methodologies. Greek body-armour would potentially have been vulnerable to physical damage by the sheer force of battle, which could lead to fragmentation. However, the Roman assemblages suggest that this is a relatively rare reason for deposition. Very few kit fittings were recovered from Baecula or Harzhorn, in contrast to Kalkriese, suggesting that the deposition of armour fragments may rely on the stripping of the dead, not fighting. Armies equipped in leather or linen armour may be unlikely to leave behind much evidence of their kit, as seen at Baecula where the non-metal armour of the Carthaginian mercenaries appears to have left little archaeological trace.¹⁴⁰ Any German casualties at Harzhorn, also potentially equipped in non-metal armour, have also left few kit fragments behind, in contrast to the range of fittings left by the stripping of metal armour at Kalkriese. Hoplites consistently fought in metal armour (Anderson 1989), and it is possible that the stripping of the battle-dead could have led to fragmentary assemblages comparable to that of Kalkriese – although whether it would be recognisable as battle-related is a different issue. As Greek metal armour was predominantly made of bronze it is likely that any fragments on the battlefield would be made from this metal, in contrast to Roman sites where iron is more common.

It is not possible to say whether the wider range of projectiles, kit and non-weaponry artefacts from Roman battlefields would have been deposited by Greek battle, and therefore what the signature or characteristic of Greek battle would manifest in the archaeological record. A bias towards bronze artefacts over iron is probable, while a range of artefacts beyond weapons and armour may have been deposited on Greek battlefields, as on their Roman counterparts, including coins and personal possessions. There may be non-metal artefacts associated with military kit – in the grave of Theban casualties at Chaeronea (338BC), the shoes of the casualties have no metal elements, instead being fitted with bone eyelets. As for Roman sites, therefore, a wider range of diagnostically-significant artefacts may have been deposited during battle in the Greek world. However, assessing what might

¹⁴⁰ For Carthaginian kit during the Punic Wars, see Daly 2002: 81-111.

survive from this potential assemblage is difficult and will vary on a site-by-site basis. Without knowing the ultimate purpose(s) of Greek battlefield looting it is difficult to say how rigorous the search for deposited artefacts would have been, or how either economic supplementation or enemy resource denial would have influenced the process. Aside from victory trophies, there are no mentions in the Greek texts of (metal) artefacts deliberately abandoned on the battlefield, but the same is true of the Roman sources, which archaeology has demonstrated was not the case. Until further archaeological work has been done, there is no way to assess the potential impact of surface obscuration, the occurrence of multiple looting phases, or to quantify the involvement of local populations. Nevertheless, there are grounds to suggest that comparable archaeological assemblages could realistically have been deposited on Greek battlefield sites, and any methodological process developed for Roman studies should be applicable to the study of Greek sites.

4.8: Conclusion

The Roman archaeological assemblages provide the best insight into the ancient battlefield looting process, adding multiple complex dimensions that were not apparent from the other sources of evidence. There is a broad confirmation of the selection bias in the absence of weaponry and armour from the battlefields. However, it is clear that a significant assemblage of projectiles went unrecovered, particularly small long-range pieces, in a greater quantity than is implied by the literary record. Other small, low-value, non-weaponry artefacts were also left behind in some quantity, and the evidence from Kalkriese suggests that they are predominantly evidence for the looting process itself and the forceful stripping of casualties on the battlefield. The assemblages are spread over a wide conflict area, associating battlefield-proximate features, particularly temporary camps, with the area of conflict, creating a vast physical landscape relevant to the actual battle which moves far beyond the area encompassed by battle narratives. The greatest insight, however, has been the re-conceptualisation of ancient battlefield looting as a multi-stage process, conducted in various phases by different groups with access to the battlefield. The consequence is that battlefield site formation cannot be judged simply on the military

involvement in looting, but with consideration also of civilian populations and subsequent land-use, both in antiquity and through to the modern day.

Extant ancient battlefield assemblages are likely only partially to represent their original quantity, nature and distribution in the immediate aftermath of fighting, but in doing so they provide a valuable insight into the looting process. It is evident that there was a selection bias in the looting process, certainly in the first phase of looting, which recovered large-piece weapons and armour, the majority of which were the non-ferrous assemblage, at the expense of projectiles, kit fittings, and other small artefacts. The deliberate abandonment through rejection of material is not suggested by the sources, and the size of the finds and their spatial distribution suggest it was predominantly artefacts obscured by topsoil and vegetation which were not recovered. The result, at least on Roman sites, is an assemblage dominated by small iron artefacts, distributed over a wide area which is not necessarily restricted to the area of fighting.

The resulting assemblages may not be glamorous or exciting. They will be dominated by (small) projectiles and *caligae* nails, with concentrations of material possible both in areas of intensive activity and of post-battle collection of material. While broken weapons and armour might once have been viewed as the archaeological remains of Classical battle, the reality is more prosaic: an artefact scatter dominated by artefacts which were not large enough to find or valuable enough to search for. However, it is likely to prove significantly distinctive, particularly in the northern Roman provinces, to function as a 'signature' archaeology which can be targeted by survey and methodology.

Chapter Five: The archaeology of battlefield mass graves in antiquity

5.1: Introduction

Alongside looting, disposal of the battle-dead is one of the two post-battle activities documented by the ancient historical record, and contributes to post-fighting site formation.¹⁴¹ Understanding what happened to the battle-dead, both in antiquity and later historical periods, improves general interpretation of battlefield sites, particularly where they shed light on the general post-battle processing on the battlefield. The battle-dead may have been disposed of close to where they died or moved to another part of the site for more central collective disposal through inhumation or cremation, creating a pit-type feature for the purpose or using a pre-existing shallow for this purpose. Alternatively, the dead may have been abandoned where they lay, lying exposed until they were eventually buried by an unknown party, or were naturally dispersed or covered. The method which was used may have had an impact on the composition and thereafter survival of an artefact assemblage, particularly artefacts associated with body-worn equipment. Traditional approaches to the disposal of the battle-dead in the Greek and Roman worlds suggest that battlefield graves were a near-universal feature on sites based on the literary record and social analysis (see 5.3). Less idealistic archaeological analysis of conflict remains suggests, however, that the battle-dead may have been abandoned on the battlefield with previously unimagined regularity (James 2007: 162).

¹⁴¹ For the purposes here, "battle-dead" is limited to those casualties who died while the combating bodies were still located on (or around) the battlefield area, between the commencement of battle-related activity and the cessation of post-battle activity prior to departure - any casualties whose disposal, or lack thereof, would affect the archaeology of the battlefield. This may include casualties who fell in battle, wounded soldiers who died soon after and prisoners executed on the battlefield. Those wounded and who died *after* the units' departure from the field are not included as their disposal would not directly affect the battlefield assemblage.

Although the Classical literary record contains few details on the nature, shape, size, capacity, or relative spatial location of battlefield graves documented in the text, a certain amount can be extrapolated from their later counterparts. While Greek and Roman civilian graves may have demonstrated particular mortuary practices (e.g. Kurtz & Boardman 1971), it is not expected that these same practices would be found on battlefields. The pragmatic considerations resulting from the mass disposal of large numbers of bodies in a short period of time often necessitate a rather more functional approach. Similar burials are often seen in graves associated with natural disasters and epidemics, such as the East Smithfield plague burial which show typically untidy mass inhumation of large numbers of bodies (Grainger *et al.* 2008). Although mass graves are studied in battlefield archaeology of all periods, the contribution which they can make to the identification of battlefield sites from Classical antiquity makes research into these features a particular priority. The location of battlefields such as Culloden, Waterloo or Gettysburg, is already sufficiently well-established that the battlefield location does not need to be verified by excavating mass graves, and they are typically not excavated (Pollard 2009b; Wason 2003). However, mass graves can provide strong verification when found in a previously unidentified battlefield context. So, for example, both Keppie (1981: 85) and Hanson (1987: 137) have previously argued that mass graves could verify the location of Mons Graupius, particularly if found in association with relevant Roman military material culture. However, in the past skeletal remains have been used to support tenuous battlefield identifications without further supporting evidence, as in the case of Trasimene where cremation pits on Mt Gualandro were used to argue a particular location for the battle (Susini 1960), now widely discredited. The presence of human remains in spatial association with a potential battlefield is not enough to substantiate an identification without further evidence.

This chapter considers the evidence for how frequently mass graves were created on ancient battlefields and the form that they took, and then discusses the issue of repatriation or removal of remains in some literary and archaeological contexts. Following this, evidence for the actual process is considered, addressing any impact which it had on the overall site formation and artefact assemblage as well as the creation of the features themselves. It suggests that far too much focus has been placed on the commemoration of the battle-dead in wider society, which has led to a distorted, and somewhat idealised, impression of the

practice on the battlefield. In many cases, potentially, the battle-dead were treated perfunctorily by either their fellow soldiers or local populations, receiving a basic burial, cremation, or even abandonment.

5.2: Disposal of the battle-dead in historical context

Repatriation is unlikely to have been a common method of disposal for the battle-dead throughout much of history. Deceased elite individuals may have had the option of being brought home, at private expense, but the average soldier did not. Repatriation of soldiers (after antiquity) is a relatively recent phenomenon, emerging on a large-scale after the Civil War in the United States and after WWI in Europe. In the early stages of these conflicts attempts were made to repatriate the dead immediately but were rapidly abandoned once the logistical considerations became apparent (Dickon 2011: 28-29). Instead, the dead were buried on the battlefield and reclaimed after the respective wars for burial in family or military cemeteries (Gilpin Faust 2006: 996; Dickon 2011: 62-64). From this point on, repatriation after the conflict became an increasingly normalised option, although Britain legislated against the return of its casualties following the First World War (see Oliver 2012). Not all casualties received a formal burial even in the aftermath of battle, as is particularly evident on the WWI Western Front where bodies are still being uncovered across the battle theatre (e.g. Fraser & Brown 2007; Pollard & Barton 2013). It was only in the Vietnam War that battlefield burial was abandoned, as transport and refrigeration technology made it possible to repatriate without waiting for the cessation of conflict (Dickon 2011: 144-145). As such, it is expected that for all battles prior to the later C20th, mass graves would have been created on the battlefield in the aftermath of fighting, and many survive, even on sites where attempts were made to recover the dead at a later point.

There is little evidence that the majority of victorious armies were in any obligated to ensure the burial of the dead of their defeated opponents. Deliberate non-burial of casualties by the victors is rare in the historical record, although it is mentioned on occasions in some limited contexts (e.g. Foard & Morris 2012: 34 for English examples).

Archaeological research is beginning to suggest that it may have been more common than the written sources suggest. Examples of unburied dead include the Castilian casualties at Aljubarrota, left unburied for at least seven years (Cunha & Silva 1997) and the US Cavalry casualties at the Little Bighorn, although they were buried soon after when the remainder of the 7th Cavalry arrived at the scene four days later (Scott *et al.* 1998). During the American Civil War victorious soldiers routinely left enemy casualties unburied after stripping (and in some cases mutilating) them, as documented in contemporary photographs from the battlefields.¹⁴² This particularly impacted Confederate soldiers who were frequently abandoned and relied on local populations to give them a burial (Reardon & Vossler 2013: 751-752), although many were left abandoned. However, a certain level of disposal was necessary if there were any plans to remain on the battlefield in the medium to long term, if only to avoid disease, or in the interests of subsequent land-use. Failure to rapidly remove the dead at Aspern resulted in the outbreak of disease (Binder *et al.* 2014: 366), and this was no doubt a common occurrence on any battlefield where the dead, including animals, lay unburied.

Where formal processes for disposing of the battle-dead have taken place on the battlefield, mass inhumation has historically been the most common method. Excavated battlefield graves show a tendency towards convenience ahead of religious or social considerations. Several battlefield archaeologists have argued that the burial methods were not intended to be disrespectful, but rather were pragmatic solutions to a large number of bodies needing rapid burial (Scott *et al.* 1998: 105; Sutherland & Holst 2005: 29). In many cases, it is unlikely that those doing the burying would have had any personal connection with the dead. During many of the Early Modern European conflicts including the Thirty and Seven Years Wars, casualties were buried by army servants and local civilians (Podruczny & Wrzosek 2014), the latter were also used at Culloden to bury the Jacobite dead (Pollard 2009a: 10) and at Aspern to bury the dead of both armies (Binder *et al.* 2014: 366). Both prisoners and local civilians buried the dead in the American Civil War (Reardon & Vossler 2013: 751-752). Waterloo provides a good example, however, of the struggles to deal with large numbers of casualties following a battle (see O'Keefe 2014: 66-70). Initial burial parties

¹⁴² I am grateful to Professor Lawrence Babits for his many comments and insights into the process, and for sharing the photographic evidence of the (mis)treatment of the battle-dead during the American Civil War.

loaded the dead onto wagons and transported them to pits big enough for 30 to 40 bodies, buried at a 6ft depth in pits measuring c.15-20ft². Many graves were subsequently uncovered by a combination of hot weather, and following that, heavy rain, which lead to resurfacing of the remains.¹⁴³ By the following week, the burial was so chaotic that the remaining bodies began to be cremated in piles, with pits dug, filled with bodies, covered in wood, and set on fire. Over a thousand bodies were buried in one fire in the courtyard of Hougoumont, with reports that the cremation pyres were still smouldering a month after the battle. The example of Waterloo suggests that even when there were intentions to implement a consistent and socially-acceptable form of burial, the logistic challenges could rapidly lead to alternative methods, including cremation.

5.2.1: Mass graves and the battle-dead

Excavated battlefield graves are typically found in close spatial association with areas of intensive artefact deposition and therefore intensive fighting and higher casualties, suggesting that graves were deliberately positioned to minimise the distance the bodies had to be moved for burial (Foard & Morris 2012: 32). In some cases, bodies could be moved a short distance to use pre-existing ditches or other sunken features as makeshift graves, as in the mass burial at Towton (Sutherland & Richardson 2009: 165-166) and multiple instances in the American Civil War (Gilpin Faust 2008: 73). At Culloden, the Jacobite graves were placed on either side of a road, which enabled the bodies to be collected from across the battlefield and transported for burial by wagon (Pollard 2009b: 136). In Medieval England, it has been suggested that some of the battle-dead, particularly those in the periphery of the battlefield, may have been collected and buried in consecrated ground (e.g. Foard & Morris

¹⁴³ As also at the Little Bighorn (Scott *et al.* 1998).

2012: 32), as suggested for some individual burials at Towton (Sutherland & Holst 2014).¹⁴⁴ If the dead had been left unburied for a period of several days or more however, it was not always possible to move them, in which case the bodies might be covered where they lay or rolled into individual trenches dug alongside each one, as at Camden (Smith *et al.* 2009) and the Little Bighorn (Scott *et al.* 1998).

Excavation of battlefield graves suggests that they typically contained between 50 and 200 inhumed individuals. As yet few battlefields have revealed multiple graves, though the casualties represented in those excavated is only a small proportion of the total. Only at Visby do the excavated graves appeared to contain anything close to the number of documented battle-dead.¹⁴⁵ The largest excavated battlefield burial from Visby is Grave 2, containing 798 casualties, one of the largest excavated battlefield graves of any period. Much smaller graves are known from other battlefields. The Towton 2005 grave contained only three individuals, alongside a single burial in an adjoining but separate grave-cut and two more single graves close by (Sutherland & Holst 2014: 90-91). At Aspern, although several mass graves have been reported including an antiquarian discovery of a grave containing seventy individuals, the excavated examples contained between two and twenty-two bodies (Binder *et al.* 2014: 368). The dimensions of the graves were not large in comparison to the battlefield landscapes overall.¹⁴⁶ Grave 2 at Visby covers an area of 72m², a relatively small area within the wider battlefield, but nonetheless not so small that even wide-spaced transect survey/excavated might have missed it entirely.

Many battlefield graves were laid out with a minimum of overlapping and consistent orientation. Those graves which do have overlapping are typically identified as casualties

¹⁴⁴ More usually, burials in chapel grounds are associated with battle casualties who died of their wounds at a later date, as at Naseby (Foard 1995: 309-319); or skeletal material recovered from a battlefield, as at Aljubarrota (Cunha & Silva 1997), Grünwald-Tannenberg (Pluskowski 2013: 346-347), and (unverified) Bosworth (Foard & Morris 2012: 32). Recovery and chapel-reburial of battlefield casualties occurs almost exclusively within living memory of the battle. At Repton, the disarticulated skeletal remains of c.264 casualties were exhumed and reburied in grounds of an Anglo-Saxon monastery in the late C9th, which has been suggested to represent the casualties of the Danish Great Army which were collected together at a period after death for collective burial (Biddle & Kjølbye-Biddle 2001).

¹⁴⁵ Visby, grave 1 c.268, grave 2 c.798, grave 3 c.119 (Thordeman 1939); two additional graves of comparable size to grave 1 have been identified but not excavated. The total Swedish casualties are estimated at c.1700.

¹⁴⁶ Visby grave 1: 5.5m x 7m x 1.5m; grave 2: 12m x 6m x c.2m; grave 3: 4m x c.11m. Towton 1996 grave: 2m x 6m x 0.5m (figures from Masters & Enright 2011).

buried by the enemy, such as the disordered burial of the Mexican dead at Resaca de la Palma by the US army (Wescott *et al.* 2012). Several disordered mass burials at Aspern have also been interpreted as burial of the defeated battle-dead by those with no affiliation to them, as other communal graves on the site were laid out in a more organised fashion (Binder *et al.* 2014: 370). That said, overlapping or disordered burials are not universally indicative of disrespectful burial of the enemy. The casualties in the large Towton grave, although heavily overlain, had been laid out carefully in the grave to make use of the space most effectively and had been intentionally buried within the consecrated ground of Towton chapel (Sutherland & Holst 2014: 91-94). The field burials of WWI (Australian) casualties in a series of pits at Fromelles, France, were conducted (by the Germans) with a varying amount of care, some carefully placed in the grave on a ground-sheet, others more chaotically deposited including one spread-eagled body (Pollard & Barton 2013: 99-100). Graves typically contain few artefacts suggesting that the bodies were stripped of any valuables prior to burial.

Whether they were buried in clothing is less certain. No evidence of shroud-pins or clothing has been identified in any Early Modern or Medieval graves, but as the large Towton grave, for example, contained mainly copper-alloy lace-ends, in some cases the dead may have been partially clothed (Burgess 2000). In later periods, the battle-dead could be buried entirely naked in mass graves, stripped of all organic as well as metal artefacts (Podruczny & Wrzosek 2014). In other cases, however, it may have been too much trouble to fully strip the battle-dead. Numerous bodies from Waterloo were buried in clothing (O'Keefe 2014: 66-70), while many field graves from WWI also contain the remains of individuals who were buried in their clothing (e.g. Fraser & Brown 2007; Pollard & Barton 2013). At Camden, the individual burials of battle-casualties contained metal artefacts (Smith *et al.* 2009), but their presence may reflect the fact that they were buried at some temporal distance from the battle, and it may not have been possible or desirable to remove the artefacts.

5.3: Disposal of the battle-dead in antiquity

The literary rhetoric from classical antiquity clearly suggests that the battle-dead were formally buried or cremated on the battlefield. This practice has, however, been extrapolated from a small number of textual references. Even if they represent common practice, there are grounds to question whether these disposal methods would have left much archaeological evidence, particularly in contexts where cremation was used (e.g. James 2013). The processes by which Greek and Roman armies dealt with the casualties of battle, or in some cases declined to, are little understood. The subject is often glossed over in discussions of ancient burial practices, addressed by generalised comments such as "... [Greek] soldiers fallen in war were buried or cremated at the site of battle" (Felton 2007: 88), and "... [Roman] soldiers killed on the battlefield were collectively cremated or buried" (Toynbee 1971: 55). Transporting the bodies of the dead any real distance was rarely convenient, as demonstrated by the difficulties in implementing repatriation of the battle-dead in later history. The logistical challenges of transporting corpses in any circumstances in antiquity were considerable, usually requiring pre-treatment of the body such as cremation or embalming. Where repatriation is historically attested it is mainly associated with the elite (see Carroll 2009). However, the bulk transportation of even ashes of the battle-dead on campaign is likely to have been logistically difficult and is likely not to have been common (e.g. Lee 2007: 253-254).

However, there is a significant problem in establishing the treatment of the battle-dead in antiquity based on much of the literary and epigraphic and sculptural evidence. Almost all the evidence comes from a commemorative context, rather than the battlefield itself. How, therefore, can there be any certainty at all that what is described in this commemorative culture is actually a representation of what happened, and not a description of what society wanted to believe had happened? As discussed in the previous chapter, methods of disposal on the battlefield were often forced into a pragmatism which might not have been desirable, but was necessary. This may not have been communicated outside the army, leading to a distorted impression in later sources as to what exactly happened to the bodies. It should be questioned exactly how the ancient writers, in

particular, would have known what had happened in each case. The few more detailed descriptions of disposal practice may not represent accepted normalised practice, but rather unusual instances which were felt worthy of recording. While it is necessary to consider and acknowledge what the literary record documents about the disposal of the battle-dead, this evidence should be viewed with a large degree of caution, and assessed to see whether the statements which are made represent in any way practices which would actually have been possible on the battlefield. What can be said, however, is that the evidence from both the literary and epigraphic evidence suggests that there was no social expectation that bodies of the battle-dead would be returned home or seen again.

5.3.1: Repatriation from commemorative practice

Although repatriation of the battle-dead has historically been rare, the archaeological evidence from antiquity suggests that it was not entirely absent from the classical world. Removal of the battle-dead from the battlefield can be traced as far back as early Middle Kingdom Egypt (c.2055-1650BC). Sixty males discovered in a rock tomb at Deir el-Bahri have been identified as casualties of an unknown battle. The tomb was found in the middle of a row of civilian officials from the same period. Many of the bodies had sustained significant peri-mortem skeletal trauma to both the head (Winlock 1945) and forearms (Vogels 2003: 244). They were wrapped in linen rather than mummified, but had survived through desiccation within of the tomb. Varying levels of decomposition prior to placement in the tomb suggested variable periods of surface exposure, probably reflecting multiple phases of attack, with several bodies also showing evidence of predation by carrion birds (Winlock 1945: 19-23). The spatial relationship of the tomb to the conflict site is unknown, although a local position is suggested, albeit with no historical context (Vogels 2003).

In the Greek literary record, repatriation is largely, although not exclusively, associated with Athens, based on Thucydides' description of the practice as an ancestral custom (*patrios nomos/πατρίῳ νόμῳ*) unique to the *polis* (Thuc. 2.34.1-6; cf. Pritchett 1974-1991iv: 254-257; Clairmont 1983). Polybius (22.16.2) claimed that the tradition of

repatriation was so well-known in an Athenian context that Philip II not only allowed but facilitated the return of their battle-dead to Athens following Chaeronea. The cremated remains of casualties were buried in the *Demosion Sema* area of the *Kerameikos*. The Athenian battle-dead were evidently buried following the public funeral described by Thucydides (2.34.1-6). Inhumed burials of conflict dead are also known from the *Kerameikos*, most notably the tomb of the Spartans of an uprising in 403BC (Willemsen 1977). In the ancient literary record only Sparta is specifically and consistently associated with battlefield inhumation (e.g. Plut. *Ages*. 40.3; *Moral*. 233C; cf. Pritchett 1974-1991iv: 255; Low 2006: 91).¹⁴⁷

The division between the practices of Athens and Sparta with regard to the battle-dead may only reflect however, the fact that these are the only two *poleis* discussed in any great detail in the context of ancient battlefield practice. In some cases, the sources mention elite casualties being buried on the battlefield, as Epaminondas at Leuctra without documenting what happened to the other soldiers (Paus. 8.11.8). Pritchett (1974-1991iv) suggested that if elite casualties were buried on the battlefield it would be unlikely that anything different happened to the others. The epigraphic memorialisation of Greek casualties, recently studied by Low (2003; 2006; 2012), suggests that in most cases the battle-dead were mourned in the absence of the actual body (cf. Rice 1995), although this does not necessarily prove that the battle-dead were left on the battlefield itself.

The traditional view of universal battlefield disposal was challenged by Pritchett (1974-1991iv: 94-259), who cited multiple examples from the ancient literary record where non-Athenian dead were removed from the battlefield, including instances of Spartan semi-repatriation (Thuc. 5.74.2).¹⁴⁸ Pritchett (1974-1991iv: 125-139) also noted a series of settlement cemetery burials which he suggested represented repatriations of the war-dead. Several of the examples he interpreted as cemetery burials of the war-dead (Akragas, Vrana,

¹⁴⁷ Plutarch's comment that casualties from among the Spartan elite might be repatriated is corroborated, by Pausanias' (3.14.1) observation of the tombs of Leonidas (Thermopylae) and Pausanias (Plataea) in Sparta, while the other casualties were evidently left on the battlefield.

¹⁴⁸ A slight problem is presented by Plutarch's (*Moral*. 214F) attribution of "either this or on this" to a Spartan woman handing her son his war-shield, which implies repatriation of the battle-dead. This may be a romanticism on the part of Plutarch, a corruption from the use of multiple sources, or misrepresent a phrase which meant to fall on the shield in battle, not to be carried home upon it.

Olynthos, Messenia; pp.125-139) are more likely to be civilian casualties, based on the demographic range represented, including women, children, and the elderly, which is not typically associated with combatants (see Redfern 2011: 118). His other examples of repatriated battle-casualties may instead represent soldiers who died of their wounds after being returned to the respective *poleis*.

However, the communal burials at Thespieae and Tegea cited by Pritchett do appear to represent the repatriation burials of, if not conclusively battle-dead, certainly victims of armed conflict. At Thespieae, a *polyandron* grave was found just outside the city limits marked with (by then fragmented) a stone lion monument. The burial enclosure measured 32m x 24m. About 60cm below the surface, a layer of pottery, figurines and strigils (iron and bronze) measuring 45cm in depth was found. Below this was a cremation layer varying between 2.5cm and 7.5cm in depth, containing ashes, fragmented bone, and more figurines, strigils and iron nails, all of which showed signs of heat-fusing. No weapons were found in the grave. The cremation layer was estimated by the excavator to contain around 300 casualties (Pritchett 1974-1991iv: 132). A later extension of the excavation recovered a further seven inhumation burials, at a depth of 25-40cm below the cremation layer, generally interpreted as survivors of the battle who died of wounds after the first burials (Kurtz & Boardman 1971: 248; Pritchett 1974-1991iv: 133). Why these later casualties were not also cremated is unclear. The grave has been associated with the Battle of Delium, almost 50km from the city. As the bodies were evidently cremated within the burial enclosure, the casualties must have been transported to the site.

At Tegea, the communal burial of ten apparent battle-casualties was excavated in the main cemetery area following the discovery of a fragmented inscribed casualty list (Pritchett 1974-1991iv). The casualties have been cautiously identified with the Battle of Delphi. The bodies were inhumed in a single row and were completely articulated, though an additional amount of disarticulated bone was also recovered from the grave. There was no evidence of cremation and no artefacts within the grave. The burial has been identified as representing battle-dead largely on the basis of the casualty list.

More recently, a rescue excavation on the western necropolis of Himera in Sicily ahead of a railway extension uncovered the remains of casualties which have been associated with the Battle of Himera (Lee 2011). Sixty-five bodies were recovered from seven different graves, spatially clustered though not entirely separate from the surrounding burials. No artefacts were associated with the burials, though several graves contained projectiles which were embedded in the bodies when they were buried (Fig. 17). These projectiles aided the identification of the Himera burials as conflict-related.



Figure 17: Himera skeleton with embedded projectile (after Lee 2011: 40).

There is little evidence for the removal of the battle-dead from the battlefield in the Roman world. The costs of repatriating the battle-dead over the distances involved, particularly under the Principate, would have been substantial and almost certainly not even close to being covered by the contributions made to soldiers' burial funds (Carroll 2009).

Reuter (2005) argued that the battle-dead could have been removed from the battlefield to nearby military cemeteries, but that this practice was not represented in the epigraphic record as very few soldiers had their cause of death recorded on their tombstone. However, Hope (2003) has made a convincing argument that the epigraphy of Roman military tombstones is consistent with casualties mourned *in absentia*.¹⁴⁹ As in the Greek world, the literary and epigraphic evidence suggests that the battle-dead would have mainly been disposed of on the battlefield in mass graves.

A small number of cemetery burials are known in the context of the Roman conflict-dead. The best example is from the fort cemetery at Krefeld-Gellep (Gelduba) in Germany, where casualties from an attack during the Batavian Revolt were buried (Pirling 1974; Reichmann 1999 *cf.* Tac. *Hist.* 4.25-35). The bodies were placed in foetal positions in cut graves without significant associated artefacts. Unlike battlefield burials, the casualties were mostly buried in single inhumations though there are some examples of double burials). The bones were well-preserved and buried within the topsoil, 80cm-1m below the surface. There were no signs of surface-exposure, so the burials can be assumed to have taken place soon after the conflict. Given that the conflict took place within the vicinity of the cemetery it would, unusually, have proved of comparable (if not greater) convenience to make use of the facilities already in place rather than creating new graves within the area of conflict. Krefeld-Gellep was later attacked in AD256/257 by a Frankish army, and at least nineteen casualties from the ensuing battle were buried in the recesses of an abandoned Mithraeum at the site (Reichmann 1997: 23-24). In Britain, a small number of military tombstones record death in battle within the perimeter/vicinity of the camp.¹⁵⁰ These casualties, like those at Krefeld-Gellep, were evidently buried in a normal cemetery context. Conflict-related violence is certainly evident in several settlement cemeteries, particularly in the Late Iron Age, as illustrated in Britain in the cemetery burials at Maiden Castle (see Wheeler 1943: 62-64; Redfern & Chamberlain 2011). A review of the Maiden Castle evidence by Sharples (1991) led him to suggest that much of the evidence for 'conflict' at the site was actually the result of industrial activity, although the (Roman) ballista bolts and arrowheads

¹⁴⁹ Although the Caelius stone (*CIL* 13.8648) dedicated to one of the casualties of the Varus battle seems to reserve the possibility that his body might someday be recovered for burial.

¹⁵⁰ *RIB* 3218; *RIB* 3364. Only 39 surviving tombstones empire-wide document death in battle as cause of death, representing 42 total individuals (Reuter 2005). Most appear to be commemorated in the absence of a body.

suggest that the site did come under attack sometime in the C1stAD. However, Redfern's (2011) analysis of the physical anthropology of the skeletal remains reflected multiple instances of conflict dating to the Late Iron Age, including internecine violence as well as a potential connection with the Roman invasion in AD43.

5.3.2: The Greek battle-dead in the ancient literary record

In some cases the ancient Greek literary record documented the disposal of the battle-dead, albeit usually not in any great detail. There is enough literary evidence to suggest that formal burial of the battle-dead was a social and religious obligation (Krentz 1985: 13; Johnston 1999: 149) and a military priority (Vaughn 1991: 40; van Wees 2004: 145) for both the professionalised and levied citizen armies of the Greek world.¹⁵¹ As such, the literary record suggests that efforts were made on some occasions to bury the enemy dead when their own were unable to do so. Pausanias (1.32.5) claimed that the Athenians buried the Persian dead at Marathon, although had no idea in what manner. Arrian (*Anab. Alex.* 1.16.6) stated that Alexander buried the Greek mercenaries and Persian commanders at the Granicus, evidently leaving the ordinary Persian soldiers exposed.

What was actually done to bury the dead is frequently omitted. In many instances the Greek literary record is not even particularly clear about whether the disposal of the battle-dead involved inhumation or cremation. The two most common terminologies, "θάπτω" (to honour with funeral rites) and its derivations (Hdt. 9.85; Thuc. 3.109.3; 5.74.2; Xen. *Anab.* 6.4.9),¹⁵² and "ἀναίρω" (to take up the dead; Thuc. 3.98.5; 4.44.3; 4.97.1), are not uniquely associated with either practice (*cf.* Pritchett 1974-1991iv: 251-257). The lack of elaboration on the process is typically interpreted as reflecting contemporary familiarity with the process which would have rendered any explanation unnecessary. Cremation is often assumed to be the easiest and therefore most common method of disposal in the

¹⁵¹ A full summary of the literary references to the disposal of the Greek battle-dead can be found in Pritchett (1974-1991iv: 153-235) and Hanson (1989: 197-209).

¹⁵² The earliest use of θάπτω in the context of the battle-dead comes from Homer (*Il.* 21.323) and evidently means a cremation followed by burial of the ashes below a mound. This may however, reflect epic and/or elite tradition rather than any real method of disposal.

Greek world, as demonstrated by Ma's (2008: 83) assumption that the fact that the Theban dead at Chaeronea were buried rather than cremated reflected their "unfavourable circumstances" in the aftermath of battle. As a result of the uncertainty, research on the battle-dead in the Greek world has focused on the military and social context, such as the status of the battlefield truce (Pritchett 1974-1991iv: 246-49; Krentz 2002: 32-33), the identification of casualties after battle (Vaughn 1991) and under what circumstances the dead could be abandoned (e.g. Pritchett 1974-1991iv: 235-241; Hanson 1989: 207-209).¹⁵³ In considerations of the method of disposal, historians have discussed the ritual, economic, propagandist and social aspects of the battle-dead, but almost never consider the pragmatic elements (e.g. Low 2006).

The literary sources rarely mention whether one or more mass grave(s) was necessary. In the few instances where multiple graves are mentioned, such as Marathon (Paus. 1.32.3) and Plataea (Hdt. 9.85), the separation appears to reflect *polis* or social divisions, not unmanageable casualty numbers. The location of graves are unclear. Ancient historians occasionally mention that the dead were buried "on the spot" (Hdt. 7.228; Thuc. 2.34.5), which may suggest a spatial association with casualty density, or simply that the dead were left somewhere on the battlefield. The sources do not mention grave-goods, although there were later festivals at the battlefield graves at Marathon and Plataea (Thuc. 3.58.4) in which artefacts were dedicated to the 'heroic' casualties. The battle-dead were evidently stripped before burial, particularly those of the defeated army.¹⁵⁴ Arrian (*Anab. Alex.* 1.16) recorded that the Macedonian battle-dead from the Granicus were buried with their arms and decorations, suggesting that the battle-dead might, in some cases, be buried clothed and with military grave-offerings, although whether Arrian was accurately representing common practice is difficult to know.

¹⁵³E.g. Thuc. 3.24.3; 3.113.5; 7.75.2-3.

¹⁵⁴E.g. Thuc. 3.119.1; 4.97.1; Xen. *Hell.* 3.2.5.

5.3.3: The Roman battle-dead in the ancient literary record

Historians have argued that, as in the Greek world, Roman soldiers expected their surviving comrades to bury them if they were to fall in battle, making disposal an issue of military morale (Peretz 2005: 124-131; cf. Onas. *The General* 36.1-2), to which end they contributed to a communal burial fund (Veget. *Epitome*. 2.20). The absence of any equivalent to the Greek battlefield truce might cause burial to be delayed by several years, with a returning Roman force burying the remains.¹⁵⁵ Any such obligation evidently did not guarantee burial, even at a later date, if it was not militarily pragmatic to do so, in which case the battle-dead would be left exposed on the battlefield indefinitely.¹⁵⁶ Cicero (*Philippics* 14.34) suggested that the battle-dead were subject to different guidelines regarding non-burial, and Hope (2003) argued that the rhetoric of Roman military memorialisation implied that society accepted the dead would not always receive a formal burial. The literary record documents the Romans leaving the enemy dead unburied on multiple occasions (e.g. Livy 23.36.4; Plut. *Marius* 21.3; *Sulla* 21.4), and in turn, occasions where the Roman battle-dead were despoiled and abandoned (Livy 5.39). Tacitus (*Germ.* 6) noted, perhaps in surprise, that the Germanic tribes claimed their battle-dead even when they had not won the conflict, suggesting that, in the Roman world, the abandonment of bodies in the field was not unknown in the provincial territories.

Although Roman sources mention the disposal of the battle-dead slightly more often than their Greek counterparts, in general they go into no greater detail about the actual process. Much has been made of a reference in Pliny which suggests that an earlier practice of inhuming the battle-dead had to be replaced with cremation when it emerged that

¹⁵⁵ Most famously at the Varian battlefield in AD9 (Tac. *Ann.* 1.61-62; but also at Zela c.64BC (Plut. *Pomp.* 39.1), and during the Parthian War (AD58-63; Tac. *Ann.* 15.28). However, several historians have suggested descriptions of the later burial of the abandoned battle-dead may be examples of literary "aftermath narrative" informed by rhetoric rather than reality (see Pagán 2000: 425-34); for discussion in the context of the *clades Variana*, see Woodman 1998: 81-84; Pagán 2000; Siedman 2014.

¹⁵⁶ For unburied dead Trasimene (Livy 22.7.5) and Cannae (Livy 22.52.6; cf. 22.59.8; 25.12.6), Carrhae (Plut. *Crassus* 27.3), Bedriacum (Tac. *Hist.* 2.70), and the casualties from an engagement in the Frisian Revolt who were left unburied despite the fact that "...a considerable number of tribunes, prefects, and centurions of mark had fallen" (Tac. *Ann.* 4.73).

provincial enemies were exhuming and despoiling the remains (Pliny *NH* 7.54).¹⁵⁷ Cremation would not prevent the grave from exhumation, and a field cremation might leave pieces of skeletal material, depending on the quality of the pyre (Noy 2000). Cremation would not necessarily have resulted in a less obvious grave on the surface, although it may have displaced less earth and thereby not created a mound which drew attention to the presence of buried bodies. With cremations, whether in pits or on the ground, there was a limited amount of despoilment which could actually be done to the remains, whether or not the ashes themselves were buried.

Pliny does not give specify in what timeframe this change in practice occurred, although he did not imply it was a recent phenomenon, and used the example to contextualise the general shift in Roman society towards cremation in the C1st AD. The Roman 'common practice' has been viewed as cremation of the battle-dead since at least the Early Empire (Webster 1998: 280-281). The references in the written sources do not reflect an obvious change to cremation at any point between the Second Punic War and the AD69 Civil War. This may reflect the incomplete nature of the source material. As reflected in Tables 6 and 7, very few Roman sources describe the process used to dispose of the battle-dead. Within the surviving examples, there is no obvious shift from inhumation to cremation of the battle-dead specifically prior to Pliny's time. Inhumation, at least in the Roman literary record, remained a method of disposal for the battle-dead, in contrast to wider civilian practice which had moved towards cremation in Italy, Gaul, Southern Britain, among other areas, since the C1st BC. References to the disposal of the battle-dead in Late Antiquity suggest a return to inhumation, usually in a mass grave, which may reflect contemporaneous societal changes in mortuary practice (e.g. *Amm. Marc.* 17.1.1).

¹⁵⁷ It should be noted that cremation did not always prevent remains being disinterred and despoiled, as observed in the case of Varus, although according to Velleius (2.119.5) he had only been partially cremated. Noy (2000: 188-191) suggests that field-cremation was often used to keep the bodies of the dead safe from enemies, but was only partially effective when the process was hurried.

Battle	Date	Method	Source
Caphyae	220 BC	Inhumation	Polyb. 4.13.1
First Nola	216 BC	Inhumation	Livy 23.46.5;
Numistro	210 BC	Cremation	Livy 27.2.9
Grumentum	207 BC	Inhumation	Livy 27.42.8
Spain (unspecified)	186 BC	Inhumation	Livy 39.21.7
Zela	67 BC	Inhumation (exposed remains)	Plut. <i>Pomp.</i> 39.1
Bibracte	58 BC	Inhumation	Caes. <i>Bell. Gall.</i> 1.26.5

Table 6: Literary description of inhumation/cremation of the Roman battle-dead 220-31BC.

Battle	Date	Method	Source
Legionary mutiny	AD 14	Cremation	Tac. <i>Ann.</i> 1.49
Burial of the Varian dead	AD 15	Inhumation	Tac. <i>Ann.</i> 1.62
Bedriacum	AD 69	Inhumation (familial)	Tac. <i>Hist.</i> 2.45

Table 7: Inhumation/cremation of the battle-dead 31BC-AD70.

Few of the references to the physical disposal of the Roman battle-dead suggest whether single or communal graves were created, while the sources imply that the dead were gathered from across the battlefield into a central location and one communal grave. At the Teutoburg, Tacitus (*Ann.* 1.62) describes a single mass grave, although the fact that the remains being buried were already skeletal may have been a factor. Similarly at Numistro, the dead were collected together into one heap, cremated, and presumably left in a single communal deposit (Livy 27.2.9). There is no mention of any grave goods, suggesting that the dead were stripped of their armour and weaponry before being buried or cremated. However, it is not clear whether the dead were stripped before being moved, which would perhaps represent the lesser effort, or once they had been centrally located.

5.4: Logistic and pragmatic considerations

As noted previously, the literary and commemorative evidence for the disposal of the battle-dead in antiquity largely fails to engage with the reality of disposal. In later periods, it is obvious that the disposal of the battle-dead was governed by pragmatic factors, particularly in cases such as Waterloo where the number of bodies to be buried was comparatively high. As a result, the most efficient means were used to minimise both time and effort, particularly in cases of high casualties and hot weather. In burying the battle-dead, military necessity and biological reality both have an impact on how long could be spent in the process and what it was physically possible to do with the bodies.

There was a limited period in which the disposal of casualties could reasonably take place, first because of the period of time an army could remain on the battlefield, and secondly the physical reality of decomposition and its impact on post-battle activity also affected by how many casualties there were and how widely they were distributed. Comparable logistic and pragmatic issues would have impacted the disposal of the battle-dead in antiquity, from which insights into the disposal process, and consequently into the resulting archaeological impact on the site, can be extrapolated. It is probable, given the scale of casualties and speed of physical decomposition, that disposal on the battlefield would have been the only realistic option following the majority of battles in antiquity. Whether that involved a formal disposal process, however, or simply abandonment of the dead on the field is another issue.

5.4.1: Casualty rates

The number of bodies requiring disposal would have varied between battles, and estimates for average casualty rates largely rely on demographic comparisons ahead of accurate historical documentation. Both army and casualty figures in the ancient sources are notoriously unreliable, and may have been exaggerated in either direction depending on

the purpose of the narrative.¹⁵⁸ Demographic calculations have been used to suggest average casualty figures, usually 4-6% for the victorious army and 14-16% for the defeated, though the latter figure could be much higher in the case of exceptional, 'total' defeat.¹⁵⁹ Absolute casualty numbers may have been higher in Roman warfare than Greek purely as a result of the average size of the respective armies; in most cases, Greek casualties numbered in the hundreds, while Roman seem to number in the thousands. The statistical calculations suggest that up to three-quarters of the casualties would be associated with the defeated army.

Based on the written sources, the battle-dead were widely spread across the battlefield, although the specific spatial distribution of casualties in ancient battle is not well known (e.g. Tac. *Ann.* 2.18; Plut. *Caes.* 19.11, *Pelopidas* 32.7). Some historians have argued that casualties were concentrated in areas where the battle-line collapsed, particularly in Greek warfare (e.g. Hammond 1968: 18), while others maintain that a higher casualty rate would have been sustained in the subsidiary fighting as one of the defeated armies attempted to flee the field (e.g. Sabin 2000: 6). Concentration in a single area of the battlefield would make the creation of a single mass grave far easier than in instances of wide distribution, in which case a series of smaller graves would prove less time-consuming. Archaeological excavation on the Roman battlefield at Baecula suggests that, even in conventional battle, military activity including but not limited to fighting stretched over several (square) kilometres. It would not be insurmountable to collect the dead to one central location, but certainly would have been less than convenient in comparison to creating a series of graves associated with areas of mortality density. Any military involvement in the disposal of the dead would need to fit into the period when the army remained on the battlefield, which would also include treatment of the wounded, looting, eating, and sleeping, as well as the usual military work of guard duty, patrolling, etc.

¹⁵⁸ For the deliberate adjustment of Roman casualty numbers (both up and down) see Brunt 1971: 694-97; *contra* Rosenstein (2004: 113-117) who argues that figures are roughly reliable. For identification of casualty numbers/identities, see (Greek) Hanson 1989: 206-207; Vaughn 1991, (Roman) Brunt 1971: 694; Peretz 2005: 131-137.

¹⁵⁹ Greek hoplite warfare 4% victory and 14-16% defeat (Krentz 1985); Middle Republican Rome 2.65-4.2% victory and 16% defeat (Rosenstein 2004: 109-25); Roman Empire 5-6% victory (Gabriel & Boose 1994: 29-34; Sabin 2000: 5-6).

5.4.2: Physical decomposition

One of the underpinning factors in battlefield burial, as opposed to repatriation, is the speed of decomposition of the human body. As seen at Waterloo, one of the biggest problems for the disposal process was the rapid and accelerating decomposition of the bodies before it was possible to bury them, leading to the adoption of wide-scale cremation (O'Keefe 2014: 66-70). The most important requirement was therefore that any method employed should be able to deal with the battle-dead in a rapid manner, alongside the other post-battle activity - tending the wounded, looting - taking place at the same time. Decomposition would have been well underway for many casualties even before the end of the actual battle. The physical breakdown of the bodies as a factor has been acknowledged by some historians, though principally in the increased unpleasantness of subsequent disposal and the difficulty in identifying individual casualties (e.g. Hanson 1989: 204-206; Vaughn 1991: 45).

The sooner that the dead could be disposed of, the physically easier the process would be. Rigor mortis sets in within an hour of death, complete after around five to six hours, with bodies remaining in this condition for approximately 48 hours, during which period it would be difficult to strip the bodies of any armour.¹⁶⁰ After 48 hours rigor disappears, replaced in its stead with advanced decomposition which sees the body becoming severely swollen and difficult to move, let alone strip. After a further 24 hours, decomposition is so advanced that the bodies begin to burst, making it difficult to move or cremate. The process would continue for another two to three weeks, albeit at a slower rate and taking a year or more for the corpse to become largely skeletonised.

The Greek literary record documents several examples where advanced decomposition impacted the disposal of the battle-dead. Xenophon recorded an occasion where a group of Arcadian dead could not be buried for five days. When he came upon

¹⁶⁰ As at Visby, where multiple casualties were buried wearing their armour. The defeated Gotlander battle-dead had lain exposed for several days, and once the time came to bury them it was not possible to strip the armour (Thordeman 1939).

them, many were too decomposed to move and were rolled into pits dug alongside the bodies. Even those which could be moved were evidently in a poor condition:

“They buried the greater part of the dead just where they each had fallen; for they had already lain unburied five days, and it was not now possible to carry away the bodies; some that lay upon the roads, however, they did gather together and honour (θάπτω) with as fine a burial as their means allowed, while for those they could not find, they erected a great cenotaph, and placed wreaths upon it” (Xen. *Anab.* 6.4.9).

The implication from Xenophon is that the Greek army recognised that in certain cases informal burial measures were necessary to deal with the dead if they had remained unburied for a significant period of time. It would not prove surprising, as on later battlefields where a similar process occurred, if individual trench burials were to be found across a battlefield where the dead had lain unburied for a number of days.

There is a similar delay in Menander’s *Aspis* (69-79), where the dead from a (fictional) battle were unrecognisable due to bloating three days after a battle. As a result, the normal method of disposal had to be abandoned in favour of a hasty mass cremation and battlefield interment. The condition of the Athenian battle-dead from the Battle of Delium held by the Thebans for 17 days before being returned (Thuc. 4.104) is unlikely to have been conducive to any process of recognition, transportation, or even, in all probability, cremation. If a victorious army in control of the battlefield did not dispose of the enemy dead, the chances are that the remaining bodies would be in an advanced state of decomposition by the time that the defeated side was able to return and bury their own. There is little evidence to suggest that either the Greeks or Romans felt overly compelled to dispose of the enemy dead, suggesting that the casualties of the defeated army may have frequently had delayed burial.

Everything suggests therefore that for both military and personal convenience, it would have been necessary to dispose of the dead within 24 hours of battle, although several literary examples state that if the battle was fought until nightfall, burial would

begin the following day. Frontinus (*Strat.* 2.10.1) implies as much in describing an overnight burial of casualties by the Roman commander Titus Didius, which convinced the opposing army that they had sustained more casualties and surrendered. Ammianus Marcellinus (17.1.1) referred to enough of a delay in the burial of the Roman casualties at Strasbourg that birds had to be prevented from eating the bodies before they were buried, although this does not necessarily imply a particularly extended period of time.

Inhumation may have proved more immediately practical than cremation, which requires large amounts of fuel and a long burning period, particularly in the case of a large number of bodies.¹⁶¹ That said, both the Greek and Roman literary sources refer to the cremation of the battle-dead, and the cremation graves at Marathon and Chaeronea are evidence that this was possible in reality in Greece. It may have been more difficult to locate sufficient dry fuel to facilitate mass cremation around provincial Roman battlefields, although this is not to say that it was impossible. Inhumation may have avoided the need to find sufficient fuel and time for a mass pyre, but had time-related issues of its own, in particular the necessity of ensuring that the grave was dug sufficiently deep to prevent the re-emergence of inhumed remains soon after their internment.

The resurfacing of bodies does not seem to have been unheard of in antiquity. Herodotus suggests that skeletal remains re-emerged at Plataea (Hdt. 9.83) and the Egyptian-Achaemenid battlefield of Pelusium (Hdt. 3.12), while Plutarch (*Marius* 21.3) described the resurfaced bones of casualties from the Battle of Aquae Sextiae being used by the people of Massalia to fence their vineyards. Shallow graves would be at constant risk of weathering and exposure of remains, but it would be difficult, in a limited period of time, to ensure a deep burial for hundreds or thousands of casualties.

¹⁶¹ Studies of Roman cremation methods have suggested that burning even a single corpse took in excess of 11 hours with the pyre requiring constant maintenance (Noy 2000: 188-192).

5.5: Excavated battlefield graves from antiquity

A number of battlefield graves have been excavated in the Greek and Roman worlds. Unlike the artefact archaeology of ancient battle, which is dominated to date by Roman examples, the examples of mass graves come mainly from the Greek world. Greek battlefield graves were deliberately targeted by archaeological excavators in the C19th and early C20th, primarily because they were still marked on the surface by monuments which made them stand out within the plain. There is no evidence for a widespread comparable practice of marking battlefield graves in the Roman world. The literary record suggests that they would be torn down as soon as the Roman army left, as Germanicus found when he raised a mound over the Varian dead (Tac. *Ann.* 1.61-2; 2.7). However, the monument at Adamklissi, which is likely to mark a battlefield burial, suggests that the possibility should not be excluded in the Roman world (Richmond 1967; Frere & Lepper 1988: 299-304). If Pliny was correct that the inhumed remains of the Roman battle-dead were disinterred and despoiled when left on the battlefield (Pliny *NH* 7.54), minimal monumental marking would be expected, and yet there is no direct literary statement that the Romans did not construct battlefield monuments, for whatever reason, as there is regarding trophies. As yet human remains have only been excavated on the Roman battlefield at Kalkriese, itself an atypical burial, which means that in reality there is no physical example yet discovered that attests to the Roman treatment of the battle-dead in normal, victorious circumstances, an issue which will be addressed in greater detail below.

5.5.1: Greek battlefield graves

A number of battlefield graves have been excavated in the Greek world. The best-known is perhaps the *Soros* mound at Marathon, long identified as the grave of the Athenian battle-dead from the battle. The *Soros* contained the cremated remains of an unknown number, along with grave offerings including pottery (Pritchett 1960). Why the battle-dead were not returned to Athens, less than a day's march away, is unknown. Both Thucydides (2.34.5) and Pausanias (1.29.4) claimed it was due to the exceptional bravery of

the casualties, but it may in reality simply have been the prevailing custom regardless of *polis*-proximity and the easier option (see Clairmont 1983). A pair of *tumuli* excavated c.2.5km to the north-west, near the settlement of Vrana, were for a while identified as the burial place of the Plataean and slave dead, an attribution dating back to the early traveller-topographers (e.g. Clarke 1812-1819ii: 28) and maintained by Hammond (1968: 30). The demographic characteristics of the grave however, which contained children and elderly men, does not suggest combatant casualties (see Redfern 2011: 118).¹⁶² Remains that have been cautiously associated with the Persian dead were uncovered by agricultural activity in the northern area of the plain in the late C19th (Pritchett 1965-1992i: 1-10).

Given that the area was previously marshland it is possible that these were casualties who drowned during the battle, rather than representing a formal battlefield burial. The spatial relationship of the burial(s) is difficult to assess due to the lack of excavation on the battlefield, meaning that there is no solid evidence for where on the extensive plain the actual battle took place. The central clash had been presumed to have taken place in the southern area of the plain around the *Soros*, which marked a convenient position to dispose of the Athenian battle-dead, most of which were thought to have been sustained in the initial clash (e.g. Hammond 1968: 18). Burn (1969: 118) noted that the position of the *Soros* did not necessarily mark the position of the main battle, nor the majority of casualties, which he instead suggested were sustained in the clash at the ships in the north of the plain (although his reconstruction of the battle, aside from the orientation of the battle-lines, was similar to that of Hammond). Krentz (2010) agreed that most of the Greek battle-dead would have fallen in the fighting at the ships, and observed that bodies had therefore been moved a not inconsiderable distance for burial. He suggested that the grave may have been positioned to be visible from the road approaching the plain from Athens, tying in to wider considerations relating to the memorialisation of ancient battles.

Two graves have been excavated on the Graeco-Macedonian battlefield at Chaeronea (338BC). They represent some of the most complete anthropological evidence

¹⁶² Leake (1841: 101) recorded a second *tumulus* close to the *Soros* during his battlefield visit in 1802 which is more likely to be that of the Plataeans; Pritchett (1974-1991iv: 128-129) in particular agreed. Unfortunately, Leake did not provide any details as to the distance or direction of the second mound from the *Soros*, and no trace of it is now extant.

from a Greek battlefield, although to date have not been studied by a forensic anthropologist. The most recent (and detailed) study of the skeletal material was conducted by John Ma, who approached the remains in the context of research into the commemoration of the battle. The first grave to be discovered located was situated close to the ancient settlement at Chaeronea and marked on the surface by a large marble lion, lying 45cm below the ground-level at the time of the excavations in 1879 and 1880. It contained 254 inhumed male skeletons laid out in seven rows, and the cremated remains of at least one and up to three individuals, placed between the heads of skeletons 13 and 14 in row 2 (Ma 2008: 82). There was no evidence of surface-exposure or over-lapping in the laying out, though many bones exhibited substantial skeletal trauma, particularly to the cranium and leg bones. The grave enclosure, unhelpfully, was recorded in size as 26 by 16 paces (Pritchett 1974-1991iv: 137), roughly 12m x 20m.¹⁶³

The only weaponry in the grave was 5 javelin heads which, from their position, were most likely embedded in the bodies, although a number of other artefacts were found in the grave. A large quantity of bone eyelets, which appeared to be fastening studs for Greek *trochades* sandals, suggested that the dead were buried with their shoes on. There were also a large number of iron strigils, five bronze coins and assorted pottery (Ma 2008: 82). A communal grave of the Theban dead from the battle, marked by a stone lion, is documented by Pausanias (9.10.1, 9.40.10). The artefacts suggested this was a Greek rather than Macedonian burial, and it has been tentatively if sentimentally associated with the Theban Sacred Band of 300 who were almost wiped out in the battle (Ma 2008: 79-80). No other Theban or allied Greek burials have been found on the battlefield to date.

North of the inhumation grave at Chaeronea a second burial, marked by a mound rather than a monument, was excavated in 1902 and 1903. The mound stood 7m above ground level at the time of the excavations, and measured in 70m diameter. This grave contained cremated remains of an unknown number of individuals, interred just below ground level with the mound raised above. The ashes were found in a cone-shaped heap, with a diameter of 10m and a height at centre of 75cm, covering a total area in excess of

¹⁶³ Based on average pace-length of 76cm.

100m² (Sotiriadis 1903). The remains were well-cremated with only a small number of long-bones in a non-fragmented condition. The grave contained a quantity of iron weaponry, including lance-heads and sword elements (but with no armour), along with bronze coins and pottery including amphorae. The weaponry was heat-fused suggesting it was cremated with the dead (Ma 2008: 77). Unsurprisingly, this grave has been associated with the Macedonian casualties of battle based on the assemblage, particularly a 45cm *sarissa* blade. Unlike the Theban burial it is difficult to suggest casualty numbers based on the remains, not least as there is no record of the varying depth of the cremation layer. It is difficult therefore to suggest whether this grave could have contained all the Macedonian casualties, although it may be worth noting that the documented dimensions of the cremation layer are well in excess of those from Marathon.

The Greek battlefield graves contain metal and non-metal artefacts, although the intentional deposition of weaponry (as opposed to embedded projectiles) is only seen in the Macedonian grave at Chaeronea. The dead must have been stripped of any defensive armour and metal clothing elements, suggesting that they were buried within 48 hours of death. The inhumation burials showed no signs of extended surface exposure, and in laying out had no overlapping or other signs of disordered burial. There was no evidence of any disarticulated burials, with the exception of the 'Persian' burials at Marathon uncovered by agricultural activity. All cremation burials had a layer of artefacts which appear to have been burnt *in situ* at the same time as the bodies. The burial areas were of substantial size. All the archaeological evidence thus far goes to suggest that care and attention was paid to the remains of the battle-dead, with the exception of the potential Persian remains at Marathon which show little evidence of ceremony.

5.5.2: Roman battle graves

The direct archaeological evidence for battlefield burial in the Roman world is limited. Human remains associated with conflict have been recovered from a number of contexts, such as South Cadbury and Dura-Europos (see 1.5). However, the only burials

associated with a battlefield rather than a siege or settlement attack come from the Varian battle at Kalkriese, more specifically from the Oberesch.¹⁶⁴ Rather than an organised grave system, there was a series of 8 (to date) bone-pits ranging in size from 30-40cm to 4m² (Großkopf 2012: 97). Each bone-pit contained a jumbled assortment of largely human skeletal material with a small quantity of animal, which suggests a limited prioritisation of human bones (Uerpmann & Uerpmann 2007: 144), although there is little evidence of organisation in the laying out of the remains (Fig. 18).



Figure 18: Bone-pit 5 from the Oberesch, Kalkriese, containing disarticulated remains including visible human skull (from Rost & Wilbers-Rost 2010: 122).

There is no obvious spatial concentration of the pits, although all are located away from the rampart in concentrations to the east and west edges of the Oberesch sites, with bone-pits 1, 2 and 3 possibly forming an associated group. Wilbers-Rost (2009b: 1350-1351) suggests that the distribution does not reflect casualty densities but rather recovery rates, arguing that the area in front of the rampart would have been covered with surface

¹⁶⁴ Full details on the anatomy of the human remains can be found in Großkopf (2007, 2012) and Uerpmann and Uerpmann (2007).

vegetation while the peripheral areas were wooded, making it easier to see and therefore recover skeletal remains from the latter. The bones had been left unburied and surface-exposed for a period of between two and ten years before burial, with the result that many continued to decompose after burial. Many of the bones (particularly from bone-pits 2, 3 and 7) survive in very poor condition. Higher rates of preservation were associated with limestone blocks in some of the graves, most notably in bone-pit 1. These may have been intentionally deposited to provide lining for the graves, as the stone is not 'native' to the area and its deposition is therefore almost certainly the result of human activity. Wilbers-Rost (2009b: 1348), however, notes that limestone blocks were used in the construction of the German rampart, which may account for its presence in the pit-fill several years later.

Many of the bones, particularly the limbs, had signs of animal gnawing concentrated on the ends.¹⁶⁵ A limited number of partially-articulated limbs were found, particularly from bone-pit 1, most notably a skull and upper vertebrae, a right arm (radius, ulna, carpal and metacarpal bones) and a right hand (carpal and metacarpal bones). A number of bones from the hands and feet survived in the pits, particularly bone-pit 1, in far higher numbers than most post-exposure burials. Unusually, the hand bones survive in greater quantity than those of the feet, despite the greater size and integrity of the latter. The articulated limbs and hand and foot bones have led to the suggestion that, if these limbs were not still partially fleshed (at best a remote possibility), the bones were held together by the remnants of clothing, non-metallic armour (Großkopf 2007: 167) or medical bandaging (Rost 2012: 106), which have not survived. The bones are predominantly male, aside from one bone which is debatably female, aged 18-55 based on the identifiable bone (very little of it is workable, however), and the minimum number of individuals is as low as seventeen, although the condition of the remains at the time of inhumation makes this estimate highly tenuous (Großkopf 2014).

Unsurprisingly, the bone-pits at the Oberesch have been identified as the Roman burial of the dead by Germanicus and his army in AD15, as documented by Tacitus (*Ann* 1.60-62) although they do not particularly fit his description of the burial, particularly as

¹⁶⁵ Comparable to the gnaw-marks on the exposed bones from Aljubarrota battlefield (Cunha & Silva 1997).

there are eight pits rather than one single (mass-)grave. Certainly, the period of surface exposure fits the timeline given by Tacitus, although the extended period of exposure to between two and ten years equally allows for earlier or later activity. One hypothesis suggests that the graves were created by the local German population, who allowed the remains to skeletonise and then buried them; the fact that the land was populated and cultivated has been used to suggest that, after a period of time, the bodies would have represented an inconvenience and would have been buried to clear them out of the way (Wolters 2003: 165).¹⁶⁶ Zelle (2008) questioned whether the pits were Roman in origin on the basis that they did not fit the ritual form of the time, in that the remains had been inhumed rather than cremated, although Wilbers-Rost (2012/13: 96) rightly observed that cremation would this have been impractical years after the battle. As observed above, the literary record through to the C1st AD does not reflect a dominance of cremation on the battle, only consistent battlefield disposal in general.

It is more problematic that as of yet no graves have been found on any of the other Roman battlefields currently excavated. No human remains have been identified at Baecula or Harzhorn, despite the extensive survey and excavation of large areas not just of the conflict area itself but the surrounding landscape. At Harzhorn, it may be that the full extent of the battlefield has not yet been recognised and other areas remain to be discovered, particularly given that this appears to have been an ambush rather than a formal field battle. By contrast, at Baecula there is no such caveat; the artefacts show the mustering and clash of battle-lines and the retreat and pursuit of the defeated Carthaginian force. The camp areas of both armies have been identified. Yet there are no traces of (mass) graves associated with the battle. The graves may have been dug below the topsoil, although this would be unusual in a battlefield context and certainly worthy of verification. More plausible is the possibility that the human remains have not chemically survived (see 6.2.2), particularly if the terrain has fluctuating ground-water levels.

The artefact distribution is not indicative of a large area turned over for human remains disposal however, even without the survival of the skeletal material. Nor is there

¹⁶⁶ Although Wolters uses this argument to support his hypothesis that the Kalkriese battlefield in general should be associated with the AD15 campaign, not Varus.

any area indicative of cremation. There are no scorched areas, heat-fused artefacts or areas stripped of artefacts. The absence of any evidence for inhumation or cremation in the central battlefield area excavated may reflect non-survival of evidence, particularly of surface cremation, and it would be incautious to read too much into the absence of graves. However, it may not be implausible to suggest that some trace of a burial should be visible if the method of disposal was consistent with a single, central grave, even if this manifested only as an area spatially devoid of artefacts through removal of the topsoil and, therefore, the battle-deposited material. No mass burials have been found in the areas around the battlefield of Abritus, although the battlefield itself has not been excavated and many of the artefacts found in the conflict landscape have been recovered somewhat informally. Frere and Lepper (1988: 299-304) have suggested that the Trajanic Adamklissi monument in Romania marks a battlefield burial of the casualties named on the inscribed casualty list, although they are uncertain which battle it could be.¹⁶⁷ No human remains have, as yet, been conclusively associated with the Roman battlefield.

Roman graves in whatever mortuary context contain very few artefacts, with no sign of intentional deposition. Beyond this, whether the dead were stripped or not is uncertain, although it seems probable, particularly in regards to weaponry and armour. Nor can anything certain be said about the use of cremation or inhumation, the size of graves or burial enclosures or the location of the graves in respect to casualty density. The burial of the Varian dead (whether they are in the Oberesch bone-pits or not) on the battlefield suggests that even when bodies had become skeletonised they would generally not be removed from the battlefield, unless a secure cemetery was in the immediate vicinity. However, the survival of Roman battlefield graves in the archaeological record may perhaps be called into question by Pliny's (*NH* 7.54) comment that the provincial examples were dug up, and the remains despoiled, following the departure of the army. Although he implies that the introduction of cremation ended this process, it is not clear whether it was the digging up overall that was ended as a result, or just the despoilment. The failure to locate graves at Baecula, Harzhorn and other conflict sites may not reflect an initial absence, or

¹⁶⁷ The date of the Adamklissi casualty list and monuments is uncertain. While Trajan did erect a memorial at the site, the altar may be contemporaneous with an earlier monument placed at the same site under Domitian commemorating his own campaigns in the area (Stefan 2005: 442-444).

incorrect location, but rather a process of destruction in antiquity. However, it can be observed that much of the evidence for the disposal of the Roman battle-dead in antiquity comes from a literary and largely commemorative context, rather than archaeological evidence on the battlefields. Based on later conflict examples, the lack of battlefield graves may however not reflect destruction, but the fact that they were never created in the post-battle phase at all.

5.5.3: Surface cremation or abandonment: the pragmatic reality?

The problem of where the battlefield graves from antiquity are however, particularly in the Roman period, may reflect little more than a modern conviction that *something* must have been done with them. This perspective is certainly backed up by the literary and commemorative record. However, the archaeological evidence, and indeed comparative reference to later periods, suggests that a rather more pragmatic attitude was taken. The easiest solution, in many cases, would have been mass cremation on the battlefield or, in other cases, abandonment of the remains on the surface. Distasteful as this may have been to contemporary societies, it is hard to argue against when the logistical considerations - thousands of casualties to be disposed of in less than three days - are considered. There is a risk in relying too much on the commemorative description of what happened, particularly the written sources composed by authors who were almost certainly in no position to have any idea of what had actually happened on the various battlefields. The Roman battle-dead buried in the cemetery at Krefeld-Gellep may represent one of the few instances where the disposal of the dead would have been visible to a wider population. Greater care may have been taken in this instance than in others where the disposal of the battle-dead would have been unknown.

Ritual significance and religious requirement might have had some impact, but consideration of these issues may only have been possible up to a certain point in the face of practical challenges, particularly if citizens at home were unlikely to find out what had actually happened. Mass cremation would have been by far the easiest and quickest

solution, providing enough fuel could be found. Unlike Roman civilian cremations, which required substantial fuel and constant maintenance (Noy 2000), the example of Waterloo suggests that the battle-dead could be piled into a pit and left to smoulder for an extended period with little maintenance (O'Keefe 2014: 66-70).

Abandonment of the Roman battle-dead is known from some archaeological contexts. The 'massacre' burials from South Cadbury were originally identified as the native victims of a Roman attack on the site during the C1st AD, some of whom showed signs of burning which was originally thought to be unintentional (Alcock 1972). Subsequent reinterpretation has suggested that the burning on the bones was intentional, and represents a number of constructed funeral pyres which succeeded in partially cremating the skeletal material (Barrett *et al.* 2000: 109-111). The casualties from South Cadbury may in fact be poorly-cremated Roman soldiers who were disposed of at the conflict site they had died at, before being abandoned. At Dura, the skeletal remains of around 20 Roman casualties from the Sasanian siege (AD258-259) were recovered from a collapsed countermine underneath the city wall. Originally thought to have died in the collapse, subsequent research has suggested that they were killed by a Sasanian gas attack (James 2011b). Spatial reconstruction suggests the bodies had been moved from their original location and placed near the entrance to the countermine before it was deliberately collapsed, and in the process also killing a Sasanian soldier (James 2013: 94-100). No attempts were evidently made to recover the dead, a likely consequence of the city's abandonment following the attack. Recent discoveries in the Alken Enge wetlands in East Jutland, Denmark, suggest that exposure burials were still used for the conflict dead in the C1st AD in a Scandinavian context (Fig. 19).¹⁶⁸ The remains show signs of prolonged surface-exposure, including predator gnawing and disarticulation, but do not appear to have belonged to a defeated non-native army. The example of Alken Enge should also serve as a reminder that in the context of the disposal of the Roman battle-dead, the archaeological record may reflect non-Roman as well as Roman practices.

¹⁶⁸ The Alken Enge material has not been fully published to date, but interim results are available at http://www.museumskanderborg.dk/Status_2012-1141.aspx (accessed 02/02/2016). Information about the site was also provided in a tour conducted by Mads Kähler Holst, the excavation manager, in June 2013.



Figure 19: Skull from Alken Enge (http://www.museumskanderborg.dk/Press_Releases-1085.aspx).

The archaeological consequence of this method of disposal would be to suggest that there will be little by way of constructed graves or skeletal material on the majority of battlefields, especially from the Roman provinces. Certainly this would explain the lack of burial evidence from Baecula and Harzhorn, and the general absence of even incidentally discovered battle-related graves in the Roman, and even Greek, world. However, this does not necessarily mean that there can be no archaeological evidence of the disposal of the battle-dead. Large-scale cremation would potentially involved a large area, whether on the surface or in one or more pits, which could be detected by remote sensing, particularly magnetometry. Mass inhumation pits may also be present on sites, particularly if cremation was not possible and there was time to organise the burial of the dead. However, in these cases it may be equally likely that the dead were abandoned on the surface, perhaps receiving later burial by the local population. Within several days, it would be impossible to identify individuals among the dead, and the stripping of the bodies during the looting phase would remove any possibility even of identifying the dead from their kit. It is unlikely in these cases that any discrimination could have been made for the bodies of the

respective armies. The presence of the bodies may have proved an inconvenience in some cases, if they were located on land used by locals for agriculture or pasture, but may otherwise have been left alone. Plutarch's (*Marius* 21.3) record of the skeletal remains of the dead from Aquae Sextiae being used to fence local fields may represent the far more pragmatic attitudes actually displayed on fields, in contrast to the commemorative record.

5.5.4: The impact of battlefield disposal on the artefact assemblage

If the lack of correlation between substantial battlefield artefact excavation in the Roman world, and grave excavation in the Greek, has a significant impact, it is in the problems it creates identifying the impact of burial processes on the overall assemblage. This is further exacerbated by issues with reconstructing the actual disposal process in the context of the battle-dead. The archaeological record has suggested that battlefield burial may be less common than imagined in the Greek world, and potentially highly unlikely to survive in the Roman. However, the evidence has been able to provide very few details about what was actually done to the bodies. The excavated graves follow later convention in burying the casualties of battle in a communal context, and there is implied evidence of the use of multiple graves on the same battlefield, although no direct examples have been found.

The process of burial provided an additional looting phase, which could focus on the equipment, armour, clothing and other personal belongings of the respective casualties. However, in the context of understanding how the method of disposal impacted the artefact distribution, it is necessary to know in particular whether the dead were collected together or not, and if so, at how many different locations, and the degree to which they were stripped before being moved. At Kalkriese it was observed by the excavators that the high number of kit fragments located at the Oberesch resulted not from damage in battle but from the process of stripping the dead before their surface abandonment (Rost & Wilbers-Rost 2010: 123). However, whether the spatial concentration of these fragments relating to the stripping of the dead reflects the original spatial distribution of casualties or

their central collection depends partly on knowing whether the armour and kit of soldiers was removed before or after they were moved. In the case of Kalkriese, the distinction is perhaps less important as the casualties were sustained in a relatively limited, enclosed landscape area and it is likely that the numbers were artificially increased by the transportation of the wounded and the dead (Rost & Wilbers-Rost 2010: 133). It may be difficult to distinguish however, between a concentration of bodies reflecting central collection of the dead, and simply an area of intensive fighting and high casualties. As yet, there is no way to reconstruct the order of stripping, because no battlefield has been excavated with both a spatially-documented artefact assemblage alongside contemporaneous mass graves. If the battle-dead were stripped at a distance from their place of burial, this would result in a wider distribution of fragmented kit fittings than following a central collection.

5.6: Conclusion

The literary and archaeological evidence from battlefields and the wider antique world broadly concurs that in most cases the battle-dead were disposed of, or abandoned, on or near to the battlefield on which they had died. Although there are some archaeologically verified instances where the battle-dead were repatriated for cemetery burial, these cases are rare overall and largely confined to C5th Greece. Otherwise the functional necessities which have governed the disposal of the casualties of battle throughout history are equally true of antiquity: in the interests of rapid burial, for both pragmatic and tactical reasons, the dead were disposed of on the battlefield. This does not mean, however, that there was a grave, with mass cremation or abandonment potentially as common as the mass inhumations implied by many of the literary sources. Whatever the form, the disposal is likely to lie in close spatial proximity to an area of fighting, with potentially multiple graves or pyres lying within a relatively limited area. Their survival in the archaeological record will, of course, be subject to the same taphonomic limits as any other feature, and it is doubtful that they will still be present on all sites. Certainly, the lack of human remains at both Baecula and Harzhorn is a concern; distinguishing between non-

survival and original absence may prove an issue as more battlefields are excavated. Nevertheless, the evidence suggests that mass graves, as well as shedding light on the treatment of the battle-dead in antiquity, a subject dealt with somewhat cursorily in the literary record, can theoretically serve as verifiers for battlefield identification in some cases. Whether they should, however, in light of both ethical and practical considerations, is another question.

Chapter Six: Survey and Excavation Methodology

6.1: Introduction

The previous two chapters considered the archaeology of ancient battle and its likely form and survival in the archaeological record. This analysis highlighted several areas in which the evidence from antiquity differed from that in modern battlefield archaeology. Although a certain number of projectiles, particularly lead *glances* and various forms of ironwork, are found on ancient battlefields, it is likely to be a density of military-associated material which contributes to both the identification and analysis of individual sites. Unlike the archaeology of modern conflict, the majority of the artefacts may not be associated exclusively with the ancient military. Further to this, the assemblage may be primarily comprised of iron, rather than non-ferrous material, a contrast to later periods where lead, in the form of musket balls and bullets, is the more diagnostically-significant metal. Chapter Five concluded that although there are likely to be shared characteristics between battlefield mortuary practice in antiquity and later periods, it is far from clear that there was a consistent practice with regards to battlefield burial, particularly in the Greek world. Battlefield graves may have been created if there was both the will and opportunity to do so, but they may have been less universal than previously imagined.

This chapter explores the practicalities of ancient battlefield archaeology, considers the impact which the characteristics of these sites will have on archaeological survey methodology, and how best to adapt approaches to make the most of the evidence which survives. Although there are some significant challenges, they are not insurmountable. The dominance of ferrous material is perhaps the greatest problem, especially when it is combined with the fact that sampling or transect survey may be of relatively limited use in identifying ancient sites, as it is the nature and distribution of the assemblage across the site, rather than the presence of a single artefact category, which is diagnostically significant.

6.2: Legislative and funding concerns

To be of any value, any theoretical archaeological methodology must recognise and demonstrate an ability to work around any practical challenges. Project-relevant legislation and overall funding are two of the most significant challenges faced by any archaeological project, battlefields included. Although many of these concerns are common to any archaeological project, the issues relevant to projects based on Greek and Roman battlefields across the ancient world need to be addressed.

6.2.1: Legislation

Any archaeological project requires permission from either the landowner and/or state authorities in order to proceed. In terms of ancient battlefields, there is a range of concerns with regards to archaeological prospection and excavation. Throughout much of the United Kingdom, permission to excavate lies largely with the landowner, unless the excavation takes place within the context of scheduled monuments. Across Europe, however, the situation is different. In some countries, such as Greece and Italy, state licences to excavate can be more difficult to obtain than in those such as Bulgaria and Romania. All permissions to survey and excavate in various countries in modern Europe will need to be granted in the usual manner, particularly with regard to the intended use of metal detection (see below). The potential for permissions to be denied, particularly for archaeologists intended to work outside their own country, may create a problem

Much of the methodology developed to explore ancient battlefields requires the use of a metal detector to identify from the surface areas of artefact deposition within which apparent concentrations can be targeted by excavation. Within England and Wales, metal detection on (potential) archaeological sites is not banned by any legislation, and with the landowners permission any detectorist can work on a site. Changes to legislation in Scotland now protect scheduled monuments from metal detection and other magnetic-based exploration (including magnetometry, gradiometry and GPR) without prior written

permission from Scottish Ministers.¹⁶⁹ Any land without scheduled monuments can, however, be surveyed with the landowner's permission, although all finds must be reported to the Treasure Trove Unit at the National Museums Scotland (see 6.2.4). However, in Europe the situation regarding metal detection, and other forms of magnetic survey, is theoretically more strictly limited by legislation. These restrictions on practice are outlined in the Council of Europe's *European Convention on the Protection of the Archaeological Heritage, Article 3 (iii)*, which requires that any use of metal detection (or other magnetic survey) be "...subject to specific prior authorisation" by domestic authorities.¹⁷⁰ Unlike much of the United Kingdom, in many European countries the landowner is unable to authorise metal detection survey even on non-scheduled landscapes, with the necessary permissions kept within centralised state control. This restriction has greatly assisted the protection of battlefields from relic hunting and other unauthorised removal or archaeological material, which are of a greater concern than the actual survey itself (Ferguson 2013: 65-66).

However, even strict licensing control of metal detection does not necessarily mean that permission to conduct surveys as part of an archaeological project will not be granted under any circumstances. Although permission to work on known historical archaeological sites is less likely to be granted, ancient battlefields, in the overwhelming majority of cases, are not known archaeological sites and are not usually under the same protections. Certain elements of the conflict landscape may be legislatively protected, particularly military installations or post-battle monuments or graves, but the actual topography of the battlefield and its artefact scatters are not. Outside of the US there is little legislation anywhere in the world which protects archaeological landscapes or artefact scatters. It typically only by incorporating the battlefield landscape within a heritage area, or with the co-operation of the landowner, that the sites can be fully protected.

¹⁶⁹ See Historic Scotland guidelines online at <http://www.historic-scotland.gov.uk/metaldetecting.pdf>, accessed 29/11/2015; also Ferguson (2013: 52-60).

¹⁷⁰ Available online at <http://conventions.coe.int/Treaty/en/Treaties/Html/143.htm>, accessed 10/01/2016.

6.2.2: Funding

If the appropriate licences to conduct both metal detection survey and excavation on a potential battlefield have been granted, there are still issues regarding the funding of the project. The costs of even preliminary exploration of potential battlefields can be substantial, particularly if a number of sites are involved in the early stages of a project. Costs incurred by a battlefield project are consistent with those of wider archaeological work, including travel and subsistence, equipment, and man-hours. The latter, particularly, can be an issue for battlefields, which are typically of substantial size. In later periods, even transect survey and excavation of sites can involve thousands of man-hours of work (e.g. Foard & Morris 2012: 121; Pollard 2009b: 142). Battlefields from antiquity face similar challenges with regards to scale, particularly given that the nature and distribution of the assemblage make it important to survey as much of the site as possible.

The substantial costs of battlefield exploration can, however, be offset in a number of ways, many of which have been introduced to the discipline specifically to address these problems. In particular, the use of local metal detectors as site volunteers has in many cases significantly reduced the costs of excavation while allowing for a substantial increase in the available man-hours. Relations between hobbyist metal detectors and archaeologists have frequently been antagonistic. Attempts are now being made within battlefield archaeology to work alongside amateur detectorists. As well as an increase in available man-hours, they often bring a considerable amount of technical expertise to a battlefield project, in many cases alongside a detailed knowledge of the local area which outstrips that of archaeologists coming in from outside to work within the area. Eleven experienced detectorist volunteers were brought in to work at Harzhorn, for example, substantially increasing the time which could be spent at the site, allowing a seven-day running in the initial stages of the project (Berger *et al.* 2010/13: 323-325). Initial survey costs may be kept relatively low through the use of local volunteers, particularly detectorists who can supply their own equipment. Multiple battlefield projects have begun to involve local metal detecting clubs in battlefield

survey, dramatically increasing the site area which could be surveyed as well as decreasing the spacing of transects, while also reducing project costs.¹⁷¹

For unavoidable funding costs, non-traditional, and in many cases non-academic, sources are increasingly necessary for battlefield archaeology, particularly those associated with heritage management. The lack of legislative protection for battlefields outside the United States means that alternative methods are necessary, frequently under the auspices of heritage management. While heritage organisations cannot necessarily legally prevent the development of identified battlefields, they can attempt to assert some influence in preventing commercial development on these sites (Freeman 2001). The *Register of Historic Battlefields* in England and the *Inventory of Historic Battlefields* in Scotland have attempted to provide non-legislative protection to sites within their remit. The Irish Battlefields Project, when completed, aims to do the same for sites in the Republic of Ireland,¹⁷² while consultation over the same for Wales is ongoing.¹⁷³ Identifying clear landscape areas and artefact scatters associated with a battle is an important step in protecting the sites even without legislative assistance.

Although ancient battlefields may prove more difficult to identify, their value to heritage management is in many cases exceedingly high. There is a significant current public interest in battlefields of any historical period, with high-tech visitor centres increasingly replacing the static information boards which previously represented the 'visitor experience'.¹⁷⁴ The battlefield and visitor centre at Hastings drew 111,990 visitors in 2010,¹⁷⁵ while Bannockburn centre saw 65,000 visitors in its first year of operation between

¹⁷¹E.g. The Little Bighorn (Fox 1993: 67); Towton (Sutherland & Schmidt 2004), Bosworth (Foard & Curry 2013), Camden (Legg & Smith 2009), First Manassas (Reeves 2010).

¹⁷² <http://www.rubiconheritage.com/our-projects/conflict-archaeology/irish-battlefields-project/>, accessed 15/01/2016.

¹⁷³ <http://gov.wales/docs/drah/consultation/20110305battlefieldsconsultationdocumenteng.pdf>, accessed 15/01/2016.

¹⁷⁴ UK: Bannockburn; Bosworth; Culloden; Hastings; Shrewsbury.

Europe: Agincourt, France; Boyne, Ireland; Kalkriese, Germany; Thiepval, France; Waterloo, Belgium.

US: Antietam, Maryland; Chickamauga, Georgia; Fredriksberg, Virginia; Gettysburg, Pennsylvania; Little Bighorn, Montana; Manassas, Virginia; Mill Springs, Kentucky; Shiloh, Tennessee; Stones River, Tennessee; Yorktown, Virginia.

¹⁷⁵ Association of Leading Visitor Attractions figures, <http://www.alva.org.uk/details.cfm?p=423> (02/04/2015).

March 2014 and March 2015,¹⁷⁶ although both sites pale in comparison to Gettysburg where the early 2000s saw annual visitor numbers upwards of 1.6million, generating in excess of \$50,000,000 to the local economy (Nash 2004: 27). Battlefields can generate a significant amount of revenue from visitors which can be put towards archaeological research.

However, research may become deliberately skewed towards issues of interest to the general public, rather than addressing academic concerns, often attempting to identify human interest stories through the discovery and display of artefacts which represent “a direct link to the fighting, killing and dying which created the hallowed ground outside the building” (Pollard 2009a: 3). It is, however, this public interest that in many cases facilitates the cultural protection of sites, regardless of what this does to archaeological research (Pollard 2004: 33). This alteration of research priorities on projects funded by non-traditional means is further exacerbated by the involvement of media organisations, particularly those making television documentaries. Although their funding does in some cases facilitate projects which might otherwise have struggled for funding, the research priorities can be distorted by the desired narrative of the documentary, as at Balaclava (Freeman 2011: 154) and Serre (Fraser & Brown 2007: 168), to name two recent examples.

6.2.3: Ethics

Ethical concerns in respect to battlefield archaeology are centred on the remains of the battle-dead on the sites themselves, particularly with regards to whether fieldwork should intentionally look for any graves, and what should happen to any human remains which are recovered. It is unclear whether battlefields should be treated as sites where human remains are likely to emerge, akin to cemeteries, or those where any finds will be incidental. Any intentional excavation of a (known) battlefield grave will by necessity be covered by the same legislation and licensing of any mortuary context, while incidental identification of remains across the site should be reported and seek a request either to

¹⁷⁶ <http://www.bbc.co.uk/news/uk-scotland-tayside-central-31641951> (02/04/2015).

rebury or remove the material. Some modern battlefield projects have intentionally excluded areas of the site associated with known graves, as at Culloden (Pollard 2009a) and Waterloo (Wason 2003) to avoid problems associated with the disinterment of burials without significant research potential.

However, in some cases there are strong research reasons to survey for and excavate battlefield graves. Exploration of the spatial relationship of the grave(s) to the artefact assemblage will shed light on the burial practices, and potentially contribute to a better understanding of how to locate more graves on further sites. Skeletal analysis of the remains may also reveal new evidence regarding the physical anthropology of ancient battle, as has been done at Towton (Fiorato *et al.* 2000), Aspern (Binder *et al.* 2014) and the Little Bighorn (Scott *et al.* 1998). Although Ma's (2008) reassessment of the skeletal material from Chaeronea provided some new insights into the anthropology of ancient battle trauma, the level and quality of evidence is still not as high as would be desired for a full recreation. Where there is no possibility of identifying individual casualties among the dead, the skeletal material associated with the battle-dead of a conflict is typically viewed as ethically comparable to that recovered from any mortuary context, particularly cemeteries, and there is generally little aversion to the photographic documentation of the bodies.

Whether the graves of the battle-dead should be treated as a separate ethical category is a separate issue. Firstly, it should be recognised that archaeological prospection for and excavation of battlefield graves is a world away from the relic hunting-associated disinterment of remains increasingly seen on sites of C20th conflict.¹⁷⁷ Excavation of battlefield graves in some cases may be necessary to prevent the disinterment of remains for the artefacts associated with them. In these cases, recovery of the battle-dead may be the preferable route. It is only in the United States, where legislative protection is extended to battlefields, that mass graves can be safely left without excavation. Battlefields such as Camden which are not fully protected may have graves left on them, but the location will

¹⁷⁷ See, for instance, the Facebook page "WW1 - WW2 Relic hunting (Excavation on battlefields)" which contains photographs of skeletal remains haphazardly disinterred alongside the equipment taken from them by relic hunters; <https://www.facebook.com/WW1-WW2-Relic-hunting-Excavation-on-battlefields-161035087279074/?fref=ts>, accessed 10/01/2016.

frequently be kept from public disclosure to prevent disinterment of the graves by relic hunters.¹⁷⁸ The growing expertise of archaeologists in investigating mass graves has led to archaeological methodology being adopted to excavate graves associated with modern civilian genocides in Rwanda, Armenia, and Bosnia, and to reconstruct the narrative of the killings (Haglund *et al.* 2001). Mass graves associated with modern conflict, particularly the First World War (e.g. Pollard & Barton 2013) and Spanish Civil War (Renshaw 2011) may be intentionally searched for, with the aim of recovering remains for 'proper' burial as well as to reconstruct the events leading to the death of each individual. Many of the remains of modern, particularly 20th, battle-dead are given formalised reburial rather than being retained for future research, although this is not common for the skeletal remains associated with earlier battles.

There do not appear to be any ethical reasons to avoid disturbing the battle-dead from ancient battlefields, although it might be noted that in some cases 'nationalist' claims might become a factor, not least where it is 'foreigners' who are exploring the site. On Early Modern and Modern battlefields, documented graves may be avoided if there is no significant research benefit associated with their excavation. However, graves that are discovered during the course of wider survey will, pending official permissions, be excavated and the remains removed for study. Many projects have attempted to locate battlefield graves through survey methodology, although have encountered significant problems in doing so (6.4.4, 6.4.5). Deliberate searches for mass graves may be avoided to avoid wasting resources. However, post-antique projects do not face the same issues as Greek and especially Roman battlefields in terms of difficulties establishing the location of a battlefield or identifying a landscape as such. Mass graves as indicators of conflict may be a much more important diagnostic feature for ancient sites than on their ancient counterparts. While there may be ethical issues associated with the deliberate disturbance of the battle-dead on any site, in antiquity it is probable that they are outweighed by the research value of a battlefield grave.

¹⁷⁸ Steven Smith *pers.comm.* 27th August 2014.

6.3: Physical survival of battlefield graves

On any site, it should be considered (if possible) whether mass graves are likely to have physically survived, based on the hydrology and soil composition of the site in question. The crystals of bone apatite, Ca^{2+} (calcium ion) and PO_4^{-3} (phosphate ions), remain highly reactive and vulnerable to physical degradation after death, but can survive indefinitely in certain conditions. Skeletal material will survive best in chemical conditions of pH neutral or slightly alkaline; skeletal material is less likely to survive in acidic conditions. Equally important is the level of groundwater fluctuation on the site. Consistent levels (permanently dry or saturated) will produce higher rates of survival than constant fluctuation (Nielsen-Marsh *et al.* 2006). Mass graves are unlikely to survive in areas of acidic and/or free-draining soil, but as chemical and hydrological conditions can be variable across a site, only certain areas may be affected by these conditions.¹⁷⁹ Prior to any archaeological survey for mass graves on ancient battlefields, it would be invaluable to establish the chemical composition of the soil across the site, and to examine any hydrological research conducted previously on the site. It may be that certain areas can largely be ruled out of a mass grave survey based on the probability of physical survival. On both ancient and later battlefields, scientific research into the spatial relationship between soil chemistry and site hydrology and mass grave location might prove useful.

Following from this, before any survey is initiated it would be worth considering the previous land-use of the battlefield, particularly whether it has been a focus for agricultural activity or other settlement-related development. At Kalkriese the human remains, as the artefacts, were protected by the deposition of a thick layer of fertiliser which minimised damage from subsequent agricultural activity. Maps of the soil-content of the Kalkriese area were already available at the time of the site discovery, and were factored in from an early stage in the research (Tolksdorf-Lienemann 2004). Pre-fieldwork research should also, if possible, consider antiquarian reports of human remains reported in the past, if there is any chance they date from the time of the battle. Such reports may allow it to be assessed whether any remains have already been disturbed and removed in the past.

¹⁷⁹ In modern mass graves, differing levels of skeletal survival have been observed within the same burial context (Wright *et al.* 2005: 146).

6.4: Artefact survey

The nature and spatial distribution of the battle-related assemblage is the central factor in reconstruct the narrative of a battle, rather than confirming that the events occurred in a particular location. Artefact survey and excavation have been the defining characteristic of battlefield archaeology from the Little Bighorn investigations onwards (Scott *et al.* 1989; Scott 2013), with a focus particularly on identifying lead munitions. Subsequent battlefield studies have developed the methodology, particularly as the discipline has moved into the study of the Medieval world. However, the artefact assemblages from ancient sites manifest in a number of ways which require significant methodological adjustment. As with Medieval battlefields, many of the more diagnostically-relevant individual artefacts, particularly projectiles and other weapons, were made from iron. The non-ferrous-based methodology of modern battlefield studies may therefore be less suitable in an ancient context.

However, as in the modern world, ancient armies had an identifiable metal-based material culture, albeit that was not restricted in use to the military. As a result, the potential range of diagnostically significant artefacts in antiquity, if not conclusive individually, is comparable to that of modern sites. A methodology which fits inside both these parameters is necessary to make the most of the archaeology on ancient battlefields. However, it must also be practical to implement the surveys on sites the size of ancient battlefields. As the deposition of ancient battle could be extensive over a wide area, the landscape areas involved in survey can be significant. Transect and sampling survey techniques have been used in battlefield archaeology because sites often cover too large an area to do much else within a limited timescale, particularly in all-metal mode. However, as the aim of these surveys is often to pinpoint a battlefield location, rather than establish one, this approach can be more effective - or at least, less problematic – in a historic rather than an ancient context.

6.4.1: Metal detection and artefacts on modern battlefields

The survey and excavation methodology used by battlefield archaeology on sites from the Late Medieval period onwards has been intentionally developed to suit the parameters of sites from these periods. The assemblages recovered from post-blackpowder battlefields are recognisably and often distinctively military, formed largely of signature munitions made of stabilised lead, the characteristic metal of post-medieval battlefield archaeology. There may be a small non-munition assemblage, often deposited in periods of hand-to-hand skirmishing, but in most cases these artefacts, by their non-military nature, would not be sufficient to identify a battlefield, as opposed to a general military site. The surviving assemblage, dominated by munitions, in most cases represents a primary deposition resulting directly from fighting, meaning that their spatial distribution can be used to reconstruct battle-period activity in most cases (*cf.* Foard & Morris 2012: 67). That said, there are some occasions where deposition resulted from post-battle activity. At Palo Alto (1846), a distribution of unfired munitions was identified as shot which had fallen from the cartridge boxes of the battle-dead as they were moved for burial (Haecker & Mauck 2009). On many American Civil War battlefields, the cartridge boxes of the defeated battle-dead were often deliberately emptied by the victorious force and the unfired munitions dumped in a distant area of the site to prevent them being used by survivors of the defeated army in a rallying attack (Lawrence Babits *pers. comm.* January 2015).¹⁸⁰

The assemblages can be distributed over a large area, depending on the exact events of the battle and excavations have demonstrated that the skirmishing which followed the collapse of one side is often archaeologically visible. Concentrations of military kit on blackpowder battlefields may be associated with hand-to-hand fighting, as at Culloden (Pollard 2009b: 151). Foard and Curry (2013: 191-192) have noted that only limited military kit was left by the almost exclusively hand-to-hand fighting at Bosworth, contrary to initial expectations based on the assemblage from Towton (e.g. Sutherland 2012). Hand-to-hand fighting is not the only explanation for deposition of military kit fragments, as a similar

¹⁸⁰ Unfired British munitions were also found in large quantity within Fort Watson, evidently deposited by the defenders during the American assault on the fort, but which the excavators could not explain (Ferguson 1977: 57-67).

assemblage to the Culloden concentration has been recovered from a small area on the periphery of the Camden battlefield which cannot be associated with skirmishing activity (Legg & Smith 2009: 223).

The methodology originally devised for battlefield archaeology at the Little Bighorn was suited to assemblages dominated by military lead munitions located within the topsoil, within a relatively wide landscape but with definite areas of fighting being known. The distribution largely represented the battle-period depositional pattern and the artefacts had, for the most part, been left behind because they were not visible to looters. The Little Bighorn methodology was based on these characteristics (Scott *et al.* 1989: 24-35). The basis of the project was a series of fieldwalking and metal detection surveys, starting at the position known to be associated with the fighting and working outwards until the assemblage stopped. Metal detector hits were marked with plastic pin-flags to identify them (Fig. 20). Artefact depositions could then be excavated to locate and identify the battle-related assemblage.



Figure 40: Metal detection survey at the Little Bighorn (1984) with artefact hits marked with plastic pin-flags (from <http://www.friendslittlebighorn.com/Dig-of-1984.htm>).

With slight adaptations on a site-by-site basis, this methodology has been broadly used in the vast majority of battlefield projects. In particular, because on modern battlefields “...most artifacts of war would either be metallic or associated with metal” (Scott *et al.* 1989: 24). Metal detection has become perhaps the technique most synonymous with the discipline of battlefield archaeology (*cf.* Connor & Scott 1998).

At the Little Bighorn, a wide range of non-metal artefacts including bone, leather, shell and rubber were recovered in close spatial association to munitions which had been identified by the metal detection survey. Metal detection survey at the Little Bighorn was complemented by field-walking, which served to identify a number of artefacts, particularly stone tools but also some cartridges which had not been picked up by the metal detector (Scott *et al.* 1989: 29). The depth-range of most metal detectors can pick up on artefacts located in the topsoil, typically where the majority of a battle-related assemblage will be located (Sutherland 2004). Artefact hits were marked on the surface with plastic pin-flags ahead of later excavation,¹⁸¹ and the find-spot recorded with GPS tracking to facilitate later spatial analysis. From the Little Bighorn project, it was soon demonstrated that a site free of surface vegetation is likely to produce the most successful results both from metal detection survey and field-walking. It was also recognised as necessary to have multiple brands of metal detectors working at different frequencies to avoid cross-contamination and distortion of the signals (Scott *et al.* 1989: 27).

Most battlefield projects have found it necessary to conduct metal detection survey in non-ferrous mode, due to the signal corruption caused by ferrous artefacts unconnected to the battle assemblage. On Post-Medieval sites this has proved largely unproblematic. The munitions which form the core of the assemblage are almost exclusively made from lead, and any kit fittings are likely to be copper-alloy, making non-ferrous mode an effective way of identifying the signature of battle (Foard & Morris 2012: 29). Survey in all-metal mode can be intensively time-consuming and may not significantly improve artefact detection rates, not least because the slow rate of all-metal survey means a significantly smaller area of a battlefield can be surveyed. An all-metal survey on part of the Culloden battlefield was

¹⁸¹ To avoid cross-contamination from the survey itself, plastic or fibreglass markers are used to identify find-spots.

only able to cover 2.4% of the area covered by non-ferrous survey at Edgehill in the same timeframe of c.3500 man-hours (Foard & Morris 2012: 121), despite the fact that other areas of Culloden had already been surveyed previously (Pollard 2009b: 142).

All-metal survey will be considered where it is expected that the majority of the artefacts in the assemblage will be made of iron, such as Medieval battlefields. This can prove effective, as in Pollard and Oliver's (2002: 52-55) survey of the Shrewsbury battlefield which recovered a reasonable quantity of iron arrowheads against the expectation of local detectorists who had previously worked on the site. If the frequency of a ferrous artefact type can be established the detector can be calibrated to identify them more accurately, albeit only those of similar constitution. At Towton, the identification of a single arrowhead associated with the battle allowed surveyors to isolate the magnetic frequency of arrowheads from the period. The resulting resurvey of an area of the battlefield produced a further 200 previously undetected iron arrowheads (Sutherland & Richardson 2009: 163). The recalibration reduced the ratio of battle-related to non-related ferrous finds in these areas from 1:50, compared with up to 1:200 on other areas of the site, although this level still represents a problematic cross-signal. Background contamination from later artefacts can be particularly problematic. At Towton, surveyors found that post-battle ferrous material interfered with geophysical survey in general, resulting in the marginalisation of these techniques in the general search for battle-related artefacts (Sutherland & Schmidt 2003: 15). Recent work at Balaclava faced problems from crossed metal signals, with the detectorists unable to distinguish between Crimean, Second World War and modern metal signals (Freeman 2010: 154). Ferrous survey may only be recommended on modern battlefields when it is certain that the core fighting area of the battlefield has been identified and needs to be surveyed in particular detail over a relatively small landscape area (Foard & Curry 2013: 195).

Battlefields of any period represent a large landscape to be surveyed. Targeted surveys, transects and sampling can all be used to reduce the time and effort required, although the area left uncovered by survey should be minimised to avoid missing important artefacts or features. Exclusion of landscape areas because they are not expected to produce any finds based on the historical narrative should be, and is, largely avoided. Most

battlefield projects employ transect-based survey, allowing a representative sample of the site to be surveyed, attempting as far as possible to correct for sampling bias by continuing to survey until the archaeological evidence stops. Transects are typically spaced at 5m during the initially sweeping phase,¹⁸² although 10m intervals can also be used, which based on an average detector sweep of 1.5-2m will still cover upwards of 15-20% of the battlefield site, such spacing typically providing only an overview of the battlefield area. Foard and Morris (2012: 29) observe that a transect system based on multiples of 2.5m spacing allows intensification (up to 2.5m) on certain areas without compromising the comparability of results, and recommend that a maximum of 2.5m should be used in all surveys of contemporary sites.

In the United States, a grid system known as the '2-2-90' method has been developed by Historic Archaeological Research (HAR) to resurvey areas of high artefact hits. A series of (15m x 15m) grids are laid out over areas which produced a high detection rate in the transect survey. These will then be surveyed in a series of overlapping transects, followed by a second set at a 90° angle to the first, preferably using a different detector model, frequency or metal-setting (Pratt 2009: 8-9; see also Foard & Morris 2012: 26). Multiple sweeps of the battlefield can result in additional artefact detection and a generally higher identification rate prior to excavation (Reeves 2010: 89-90). Comparison of artefact identification rates by 10m and 2.5m transects in surveys from Edgehill demonstrates the positive difference that smaller- scale transects can make (Fig. 21). The smaller transects produced a much higher rate of recovery albeit at the cost of a far higher rate of effort, which in the context of Edgehill, largely confirmed the pattern represented by the more spaced transects. Whether more detailed transects are worth the additional effort is debatable, dependent on the context and research aims of the individual project.

¹⁸² As at the Little Bighorn (Scott *et al.* 1989: 27-29); Pea Ridge (Carlson-Drexler *et al.* 2008: 23); for discussion of transect spacing see Pratt (2009: 8).

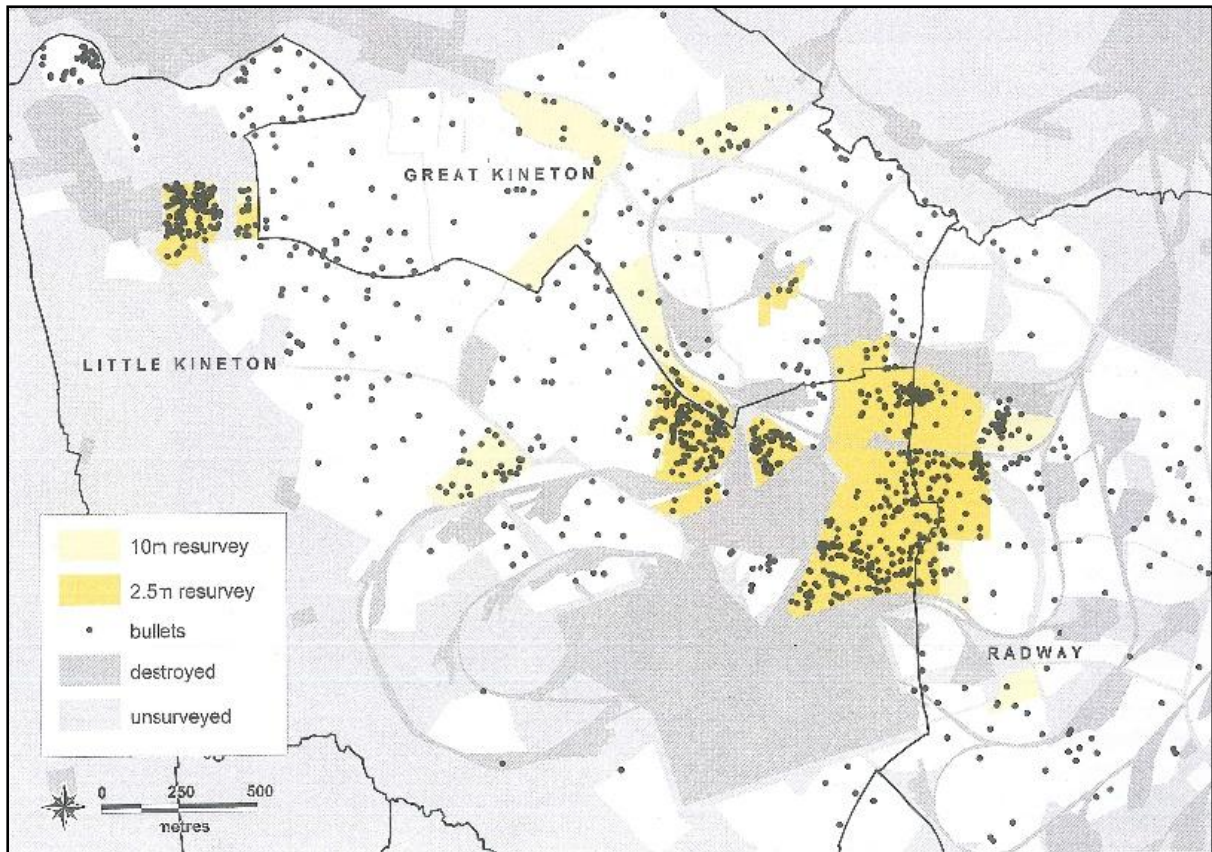


Figure 21: Difference in artefact recovery on 10m and 2.5m transect survey at Edgehill (Foard & Morris 2012: 123).

Confirming that an area was part of the battlefield, the presence of a particular unit to a known area of the battlefield, or establishing the extent of fighting may not require the same density of finds needed to argue that a previously unidentified area was a battlefield, or to reconstruct or radically alter the narrative of a battle from the archaeology. In cases such as Edgehill, the higher artefact recovery rate which resulted from the more detailed survey did little more than confirm the impression already taken from the wider transect, itself used to validate the historical record. The point may be however, that the possibility of revisionist archaeological evidence should not be marginalised, and certain areas therefore excluded because nothing unexpected is expected.

It is recommended that records be kept of ground and weather conditions on each day of survey, to allow for any systematic bias in detection resulting from environmental factors (Foard & Morris 2012: 28). The use of transects minimises the effort needed to establish a survey overview of a battlefield, although it risks missing areas of importance if

they fall outside the remit of the original transect grid. That this can be marginalised in later historic battlefield studies largely reflects the fact that in most cases these projects are not necessarily aiming to produce an independent narrative of battle, but rather to establish whether an extant literary account is correct or not. Full survey across an entire battlefield would, of course, provide a much more thorough picture of the artefact distribution, rather than the representational resulting from transect survey, but in most cases it is impractical due to the size of battlefields.

Metal detection survey is likely to remain the predominant survey methodology on battlefields from any period. Alternative methods of geophysical remote sensing have proved to be of limited use, and are predominantly reserved for detection of features rather than artefacts. An electromagnetic survey of the Fort Morton area of the American Civil War battlefield at Nashville showed that ground conductivity meters, particularly EM-31 and EM-38 devices, can detect large metal objects on battlefields, while the latter can also identify small artefacts, particularly iron, which can be problematic for some metal detectors (Bevan 1998: 31-32). However, at best these survey methods supplement metal detection. The main methodological issue in battlefield archaeology is the debate between all-metal and non-ferrous survey modes, and transects over full survey. The ideal of complete assemblage recovery has to be balanced against the time and funding available for projects, and the probability that more comprehensive survey will lead to measurably improved results. In most cases, particularly on post-blackpowder sites, non-ferrous survey will be sufficient to produce a reasonably accurate impression of distribution; however, the transect system is proving increasingly unpopular, although has to be retained in most cases for practical reasons.

6.4.2: Metal detection on ancient battlefields

As in later historical battlefield studies, the methodology for studying ancient sites will be based on archaeological survey, particularly metal detection, of the site, followed by excavation of areas presenting with high artefact hits. However, the methods used will have

to be altered to take into account the specific nature of ancient battlefields; namely, their physical size, and the fact that the majority of the assemblage is likely to consist of iron, rather than non-ferrous, artefacts. The initial stages of the survey may be conducted blind, particularly if there is no real idea of where the battlefield centre is, although pre-excavation research may have revealed a position in the landscape from which to start. Antiquarian reports may record chance finds in the past may provide an area to begin survey, although the artefacts may not be associated with the central battlefield. At Kalkriese, Clunn began his original prospection in the area previously associated by Mommsen (1885) with the battle, although the site he discovered ended up being on the periphery of the conflict zone (Clunn 2005: 2-3). The work at the Oberesch has suggested that a higher proportion, if not absolute quantity, of artefacts may have been preserved in the peripheral areas. Secondly, it has illustrated that in some cases artefacts, particularly weaponry, armour and valuables were moved around the battlefield during the looting process, collected together in a central area. As such, the relative density of artefacts may not be directly associated with the intensity of conflict in a given part of the battlefield.

Chapter Four discussed the composition of ancient (Roman) battlefield assemblages, suggesting that they are typically comprised of small, low-value projectiles and kit fragments which evaded notice in the looting process through natural obscuration. As on later battlefields, complete weapons are practically unknown, with the reported antiquarian finds of helmets and swords to be treated with caution. High value finds are likely to be limited to the periphery of the battlefield, and are likely to represent battle-period deliberate hoarding of material. The assemblage may not be distinctively military, although all the individual artefacts can be associated with the army when found in a known context. As such, the signature archaeology of ancient battlefields is not necessarily the type of artefact, as it is on more modern battlefields with munitions, but rather the scale and distribution of the assemblage, particularly a concentration of multiple projectiles, *caligae* nails, and kit fragments.

The main methodological issue is that these finds will almost exclusively be made from ferrous metal, survey for which, as discussed above, comes with a range of technical problems. Of only slightly less significance is the problem of the potential size of ancient

battlefields, particularly in the early stages of preliminary landscape survey before the area of fighting has been securely identified. Although the potential battlefield can be of a daunting size, it is potentially problematic to rely on transect survey to identify the assemblage, particularly on the larger scale often used in the early stages of battlefield survey, as the potential to miss the depositional pattern through transects can be significant.

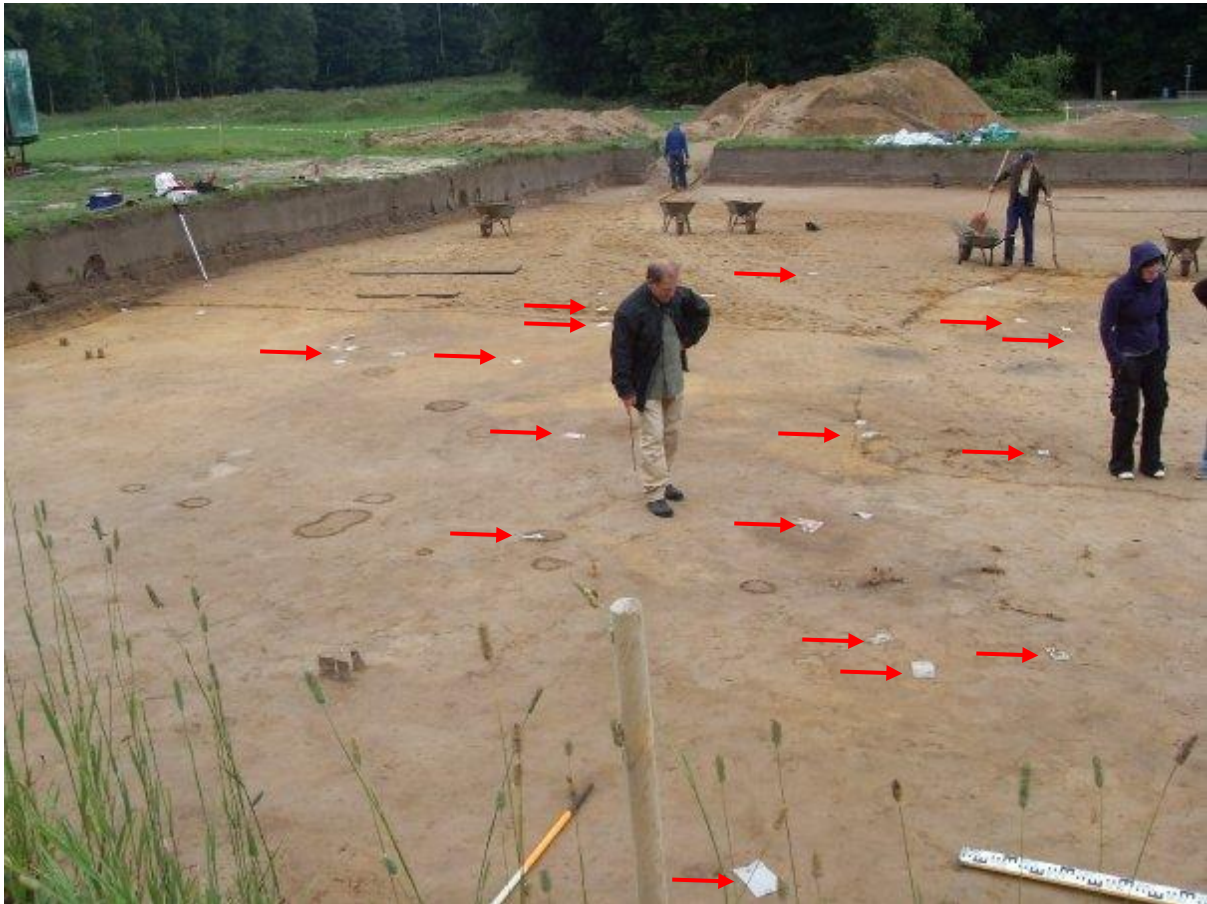


Figure 22: Excavation at the Oberesch with excavated artefact finds marked with pins (red arrows; author's own).

The lack of a consistent approach to ancient battlefield survey, particularly the process of developing a largely *ad hoc* methodology without reference to later historical sites, has resulted in some problems at certain phases of study. At Harzhorn, the first metal detection survey took the guidelines from the Little Bighorn to mark artefact hits on the surface to identify hotspots and guide excavation. Unfortunately, they marked them with metal pins, distorting the signal for between 20cm and 50cm around the artefact. This

problem was soon noticed and the metal pins replaced with plastic flags. Unfortunately, those used were too lightweight and easily disturbed by animal activity, resulting in many being repeatedly torn out of the ground when they were left overnight (Berger *et al.* 2010/13: 325-326). The excavators may have used metal pins as a result of observation excavations at the Oberesch, where pins were used to tag find-bags in the ground during excavation (Fig. 22). Metal pins however, were not used during the survey stage. Basic problems such as this, resulting from differences in approach across the discipline of ancient battlefield studies, are an indicator of why it is important to move towards methodological consistency.¹⁸³

Rather than working outwards from a central area to see how far the archaeology extends, as on later historical battlefields with a verified location, landscape analysis and antiquarian reports may make it more profitable to work from the outside in, identifying key features and artefacts associated with battle in the wider landscape, drawing the evidence together to identify a small area which can then be more intensively prospected. This can include military march routes and temporary camps and reports of Roman artefacts not usually associated with battlefields as such, concentrations of *caligae* nails in particular. The battle-related archaeology may be located in both in the central and peripheral areas of a battlefield due to the impact of inverse spatial proportioning/the 'donut effect', and therefore as much of a potential site as possible should be prospected. Certainly, we do not yet know enough about the archaeological manifestation of ancient battle to say that peripheral areas do not need to be surveyed, particularly as some of the key diagnostic finds - *glandes*, *caligae* nails - are evidently deposited in these areas, and their distribution at all three Roman battlefields has revealed previously unknown evidence about the physical route of conflict.

¹⁸³ One of the self-stated aims of the Baecula project was to contribute towards a common methodology for studying Roman conflict sites in Spain (Bellón Ruiz *et al.* 2012: 358).



Figure 23: Surface vegetation at Harzhorn (October 2011; author's own).

There are likely to be methodological issues with the conducting of metal detection survey in the field, regardless of the type used. The physical topography and geography of the site may have an impact on the effectiveness of remote survey. As previously mentioned, the effectiveness of metal detection at the Oberesch was limited by the *Esch*, which resulted in artefacts being too far below the modern surface to be picked up by survey devices. At Harzhorn recovery was hampered by the presence of substantial surface vegetation and its roots, which prohibited access to certain areas of the site for much of the year due to the signal-distorting effects of the plant-matter (Fig. 23). Areas of uneven terrain and slope with over-hanging vegetation proved particularly problematic. Survey was intensified during a short winter period when the majority of the vegetation died away, allowing a few months of relatively unhampered access to the site (Berger *et al.* 2010/13: 326). Supplementing metal detection survey with other remote survey techniques is desirable but potentially problematic. Fieldwalking can be employed, which may recover some battle-related material, although this may be unlikely unless there had been recent disturbance of the topsoil. Surface survey could contribute in identifying areas of

subsequent activity on the battle, through artefact (particularly pottery) density, which may identify parts of the battlefield which were more vulnerable to post-depositional disturbance.

As yet, aerial survey of the battlefield or its landscape context has proved of limited use due to the physical terrain, particularly at the German sites. Around Kalkriese, while the medieval deposition of *Esch* lead to the preservation of the assemblage, it has also meant that aerial survey attempting to locate constructed features associated with the battle has been almost entirely unsuccessful. Geophysical prospection has been inconclusive, because of the *Esch* (Wilbers-Rost 2007: 7), with magnetometry particularly ineffective (Wilbers-Rost 2009a: 128-129). The topographic conditions around Harzhorn, particularly the forestry, make alternative forms of remote survey, from aerial to resistivity, almost impossible. Given the issues evident at Harzhorn in the metal detection of small iron artefacts, if soil conditions were suitable it might be productive to introduce EM-38 survey to limited areas of the site, based on the success of this method on battlefields in the United States. However, the physical topography of the battlefield may preclude this as a viable method.

6.4.3: The use of transects and/or sampling

The size of a potential battlefield has proved to be a problematic issue for archaeological teams, particularly if the peripheral areas which perhaps did not see direct fighting are to be incorporated into the project. Full-field survey would be preferable, particularly while an understanding the spatial manifestation of battle-related assemblages is being developed; however, this is unlikely to be possible, given the physical parameters involved. As on later battlefields, it has been necessary for sampling strategies to be employed. The results from Baecula suggests that this approach does not always prove ineffective, although the level of detail will be significantly reduced in comparison to more complete survey. Transects have been used in areas where finds are expected, typically in the core battlefield based on the literary narratives, but additional survey has also been conducted in the peripheral surrounding to establish the physical extent of the assemblage.

At Baecula, the size of the battlefield rapidly led to the adoption of transect survey, in total employing 106 transects, sub-divided into 3453 grids, covering a total area of 40ha (Cárdenas Anguita *et al.* 2011: 921). To date 6.88% of the entire 450ha battlefield area has been surveyed, equating to about 10% of the actual area of fighting (Bellón Ruiz *et al.* 2012: 357). This survey area has been sufficient to identify several battlefield-proximate features and trends of movement across the field, with the closer transects used in the central core universally confirming the overall impression given by the wider spaced.¹⁸⁴

At Harzhorn, the size of the conflict landscape was cited by the excavators as one of the chief issues in the methodological preparation (Berger *et al.* 2010/13: 321). Pressures resulting largely from the media coverage of the battlefield meant that the site survey and excavation had to be rapidly carried out to avoid illegal relic hunting. To assist in the coverage of such a large landscape area – the extent of which was unknown at the time – the four archaeologists and five excavation technicians employed were supported by 11 experienced volunteer detectorists, enabling the Harzhorn project to run seven days a week in the early phases (Berger *et al.* 2010/13: 323-325). As a result, the use of transects was minimised, producing an artefact distribution which was much more comprehensive than might have otherwise been recorded.

The Harzhorn approach is preferable where possible, as it produced a more complete distributional map which was less prone to missing unpredictable spatial concentrations. While the Baecula approach certainly provided a reasonable overview of the battlefield, and was able to identify key areas of movement as well as recognise the changes in depositional density which marked the edges of the fighting-area, the risk would be that important finds would be missed. As yet, a ‘typical’ spatial distribution of ancient battle archaeology in relation to phases of battle-related activity has not been identified. As such, it is not possible to exclude particular areas of a battlefield from survey on the basis of specific actions consistently failing to leave an identifiable archaeological trace. However,

¹⁸⁴ It was noted that the inclusion of the peripheral areas of the battlefield, particularly of the Roman approach, was vital to the reconstruction of the battle but somewhat distorted the figures in suggesting that less of the fighting-area battlefield had been surveyed than actually was (Bellón Ruiz *et al.* 2012: 357 n.23). Most of the survey was conducted in the area between the Roman and Carthaginian camps, and there has been minimal exploration of the areas beyond.

the transect method is not necessarily an ineffective approach, and there may be certain cases where, due to the nature of the site or the project funding it proves to be the only effective method.

6.4.4: Ferrous and non-ferrous survey

At the Oberesch, the metal detection survey was mainly carried out in non-ferrous mode because of the potential problems with signal corruption from non-related ferrous material (Moosbauer 2005: 95-96). Multiple phases of metal detection survey were undertaken prior to excavation to ensure that as many finds were identified as possible (Wilbers-Rost 2007: 7). The majority of artefacts however, particularly in the categories of what might be thought of as diagnostically significant, were made of iron (Table 8). Over 55% (433) of the total weaponry and armour assemblage (including miscellaneous military kit and *caligae*) was made of iron, with these artefacts largely discovered as a result of the extensive excavations rather than results from geophysical prospection. All the projectiles and *caligae* were iron, with the assemblage boosted by a large number of iron shield-pins lost during the field-reprocessing. Copper-alloy was best represented in the shield fragments, deposited by the looting process and the stripping of metal elements, and there was a smaller quantity from body kit, particularly buckles and *phalerae*. Given that the deposition of these artefacts is, in contrast to Baecula and Harzhorn, almost entirely associated with the field-stripping of the Roman army, it is unlikely that they would occur in any context where the Romans or a similarly well-armoured (in metal) force had not been defeated. Otherwise, based on the Oberesch assemblage, the majority of artefacts, particularly those of diagnostic significance, are likely to be iron.

Artefact	Iron	Iron + copper-alloy	Iron + non-ferrous	Copper-alloy	Copper-alloy + non-ferrous	Other
Pila	32	-	-	-	-	-
Spear	55	-	-	-	-	-
Arrows	3	-	-	-	-	-
Sword	1	-	-	-	-	-
Scabbard	2	1	-	16	1	-
Shield	219	-	1	196	4	-
Helmet	13	2	-	8	5	-
Armour	3	10	2	21	8	-
Misc. body-kit	1	3	-	56	43	5
Fibulae	18	9	-	55	-	-
Caligae	104	-	-	-	-	-
Horse & mule	42	5	-	35	10	-
Total	493	29	3	381	47	20

Table 8: Metals used for weapons, armour and military kit from the Oberesch (data from Harnecker & Franzius 2008; Harnecker & Mylo 2011).

The team at Harzhorn implemented all-metal survey from the start of the project, despite the presence of Second World War ordnance across the site. In part this was the result of the composition of the surveying team. The lack of Roman artefact expertise among the 11 volunteer detectors further led to a policy of recovering as much material as possible from the battlefield rather than relying on inexperienced surveyors to determine what material was significant (Berger *et al.* 2010/13: 323-325).¹⁸⁵ All-metal mode slowed the survey rate in the early stages of the project. As the excavations emerged however, it became obvious that some makes of detector were struggling to pick up artefact hits from

¹⁸⁵ The excavators noted in particular the lack of typological distinction between Roman and post-Roman in many of the artefact categories recovered, particularly in hobnails where a similar form was used through to the late C19th; as such, the team was encouraged to collect all material (Berger *et al.* 2010/13: 333-334). The lack of distinction is largely the reason for the c.950 artefacts which have not, as yet, been assigned to a historical period.

the small iron artefacts, particularly *caligae* nails, even when set in ferrous mode (Berger *et al.* 2010/13: 325).

In trenches 1, 5, 7, and 8, the survey picked up both spearheads in the assemblage and seven of the 8 catapult bolts, but only two of the 18 *caligae* nails and none of the three arrowheads, all of which were instead identified during excavation (Berger *et al.* 2010/13: 364-365). The team attempted to minimise the impact of patchy identification by using five different makes of metal detector, as advised by Scott from the Little Bighorn, and by surveying each area of the site up to 10 times (Berger *et al.* 2010/13: 325). Nevertheless, the artefacts mentioned above evaded detection during survey and only emerged during later excavation. If all-metal mode is not always able to detect iron artefacts, it must therefore be considered whether the additional problems with cross-contaminated signals and modern artefacts being picked up make ferrous mode an impracticality, particularly when it may not identify additional artefacts. As such, while excavation is guided by areas of high artefact hits, following survey in either all-metal or non-ferrous mode, it may turn out that the apparent densities have been distorted by the failure to pick up ferrous material in the survey stage, regardless of whether it was intended or not. This is particularly problematic in all-metal survey, as a lack of iron-related hits might not represent an absence of these artefacts in the ground.

Non-ferrous survey may therefore prove largely ineffective in identifying the extant archaeological assemblage on an ancient battlefield, principally because of the selection bias in the looting process. While many elements of ancient military equipment were made of bronze or lead, the majority of such pieces were removed from the battlefield during the looting process - helmets, shields, and body-armour in particular. By contrast, the majority of artefacts which appear to be unrecovered by looting are made of iron - long-range projectiles, spears, and hobnails in particular, which are the artefact types with greatest diagnostic and analytical significance on these sites. The looting process, therefore, changed a battle-deposited assemblage likely to have been dominated by non-ferrous material into a post-looting assemblage which was dominated by iron. Non-ferrous metal detection survey is likely to be at best partially ineffective, at worst misleading, with regards to the distribution of artefacts on Roman battlefield sites. The artefact-type which emerges as a

consistent presence, and therefore diagnostic indicator, for ancient battlefield which is not typically made of iron are *glandes*, most commonly (but not exclusively) cast in lead (Rihll 2009: 151). However, they will not be found on all sites as they were evidently not always used, depending on the nature of the battle, as demonstrated at Kalkriese where very few *glandes* were found. At the Oberesch, there was a higher quantity of copper-alloy artefacts, for the most part fragmented kit fittings resulting from the stripping of the Roman battle-dead rather than fighting-period deposition. As such, a similar quantity of copper alloy fitting fragments would not be expected on sites without a comparable phase of stripping the body-armour of casualties whose armour had copper alloy fittings. Even allowing for this process, the majority of the assemblage from the Oberesch is iron. This is further illustrated at Baecula and Harzhorn, where only *glandes* and coins represent a notable non-ferrous assemblage; again, the majority of the artefacts recovered were made of iron. At Kalkriese, the negative impact of non-ferrous survey was largely mitigated by the ineffectiveness overall of metal detection at the site, largely due to the 1m+ of *Esch* across the site. Some non-ferrous material was identified on the site, and in some areas the *Esch* was removed to allow metal detection.

Excavation has proved a much more effective method for artefact recovery than remote survey (Harnecker 2004: 26; Wilbers-Rost 2007: 7). This might not be expected on other, less covered sites and non-ferrous survey may prove a greater hindrance in such cases. Given the diagnostic significance of iron artefacts in identifying a Roman battlefield, it is necessary to condition the survey methodology to have the best opportunity for identifying as many non-ferrous artefacts as possible. Despite the time-consuming nature of all-metal survey and the likelihood of picking up much irrelevant material, it should be used where possible, particularly if excavation will be limited to areas of high artefact concentration. Survey would, however, need to accommodate the fact that, based on the experiences at Harzhorn, metal detectors may not pick up on the signals from small iron artefacts, particularly *caligae* nails, even in ferrous mode, and once again extensive excavation will be necessary. It seems probable in either case that excavation should not be confined to areas of high artefact density, but should be supplemented by an initial phase of test-pitting in areas of low artefact identification, followed by more if the first pits prove to contain a significant amount of material not picked up by the survey.

Most of the evidence base for the methodological development detailed above would be equally applicable to Greek battlefield archaeology, without significant change. Conventional battlefield study will be difficult on some Greek sites due to topographic change, particularly at Marathon where the plain appears to have become heavily silted with alluvial run-off, with rises in the ground-level of c.3m around the *Soros*, even more in other areas of the plain since 490BC (Pavlopoulos *et al.* 2006). Changes in the ground-level will have consequences for survey and excavation, particularly as metal detection and other remote sensing techniques, are unlikely to be practical in the case of alluvial deposition in particular. They are not necessarily prohibitive to study, as demonstrated at the Oberesch, although the alteration there is less than a third of that at Marathon; it is unlikely that the test-excavation strategy partially employed in lieu of remote sensing would function as well on a site like Marathon. It is clear that any metal detection should, as on the Roman sites, focus on all-metal survey despite the problems that this will cause in terms of non-related material, particularly on sites which were subsequently used for battle in later historical periods, such as Thermopylae. As in the Roman world, the majority of the assemblage left unrecovered on a Greek battlefield is likely to be dominated by iron. Although it was acknowledged that the evidence is more speculative pending any battlefield archaeology results, it was earlier argued that there was a selection bias in Greek battlefield looting. Just as in the Roman world, this process removed the majority of the shields, helmets, body-armour, greaves (all bronze) and swords (iron) from the battlefield, leaving behind an assemblage which would potentially be dominated by projectiles (iron/lead) and spears (iron), and, if they were in common use among Greek soldiers, hobnails (iron).

6.4.5: Metal detection and mass graves

Mass graves are typically difficult to identify on medieval and modern battlefields with metal detection as they rarely contain any metal artefacts. Any incidental finds in the grave-fill may not be identified due to the depth of burials which, although often not deep by the standards of contemporary civilian practice, frequently exceed the effective operating depth-limit of the equipment. There is little reliable methodology to identify, prior

to excavation, whether metal detector hits are associated with a grave. If all artefact hits are excavated this may not present a significant methodological issue. However, in cases where excavation of mass burials is avoided where possible this can prove problematic, notably in recent excavations on the Western Front of the First World War (e.g. Fraser & Brown 2007). Intentional attempts to locate battlefield graves, or to use any skeletal material belonging to known battle casualties, in archaeological analysis, has come under criticism, particularly in the United States (Fox 1993: 325). As such, efforts may not be made to intentionally locate battlefields post-dating the Early Modern period, unless it is to ensure their protection and/or reburial, as at Camden (Smith *et al.* 2009) or the WWI burial at Fromelles (Pollard & Barton 2013). Battlefield graves, and the human remains they contain, from the Early Modern world back are treated more as anthropological archaeological resources, perhaps due to the anonymity of the individuals.¹⁸⁶ Greater efforts may be made in these cases to identify battlefield graves, although metal detection does not always prove effective in doing so.

Very few medieval battlefield graves contain any metal artefacts, although eighteen metal, largely non-ferrous, artefacts were recovered from the grave excavated at Towton in 1996 (Burgess 2000: 30-32). Very little weaponry or armour is found in any mass grave from this period (the latter unsurprisingly given how few soldiers would have worn it), although a number of casualties from Visby were buried in armour parts, most likely because there was a delay in their burial leading to advanced decomposition making it impossible to remove (Thordeman 1939). In the Early Modern period, metal uniform fittings are relatively commonly found in battlefield graves, though weaponry remains rare. At Camden battlefield in the United States, eight individual graves were identified by metal detector survey as a result of artefacts in the grave. Most were uniform fittings such as buckles and insignia, but in one case a lead bullet embedded in the body was identified by the survey (Smith *et al.* 2009: 12). In each case the detectorist was unaware that they had found a grave until they excavated the area. Several of the mass graves at Aspern contained metal artefacts, including uniform fragments and both lead and iron projectiles (Binder *et al.* 2014: 370). At the Fallen Timbers battlefield, clusters of United States military insignia were

¹⁸⁶ Individualisation of the conflict-dead is more common with C20th mass graves in particular, and has been linked to the presence of recognisable artefacts in association with the remains (Renshaw 2011: 157).

identified by metal detection survey and subsequently interpreted as resulting from the surface abandonment or shallow burial of casualties from the battle, although as yet no human remains have been recovered in conjunction with them (Pratt 2009: 12-15). The US Cavalry casualties at the Little Bighorn also possessed many elements of their metal fittings and insignia when they were buried (and later reburied) after the battle (Scott *et al.* 1989: 191-201). Many casualties recovered in recent years from incidental graves on the WWI Western Front also had elements of their military fittings and non-weaponry equipment on them when they were buried informally (e.g. Fraser & Brown 2007). The problem is however, that there is likely to be a lower concentration of metal artefacts in general in the grave area, meaning it could be more easily missed in transect survey. In most cases only areas producing high numbers of hits are subsequently re-covered with smaller transect or complete survey, and low level areas may not be excavated at all if time (and funds) are limited. Any graves located away from concentrations of battle-deposited material, particularly those on the periphery, are unlikely to be located as a result of incidental discovery during excavation of artefact-dense areas.

6.4.6: Metal detection and ancient battlefield graves

To date, metal detection on later battlefields in regards to graves has largely relied on picking up hits from artefacts incidentally deposited in the grave, either as embedded projectiles or unwanted military ephemera, and has not focused on using the artefacts to find graves. An attempt was made to find a correlation between artefact distribution and mass graves by Sutherland and Richardson (2009) at Towton, looking at the spatial distribution of ferrous arrowheads which could have been embedded projectiles. This research led to the discovery of human skeletal material. However, in most cases metal detection is not used in modern battlefield archaeology specifically to find graves, as most are not associated with any metal artefacts.

This is not quite the same situation in antiquity, particularly in the Greek world, in which the battlefield graves thus far excavated in fact do contain both ferrous and non-

ferrous artefacts, through both intentional deposition in the grave and incidental occurrence (embedded weaponry and/or grave-fill). As in any battlefield situation, metal detection would not be able to discern that these artefact hits were associated with a grave, but it is more probable that graves in this context would contain metal. The Theban burial at Chaeronea contained both non-ferrous (bronze coins) and ferrous artefacts: the five javelin heads which probably represent embedded projectiles, and the iron strigils. The Macedonian cremation grave at Chaeronea contained both bronze (pyre-nails, coins) and iron (weaponry, pyre-nails, strigils) artefacts. The Macedonian grave was in the topsoil layer and would have been within the range of metal detection, while the lower Theban burial layer, at 0.45m deep, would be more difficult to identify. The mixed metals of the artefacts means both graves would have been identifiable in ferrous or non-ferrous targeted surveys. The metal artefacts were distributed relatively evenly through the grave correspondent to the individual bodies. Whether such an artefact range and distribution is typical in Greek battlefield graves is unclear, and as-yet there is insufficient evidence to say whether every example would contain a similar assemblage. Although they are separated by almost a century, the Chaeronea assemblages have similarities with that in the repatriated grave at Thespieae. That said, the temporally-closer repatriation grave at Tegea does not contain any grave offerings, nor do the Himera necropolis graves.

Embedded projectiles may also provide a source of metal in graves, examples were found in the Theban burial at Chaeronea, in the Himera necropolis burials. Embedded projectiles were also recovered from a Spartan mass inhumation in the Athenian *Kerameikos*, identified with Spartan casualties from a civilian uprising during the Oligarchic period. One skeleton had an iron lance-head in the ribs while another had two bronze arrowheads in the right leg (van Hook 1932). In a more civilian context, one skeleton from Maiden Castle had an embedded projectile in the neck, originally identified as a Roman catapult bolt (Wheeler 1943: 61-62), although Sharples (1991: 81-83) has since questioned some of Wheeler's original interpretation. Non-embedded projectiles may also be recovered from the grave fill, due to their use in ancient battle. Arrowheads were reported in the grave-fill of the Marathon *Soros*, although the provenance of the examples in the British Museum is debatable. Incidental finds such as embedded projectiles and artefacts in the grave-fill may also emerge in battlefield graves from the Roman world when more are

discovered. The Kalkriese burials were not located because of metal detection hits, although the probability of embedded projectiles so many years later would have been minimal. In more battle-proximate graves, projectiles may occur in the grave fill, but this remains entirely speculative until more examples are excavated.

The main problem with metal detection survey and ancient battlefield graves is the potential to miss them as a result of limited transect survey. Compared to the overall size of a battlefield, the graves represent a small area evocative of the 'needle in a haystack' variety. It is not such an issue that the artefact hits cannot be identified as belonging to a grave as such, the feature will be uncovered when the artefact is excavated regardless of whether it had been previously identified as a grave or not. Excavation however, relies on artefacts being detected during the survey, a process which can be hit-and-miss due to the conditions of transect survey. If graves contain metal artefacts, but do not lie in the area covered by the survey, they will not be identified and the feature may not be excavated. In the two Chaeronea graves, the metal artefacts were associated with the individual bodies and were relatively evenly distributed. However, if there are no metal grave offerings but only the remains of embedded projectiles, this are unlikely to be evenly distributed, as demonstrated in the cemetery graves at Himera. Metal detection survey on ancient battlefields has broadly followed the parameters of later methodology, with transects at 10m intervals with a 0.5m sweep on either side, incorporating around 10% of the total battlefield area. If the metal artefacts were predominantly incidental occurrences - embedded projectiles and grave-fill - it would be chance as to whether they would be picked up during the survey or not.

6.5: Geophysical survey

The effectiveness of metal detection on ancient battlefields has meant that geophysical remote survey, such as ground-penetrating radar or magnetometry, has not necessarily been developed in the context of studying these sites. However, as discussed in the previous section, metal detection is unlikely to prove an effective methodology for

locating battlefield graves, not least because of the absence of metal artefacts, and on some sites where environmental factors may limit the effectiveness of detectors. Geophysical survey has not yet been used on ancient battlefields to locate mass graves. The nature and form of battlefield mass graves are as yet too undefined archaeologically for it to be certain that these parameters will apply equally to them. Discussion of geophysical survey in this context is presented here therefore as an evaluation of the methodologies in a medieval and modern context. However, there will be brief consideration of how far these techniques could be used in an ancient context.

6.5.1: Geophysics and detecting mass graves

The development of survey methodology dedicated specifically to the identification of mass graves on battlefields is relatively limited. That mass graves were created on post-antiquity battlefields through to the C19th is in no real doubt, and in general it is hoped that any extant battlefield graves will emerge during excavation without any dedicated prior survey. In 2010 Masters and Enright (2011) began a project to locate battlefield graves through geophysics on four Late Medieval English battlefields. While a combination of gradiometry, EM-38 and resistivity survey identified a number of sub-surface features which could have been graves, the results were not consistent across sites and none of the features located have a battlefield grave. One of the earliest attempts to use geophysics to locate mass graves was at Towton where areas historically associated with additional mass graves were subjected to a range of geophysical survey, initially without success (Sutherland 2000: 163-166; Sutherland & Schmidt 2003). In 2005 geophysical survey and trial trenching in areas targeted following the emergence of skeletal fragments in ploughing activity did, however, prove successful in locating a grave close to the 1996 grave (Sutherland 2009). At Camden, a ground-penetrating radar (GPR) survey failed to identify any of the eight individual graves already known from metal detection, or provide any evidence for a historically documented mass grave, despite use of up to 22 individual and overlapping 0.5m transects within limited 10m x 15m survey areas (Smith *et al.* 2009).

The effectiveness of GPR for identifying battlefield graves may be limited by their depth, typically within the topsoil, which prohibits the identification of the feature edges. The Towton 1996 grave was 0.5m below current surface level (Fiorato *et al.* 2000: 2), while the deepest graves at the Little Bighorn were 30-35cm below the surface (Scott *et al.* 1998: 97). At Camden, the deepest burial was 48-62cm below surface level, while the rest were significantly shallower (Smith *et al.* 2009). As well as limiting the effectiveness of GPR, shallow burials are more likely to have been disturbed by subsequent site activity, weathering, and animal activity. Topsoil location however, would assist efforts to locate graves through metal detection survey, as any artefacts would likely be placed within range of the detector. Very modern mass graves can be identified from aerial photography and crop-marking, proving particularly useful in identifying a First World War mass grave at Fromelles, France (Pollard & Barton 2013). GPR, resistivity and fluxgate gradiometry have all been used in forensic explorations of modern mass graves with relatively high levels of success (Wright *et al.* 2005), although these graves are consistently much deeper than those associated with battlefield burials.

6.5.2: Geophysics and ancient battlefield graves

The amount that is known about the form of ancient battlefield graves is limited, as is the certainty that they exist on all sites, or indeed, were even originally created on them. A significant methodological challenge is presented by the fact that it is unknown whether inhumation or cremation was used. The probability is, however, that in many cases graves were originally located on the majority of ancient battlefields. Is there any way, therefore, of integrating the little evidence that we do have for their form with the geophysical methodology described above? If there are mass graves extant on ancient battlefields, they are likely to be of substantial size, although their depth in relationship to contemporary ground-level may be variable. The Theban burial at Chaeronea was reportedly found 45cm below C19th ground-level, although Ma (2008: 82 n.73) notes that the excavation report is unclear, and the accurate figure may be 85cm. The shallow depth of the ancient battlefield graves excavated to date suggests that GPR will be of limited use in identifying the features

regardless of their actual dimensions, as its effectiveness in identifying near-surface features is minimal (Cassidy 2001). This may reflect a research bias, in that only near-surface graves have been identified and excavated thus far, although it is observable that battlefield burials in any period are typically shallow. As grave-cuts have been typically difficult to locate on modern sites through geophysical survey, there may be little chance that these features can be identified on Greek and Roman sites through the use of GRP.

Magnetometry may be of some use on ancient battlefields due to the Greek (archaeologically attested) and Roman (literarily claimed) use of cremation to dispose of the battle-dead. The cremation pyres which would have been required to dispose of a considerable number of casualties would have been substantial in size, and the burning may leave an archaeological trace which can be picked up by magnetometry. The technique has not been used on post-antique battlefields, although this has largely been due to the virtual absence of cremation from the treatment of the battle-dead throughout most of the period. Magnetometry, therefore, has been judged as being of minimal relevance to sites post-dating antiquity. However, as discussed in the previous chapter, mass cremation, whether in pits or on the surface, may often have been the most pragmatic method of disposal, short of abandonment. Where it did happen, magnetometry might, hypothetically, identify some trace of the process. Magnetometry is most effective within the top 2m of soil, placing the majority of battlefield graves within the physical scale of the technique. It would be interesting to test whether any evidence for mass cremation can be detected on ancient battlefields. However, the necessary magnetic signals might be distorted by the presence of metal artefacts on the battlefield, making this survey method potentially mutually exclusive with the successful implementation of metal detection survey.

The traditional problem with geophysical survey has been that the process is likely to be too time consuming if used to try and find graves (that may not even exist) somewhere within a large battlefield area. However, new methods of survey being introduced, particularly the use of motorised vehicles, has vastly increased the area which can be covered in a relatively short period of time. Graves are valuable to find; as well as providing archaeological identification of a battlefield to, it would be hoped, even the most sceptical historian, they also offer insights into the reality of disposing of the battle-dead in antiquity,

and osteological evidence from the skeletal remains themselves. Whether the worth of this evidence is, however, enough to justify the effort involved in locating them is questionable. Metal detection can identify a range of artefacts, and through them features, from across the battlefield and, although a significant time investment, consistently produces results which justifies its use. By contrast, there is little evidence to suggest that implementing a site-wide process of remote sensing in the search for mass graves would be effective in most cases, particularly given the problems which most of these methods have in detecting shallow burials. Better results might be achieved if it were possible to narrow down an area of potential burials based on the artefact distribution and focus remote sensing on these areas, although this would have to wait until more battlefields have been excavated and more mass graves identified.

6.6: The research value of battlefield graves

Whether it is worth attempting to locate mass graves prior to excavation is another question. There is an inherent danger in battlefield archaeology, as across archaeology as a whole, in attempting to 'find' a certain feature on a site, and mass graves on battlefields are no different. On any individual site they may not have survived, if they were even created in the first place, and distinguishing between original absence and non-survival may be beyond the time and budget of most projects. At the same time, a mass grave in the vicinity of a battlefield provides strong verification for the identification of a site of conflict. While this may not necessarily be a priority in the Greek world, in the Roman world, where battlefield assemblages may not at first appear overwhelmingly military, mass graves would be much harder for sceptics to dismiss. At the same time, even in the Greek world where mass graves may not be needed to verify a battle's general location, there is likely to be value in the archaeological study of mass graves. It cannot be denied that the ancient literary record falls very short of being satisfactory regarding the disposal of the dead, and it is almost certain that physical mass graves have a lot to reveal about the process in reality, in addition to evidence about the military and societal perception of the battle-dead and their memorialisation. Further to this, it should not be considered acceptable to dismiss the

possibility of mass graves surviving on ancient battlefields without attempting to look for them, without any site-specific reason for why they are unlikely to have survived.

The ancient sources and the extant (if limited) archaeology, suggest that mass graves were created on the majority of ancient battlefields, although it is unclear exactly where or in what form. The impact which the disposal of the dead had on the wider archaeological assemblages of battlefields will remain uncertain until evidence of both has been thoroughly surveyed and excavated from more battlefields. How far mass graves will survive in the archaeological record across battlefield sites is a difficult question, as is the degree to which deliberate survey for mass graves should be built into battlefield methodology. Certainly, it would be a significant effort to implement remote sensing methodology specifically to locate mass graves on ancient battlefields. Metal detection survey conducted across a battlefield may locate artefacts associated with graves, although an association with the may only become apparent during excavation. Some Greek battlefield graves appear to contain a surprising amount of intentionally deposited material, in addition to embedded projectiles or other incidental finds in the grave-fill, and it may be that they will be identified in a general battlefield metal detection survey without the need of additional remote sensing.

However, the transect methodology of metal detection survey is not particularly suited to the identification of mass graves in any period and could very easily miss such a feature during the course of survey. This provides further support for the importance of getting as close to whole-site survey (and excavation) as possible on ancient battlefield sites. Other methods of remote sensing offer minimal supplementation, with GPR particularly ineffective for locating these typically shallow burials. As already noted, magnetometry is a method which has yet to be substantially implemented on ancient battlefield sites, although the close association between the ancient disposal of the battle-dead and cremation make it potentially worthwhile. In all cases, however, the size of the battlefield makes it impractical to apply any remote sensing method (other than metal detection) in the hope of finding a feature which may not even survive. If a smaller area of a battlefield could be associated with mass graves and prioritised for study through the artefact distribution displayed by metal detection it might be more feasible to implement additional remote survey methods,

as at Towton, although the lack of any historical evidence relating to the location would perhaps prove a problem. Most geophysical prospection, therefore, should be seen as supplementary to metal detection used to target specific site areas, rather than methods to be applied wholesale across a battlefield area.

6.7: Conclusion

The question, overall, is how best to survey, and consequently excavate, a Greek or Roman battlefield, taking into account the (probable) specific nature of the extant archaeology of battle in this period? The artefact assemblage is likely to be heavily weighted towards small iron artefacts unevenly distributed over a large landscape area, deposited by pre- and post-battle activity as well as actual fighting. The best methodological approach would be to implement full-site survey – certainly, no more than 2.5m transects – in all-metal mode, of both the central area of fighting and the periphery. It cannot be expected that artefact recovery rates will be highest in the central ‘fighting’ areas of the site due to the spatial variance in looting density (the ‘donut’-effect of modern battlefield archaeology), or that artefacts will be found in their original place of conflict-period deposition. The smaller and more peripherally deposited an artefact, the more likely it is that the find-spot marks an *in situ* location, but this cannot be assumed. If a battlefield camp is known, the area in between should be incorporated into the survey and excavation, but due to the increase in survey size this would require, this would be best conducted in transect mode rather than full-survey. Areas of artefact density should be excavated, with all material recovered, while test-pitting of areas with low artefact density should, if possible, be conducted to minimise the possibility that artefacts have gone undetected by the metal detector.

The main focus is to identify key diagnostic indicators on the battlefield and its periphery, largely long-distance projectiles and *caligae* nails, developing into shorter-distance projectiles, military kit, and coins towards the central area of the battlefield. No large-piece weapons or armour should be expected except in fragments, and are most likely

to be associated with the defeated army. If the losing force did not wear metal body-armour, substantial deposition of kit fragments may prove unlikely. If possible and/or necessary, metal detection survey could be supplemented by conductivity survey with an EM-38 device, which may pick up small iron artefacts missed by a conventional metal detector. Inhumation graves may be difficult to find with traditional survey methodology. However, the use of magnetometry may be able to identify areas of large-scale burning which can be more intensively investigated. Survey on ancient battlefields in general is likely to be considerably improved by the introduction of motorised vehicles which allow larger areas to be prospected. The archaeology is likely to be widely dispersed over an area that was not possible to cover entirely in the past, necessitating the use of transects. Now, however, it may be possible to gain a more complete picture into the site as a whole.

Chapter Seven: Conclusion

7.1: Introduction

The introduction to this thesis set out the major issues concerning the archaeological study of ancient battlefields. These sites have, almost universally, been poorly studied. The varied reasons for this low level of development in the discipline were also considered. The connection of many early practitioners, particularly in the late C19th and early C20th, with the contemporary military led to the prioritisation of strategic and tactical applications above actual accuracy and verification. Later scholars, although increasingly disconnected from the practical military side, followed much of the methodology which had been developed over the previous century and a half. In particular, ancient battlefields were considered to be sites which fell beneath the remit of historians, rather than archaeologists. As such, study of the ancient literary record was prioritised in study, despite its frequent unsuitability to the study of battlefield sites, as discussed in Chapter Two. Not only did the ancient writers fail to document the issues of concern to modern battlefield studies, but the nature of the texts means that even reliable incidental evidence is largely absent from the record. Shifts in archaeological practice from the 1960s onwards failed to stake a claim to the study of ancient battlefields. Although historians such as Hammond and Pritchett were clearly aware of the archaeological evidence which had been found, neither commissioned any verification work at their sites, nor even discussed the potential of archaeology for doing so. The developments in battlefield archaeology from the 1980s onward have also largely failed to draw ancient sites into the wider confines of the discipline, not least due to concerns over the survival of assemblages.

This thesis therefore set out to explore the parameters of battlefield archaeology in an ancient context, and establish how both the historical and archaeological evidence can be most effectively used in the study of these sites. In Chapter One the contextual background of this research was addressed, considering the origins of both ancient battlefield studies and battlefield archaeology relevant to the thesis. It highlighted the fact

that several of the methodological assumptions, from the nature of the evidence to the very definitions of 'battle' and 'battlefield', need to be redefined for antiquity. Chapter Two provided an in-depth consideration of the suitability of the ancient literary record with regard to battlefields, suggesting that the reliability of even the incidental evidence is highly problematic. The texts record at best generalised battlefield landscapes, at worst partially or wholly created ones, and it was argued therefore that their contribution to the study of ancient battlefields should be far more limited than it has previously been. It was therefore then necessary to suggest what could replace the ancient literary record as the primary source of evidence, particularly in the early desk-based research phase. In Chapter Three it was suggested that archaeological evidence from the wider conflict landscape could be used to identify battlefield sites on a localised level, if not to map-reference standard. The impact of conflict in antiquity left an identifiable trace on the landscapes surrounding a battlefield, potentially allowing a more realistic study area to be identified without relying on topographic descriptions from ancient writers.

In Chapters Four and Five the nature of the evidence which would form the target for archaeological exploration of ancient battlefields was considered. In Chapter Four it was argued that the surviving archaeology of ancient battle, like that of many other military sites, was dominated by finds which are not martial or conflict specific. In many cases, they can be definitely associated with the army when they come from a known military context, a slight issue in the context of discovery of a field which might, or might not, be a battlefield. It was concluded that the predominant reason for the presence of these artefacts on sites, in that they 'survived' post-battle looting, was their small size contributing to a process of natural obscuration. The assemblages were likely, therefore, to be dominated by small finds, not necessarily exclusively military in nature, with a distribution impacted by the physical process of looting. In Chapter Five the non-artefact archaeological evidence was discussed and identified to be represented in most cases by the features, or lack thereof, associated with the disposal of the dead. It is reasonably certain that in most cases the disposal happened on the battlefield. However, whether there was consistent practice, beyond the fact that the methods used are likely to represent the most pragmatic method available to those involved in the process, is unclear from the current lack of evidence. This may be less negative than it sounds, as the less formal methods may leave a more identifiable

archaeological trace than simple battlefield inhumation might have done. The issue of adapting survey methodology to the ancient battlefield archaeologies identified in Chapters Four and Five was discussed in Chapter Six. The chapter suggested that the main methodological challenge would be to adapt survey methodology to sites which are extensive in the landscape, with an assemblage which, by both its distribution and ferrous nature, requires more intensive survey than is necessary on many later sites. Many of the methodologies used on later sites, particularly transect-based non-ferrous metal detection survey, are unlikely to make the most of ancient battlefield assemblages, but the use of more intensive survey may not be possible with the resources available to an individual project.

This thesis has addressed what it perceives to be the main issues regarding ancient battlefield archaeology by considering both the literary and archaeological evidence. While the (ancient) literary record provides a backdrop to the study of ancient battlefields, it is becoming increasingly clear that its contribution to archaeological exploration of ancient battlefields will be limited. However, potential problems were also identified in the context of the archaeological material, resulting in no small part from the lack of known evidence for the deposition of military equipment on the battlefield, its recovery, and general post-battle activity. This evidence from numerous conflict sites from antiquity has been used to reconstruct these site formation processes, using this evidence to suggest what the signature archaeology of ancient battlefield actually is. Thereafter, it identified how archaeological methodology could best be adopted to suit these characteristics. The archaeology of ancient battle will become better understood with each new site which is identified, surveyed and excavated. The discipline is in a very early stage of development, and it should not be too disheartening that there are still elements and processes which remain to be identified and their significance exploited. The future development of this research will be addressed in this chapter, particularly how the methodologies developed throughout the thesis can be used on a case-study basis.

7.2: Addressing the research aims

This thesis did not set out to answer a simple research question. Instead, it was hoped that some answers could be provided both as to why the methodological approach based on literary evidence has been of such limited use, and how archaeology can be used as an alternate basis of study. The unifying, underlying theme to the research presented here is one which aimed to consider why ancient battlefields have been so poorly studied in the past, and why the archaeological methodology which has proved so effective on later period sites has been under-used on sites from antiquity. These questions were addressed in several ways. The development of the discipline was considered from its early origins in the C19th and the impact of the military relationship of many researchers on contemporary and later methodologies. Contemporary attitudes to the archaeology both of the Greek and Roman military was also addressed, as was its survival in the archaeological record.

One of the more significant aims was to demonstrate just how problematic the ancient literary record is with regards to battlefield studies. Although historians had previously recognised that the record was less than ideal with regard to battlefield location and geography (e.g. Sabin 2007; Whitby 2007), archaeology was not seen as a viable alternative. Even today, the debate surrounding their use is framed in terms of how far the sources can be used, without a discussion of whether they should be in the first place. In some cases, the failure to recognise archaeological evidence has been associated with a lack of belief in the survival of ancient battlefield archaeology. In reality it often betrays only a deeply conventional attitude, which worries that the marginalisation of the written record will lead to nothing more than a complete lack of context for anything which is found in the archaeological record. An argument has been put forward in this thesis for a cautious attitude towards the literary record in regards to ancient battlefields. It does not argue for the complete exclusion of the textual evidence, particularly in providing historical context and identifying a series of known military campaigns. However, the geographic and topographic evidence is a different issue. Although the texts contain some useful location evidence, distinguishing these examples from the mass writings which are at best irrelevant, at worst deliberately misleading, makes them a highly problematic source of evidence. The

concern of ancient authors was not to tell archaeologists two millennia later where a battle was fought or what happened on the battlefield. It may seem intimidating to marginalise much of what is documented in ancient battle narrative, but when it can be demonstrated that that record contains little accurate evidence, there may be no other alternative than to do so.

It is not just the continued use of the ancient historical record which has proved problematic to ancient battlefield studies. Even among battlefield archaeologists, there has been little reflexive consideration of how the methodologies developed in the study of modern battle, of which the Little Bighorn is the most prominent example, can be used on sites from much earlier periods. Antiquity has been marginalised by historians (Sabin 2007: 399) and archaeologists (Foard 2009) both within battlefield and Greco-Roman archaeology, largely due to nothing more than the lack of signature munitions of the sort that modern battlefield archaeologists are able to find and analyse. This attitude completely fails to recognise that the projectile assemblage from ancient warfare was certainly comparable in use, and that the metal-based military assemblages from the period often present a far more diverse range of battlefield artefactual detritus than many other periods of warfare. Ancient battlefield archaeology has been held back by a failure to assess the likely assemblages before passing judgement on their viability.

The greatest methodological issues are in respect to the metal composition and recognition of assemblages rather than their actual survival, the latter of which can be assessed in part by desk-based environmental research prior to survey and excavation. The prominence of iron in ancient military archaeology, particularly in the Roman world, is perhaps the greatest methodological problem due to problems with the physical survival of the material, and indeed in some cases copper-alloy, in many archaeological contexts. This is a valid and potentially significant challenge to the investigation of many battlefields from the Greek and Roman world, and yet the taphonomic survival of material, as opposed to that of the looting process, has been relatively little discussed within the context of the discipline. However, the physical survival of metal assemblages is possible under certain chemical conditions, as demonstrated by the battlefields already located, and survey methodology can be adapted to target ferrous and non-ferrous artefacts in different phases,

provided enough time can be dedicated to the project. From an archaeological perspective, therefore, it is reasonable to say that ancient battlefields have been so poorly studied simply because they are not post-blackpowder sites, as there is nothing in their archaeological manifestation that justifies such marginalisation.

Contrary to the views of some (e.g. Webster 1993: 100; Sabin 2007: 399), there is certainly an archaeology of ancient battle. It is not necessarily uniform or uniquely martial in nature, consistent with the assemblages from other military sites in antiquity, particularly military installations. Most of the weaponry and armour was removed from sites in the aftermath of battle, to a degree as part of a wider systematic process of looting, but this activity in reality left many smaller artefacts behind. The signature archaeology of ancient battle, particularly in the Roman world, is dominated by small projectiles and fragments. Lead *glandes* are particularly diagnostically useful, but are not found in all conflict contexts, as demonstrated by their absence at Kalkriese. As seen at Burnswark, it may also be difficult to identify from *glandes* alone between an actual conflict and a training exercise (e.g. Campbell 2003; Breeze 2011).¹⁸⁷ Iron artefacts, particularly projectiles and *caligae* nails, are also therefore important elements of battle-related assemblages, and have been found across conflict sites from the Roman, and indeed the Greek, world. No single artefact or artefact category is itself diagnostically conclusive of a battlefield. It is the quantity and spatial distribution, relative both to the terrain and other artefacts, which comprises the signature of ancient battle. Similar assemblages are documented from Roman forts across the Empire, albeit often in lesser quantity and with reduced quantities of weaponry, particularly projectiles. The distinctive features of battlefield assemblages as opposed to those associated with military installations (and indeed, civilian contexts) primarily concerns the widespread distribution of projectiles and kit fragments in the open field, outside of a constructed feature.

The issue of mass graves is more difficult, dominated as it is by discussion of contemporary social attitudes and commemorative practice which discourage assertions

¹⁸⁷ See also work conducted at the site in summer 2015, uploaded as an online presentation <http://www.socantscot.org/resource/burnswark-siege-or-no-siege-by-dr-john-reid-and-andrew-nicholson/> (accessed 05/01/2016).

that soldiers in antiquity, just like their later counterparts, often did the bare minimum when disposing of their battle-dead. This may not have made favourable reading to audiences, as mirrored in later practice, hence its exclusion from the record. However, the examples from later periods have made it clear that pragmatic considerations, rather than mortuary convention, governed the mass disposal on the battlefield. However, this is not necessarily a negative in an archaeological context. Such methods should mean either that there are, or were, areas of disposal on the battlefield of substantial size, whether in the form of pits or trenches dug/used for burial, or surface areas showing evidence of mass cremation. The reality of Greek and Roman battlefield disposal may not be pleasant reading, but may not be as archaeologically invisible. This reality is slowly beginning to be recognised. A recently published re-evaluation of Caesar's campaigns in Gaul by Roymans and Fernández-Götz (2015) cited battlefield archaeology as a potential methodology for reinterpreting the conflict. This paper focused on the diagnostic potential of lead *glandes* from the siege at Thuin, cautiously identified with the Aduatuci *oppidum* attacked in 57BC (Caes. *Bell. Gall.* 2.33; Roymans & Fernández-Götz 2015: 75). One hope of this research is that the signature archaeology of ancient battle will become recognisable independently of a historical context, allowing sites to be located outside of projects aiming to find a particular historically-documented engagement.

7.3: Avenues for future research

Much of the discussion in this thesis has been, unavoidably, based on assemblages published from other sites, rather than a new range of material. It has not been possible to test in the field many of the hypotheses advanced here, although in all cases excavated examples have been used to verify any points developed. Ideally, there are two ways in which this research might be developed in the future. First it could contribute to the database of known ancient battlefield archaeology by locating, identifying, surveying and excavating new sites. In the Greek world, in particular, this may contribute to an understanding of ancient battle which goes beyond the formulaic narrative descriptions backed up by generalised topographic locations which have, in many cases, been accepted

as 'good enough' (e.g. Hanson 1989; van Wees 2004). The archaeology of Greek battle has almost exclusively been studied through experimental and experiential recreation (e.g. Schwartz 2009) and the reality of campaigning assessed as a logistic issue (e.g. Engels 1978; Lee 2007), without first establishing what was actually happening on the battlefield, and where. Contemporary archaeological study of Greek battle has been confined to human remains (e.g. Ma 2008; Lee 2011; Atwood 2014), but the physical sites themselves have a valuable contribution to make.

In the Roman world, the identification and narrative interpretation of conflict sites may provide new insights into how soldiers functioned on the battlefield. As in modern studies, training manuals such as Vegetius' *Epitome of Military Science* indicate how soldiers and units should have behaved; archaeology provides the potential to assess how far this was replicated on the field. At Baecula, the manoeuvring of the Roman soldiers on the battlefield could be reconstructed from their *caligae*, as could the route by which the Romans took the ridge at Harzhorn. A better understanding of the function of the Roman army in individual military situations is, therefore, one of the main outcomes of battlefield identification, although it is only one facet of a much wider potential application. The identification of new sites, will establish a more accurate geographic extent for Roman campaigning. The discovery of the Harzhorn battlefield, for example, indicated that in the 3rd AD a probable Roman army was engaged in active campaigning far beyond the contemporary frontier. This force was of considerable size, potentially (at least partially) composed of a vexillation unit taken from Upper Moesia, and based on the direction of travel, had travelled further north than Harzhorn. The position and nature of this battle contributes to a reassessment of the function of not only the Roman army in this period, but also the function of the Germanic *limes* in this period.

The identification of smaller-scale siege sites such as those in Spain, often unattested historically, and lower-intensity engagements in the Roman provinces, will lead to a more accurate assessment of the field potential of the Roman army. It can also contribute to the reassessment of the typical function of the Roman army as an institution based on more evidence than the location of military installations, inscriptions, and formal written histories. The issue of how the legions have been studied in the past has been previously flagged as

problematic (see James 2002). At this stage of research, the number of emerging lower-intensity sites suggests that the Roman army fought more of these conflicts than it did pitched battles, which may encourage more research into the structure and organisation of the legions and *auxilia*.

Longer term, however, the research aim is to go further than the identification and narrative reconstruction of individual battles, and use these examples to inform a wider study of the impact of warfare in antiquity. There are many aspects of ancient warfare, such as the daily life of soldiers, logistical supply, and organisation both on the march and inside installations, which are not discussed by the ancient literature. Study of the artefacts and inscriptions related to the army has contributed to new understanding, as has the reinterpretation of military installations, but our understanding of the Roman army, and thereby also associated themes such as the frontiers, remains incomplete. Identifying battlefields as focal points within a conflict landscape allows the impact of the process of battle and war on the landscape to be assessed.

A better understanding of the location of battlefields, both pitched and lower-intensity, may also identify patterns in location. To some degree this draws on work developed by the Carman and Carman (2005; 2006; *cf.* Carman 2013) which attempted to identify cultural factors in the location of battlefields. Research into battlefield locations could be much better structured by a basis in archaeological, as in artefactual, reality, considering military logistical issues as well as the social constructs cited by the Bloody Meadows Project. Were battles fought near civilian settlements, and if so, is there a difference in the nature of size of the battle relative to the population level? What were the immediate and longer-term consequences for local populations? Is there consistent evidence of destruction or depopulation in settlements within the hinterland of battlefields, as suggested around Baecula? Were certain provincial areas 'hotspots' for battle? It is not, therefore, the aim of this thesis that identifying battlefields should be viewed as a complete research project, but rather, as a step towards a more refined and accurate interpretation of ancient warfare as a whole. In particular, future research in this area will also draw together some of the more disparate evidence coming from battlefields and conflict sites in Spain, from the Punic, Sertorian, and Caesarian wars. A research trip is planned to Spain in the near

future in which preliminary surveys will be made of a number of conflict sites, including the supposed battlefield of Munda at La Lantejuela.

7.3.1: Mons Graupius

Perhaps an obvious place to start would be the identification of a site such as Mons Graupius. Innumerable antiquarians and archaeologists have looked for the battlefield, anyway from Perthshire to Aberdeenshire, and none have seen successful (see Maxwell 1990). Very little archaeological work has been done, beyond identification of Roman military installations which could serve as the battlefield camp (e.g. St Joseph 1978). Currently the preferred location for the battle-site, following St. Joseph's identification of Roman marching camps towards it, is Bennachie, near Inverurie in Aberdeenshire and which in turn has been become the focus of narrative reconstructions of the events of the battle (e.g. Campbell 2010). In order to verify the identification, most recently Gordon Noble, an initial survey of Bennachie was carried out in an attempt to identify battle-related material, although no period-relevant artefacts were reported by the project (Gordon Noble *pers. comm.* May 2011).

Mons Graupius presents an excellent potential site for re-evaluation on an archaeological basis. As one of the earliest - and indeed, in some ways the latest - historically-attested pitched battles in Britannia, it presents a unique research opportunity, particularly as the historical record superficially detailed is in fact so unclear on what actually happened. Tacitus (*Agric.* 35) documented a highly unusual engagement in the context of ancient battle-narrative, in which the legions, although present, did not fight, and for which the casualty figures are by all common-sense evaluation entirely unrealistic. Tacitus' (*Agric.* 25-38) topographic description of the site suggests that it was located north of the Firth of Forth, with the Britons holding the high ground of the "Grampians" which had an open plain in front, close to a native settlements and houses, with a fortified Roman camp constructed nearby. A northern location in Caledonia has been seen as implied by Tacitus' (*Agric.* 33) comment in Agricola's battlefield speech that it was no shame to die in

the furthest reaches of the earth (e.g. Campbell 2015: 410) although this may have been intended on a provincial rather than local level. Most of the topographic details are incidental to the narrative, rather than a neutral description of the site. Toponymic identification of the "Grampians", although attempted by some (e.g. Feacham 1970), has proved unsuccessful and is based on false etymological premises (see Ogilvie & Richmond 1967: 251; Rivet & Smith 1979: 370-371). It has been previously noted that the terrain is similar to that of other set-piece battles in Tacitus (Hanson 1987: 130). Attempts to identify the site archaeologically have focused on locating positions which could fit the respective armies (30000 Britons, 8000 Roman *auxilia* and 3000 cavalry) within the conflict landscape (Burn 1953) and identifying the battlefield camp (e.g. Hanson 1987: 130-137). However, as argued in Chapter Three above, it is highly debatable whether any of the topographic or narrative details reflect the reality of the battlefield situation. However well an individual site meets the criteria set out in Tacitus, it is questionable whether this in any way indicates the probability of it having been a Roman battlefield, let alone Mons Graupius.

This issue with identifying the battlefield, as in so many cases, is that the literary description of the battlefield, and consequently the archaeological targets, is too vague so that it satisfies a number of different sites, particularly when the potential study area can only be narrowed to 'Scotland'. At least 29 different sites have been proposed in various publications for the site of the battle (Fig. 24). All meet at least some of Tacitus' topographic criteria, and several meet all of them. In most cases, the location of the battlefield was suggested following the identification of a topographically-suitable area within the vicinity of a Roman military installation. The installations at Dunning, Durno, Raedykes, Strageath and Auchinhove have been particularly associated with the battlefield, with nearby plains and hills thereby associated with the fighting. No battle-related artefacts or features have yet been identified with any of these locations. Each potential site can be assessed with desk-based research in terms of the distance from the battlefield camp to the respective hills and plains, and evidence for any antiquarian or incidental finds of artefacts and monuments. Environmental analysis of the terrain, particularly regarding the survival of iron, might also prove useful. Following this, any probable candidates could be assessed in the field with preliminary artefact survey, based on iron or lead frequencies (ideally both) prior to any full-scale exploration.

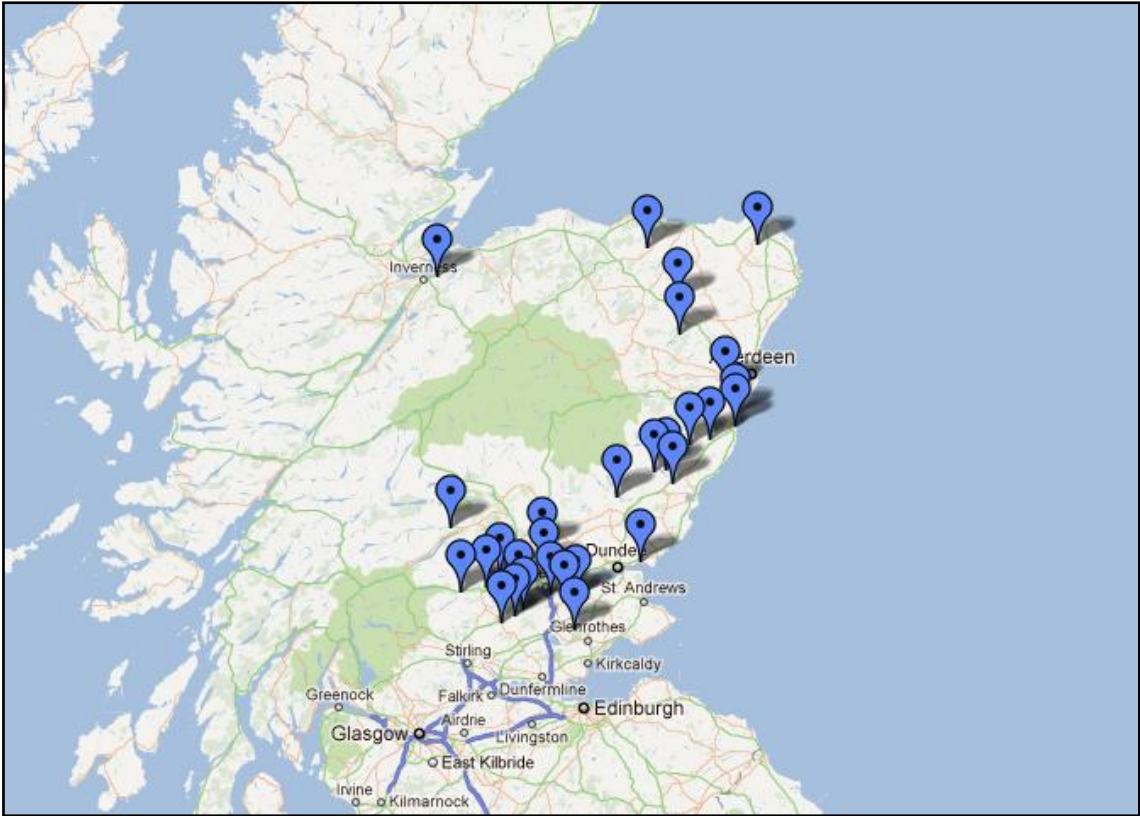


Figure 24: Suggested locations for Mons Graupius from published papers and internet sources (www.roman-britain.org).

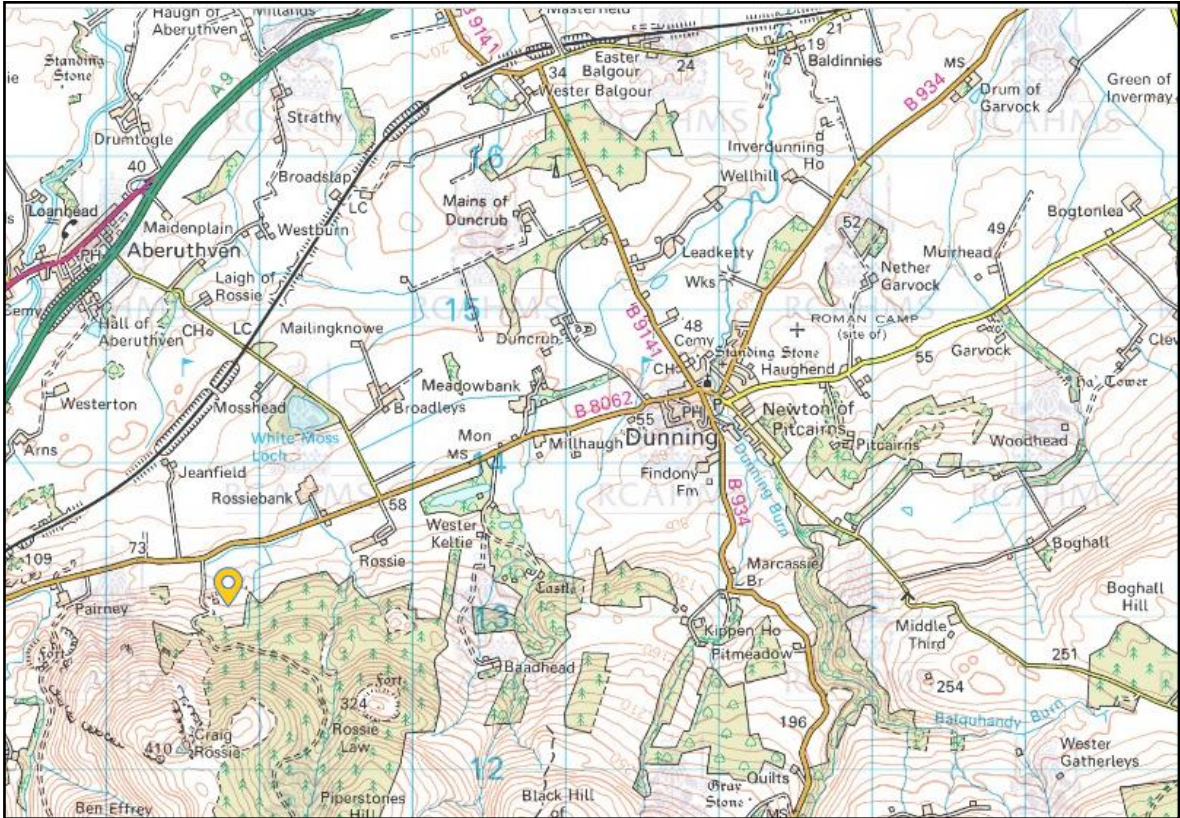


Figure 25: Dunning temporary camp and landscape (www.canmore.org.uk).

In an earlier stage of this research, a preliminary investigation of the site at Dunning was attempted, using the database of the Royal Commission on the Ancient and Historical Monuments of Scotland (Canmore; Fig. 25). The area had several of the features which, from desktop research, could suggest a potential battlefield. The Roman camp at Kincladie Wood is c.47ha in size, comparable with the nearby camp at Carey, Abernethy, 16km to the east, which may suggest a route of advance and/or retreat to the installation at Dunning. A native hillfort has been identified at Dun Knock, c.1.5km south of Dunning, and another at Rossie Law, c.3.25km west of the Dunning Roman encampment (Poller 2012). Of potentially pertinent other evidence, human remains were recovered in the grounds of 'The Ship', Tarnavie, in the early C19th (Canmore ID: 26074; NGR: NN 988 131). The grave also contained fragments of weapons and armour. Both the artefacts and human remains have subsequently been lost with no extant records, and there is little indication of the date associated with the burial. Another battle is documented from the Dunning area, the Battle of Duncrub in AD964, for which there is a memorial standing stone (Canmore ID: 26715; NGR: NO 0185 1469), which may be associated with the remains - without any secure dating, it is impossible to tell. Although the proposal to develop the Dunning site did not result in any metal detection work, the area between the Roman camp at Kincladie Wood and both native hill-forts remain priorities for any survey work in the area. An effective initial strategy would take two strands. Firstly, implementation of a large-scale survey, particularly magnetometry, to search for evidence of battlefield pyres, followed by metal detection survey.

Unlike previous attempts to identify the battlefield, such as that of Noble at Bennachie, the survey would avoid scatter-gun sampling strategies or use of transects, concentrating instead on covering as a wide landscape area, made feasible by motorised survey methods. At Mons Graupius, it would be useful to look not just for the core of the battlefield, but also for evidence of artefacts and pyres on the periphery of the battlefield, following the lead of the 'donut effect' as seen on American battlefields (see 4.3). This spatial patterning has been documented in antiquity at Kalkriese (see 4.5.2), suggesting that a concentration of battle-related material will be located in the periphery of the battlefield. Wide-scale coverage not just of the expected central area, avoiding limited sampling, aiming

to identify evidence not just of the fighting, but of advance and rout/retreat phases, provides a much better opportunity of identifying battle-related archaeology. Although in this case Dunning is unlikely to be connected to a battlefield, rather more to the construction of the Gask Ridge, other proposed sites for the battlefield will form part of subsequent research into the battlefield location following this thesis. Similar research will be prepared for the first set-piece battle of the Roman invasion. It is also planned to take this research further in Spain, with a preliminary exploration of La Lantejuela, Spain, planned following the incidental recovery of lead *glandes* from the site and its tentative association with the battles of Munda (Grünwald & Richter 2006).

7.4: Final conclusion

As demonstrated throughout this thesis, the archaeology of ancient battle certainly exists on battlefield sites. It will be difficult to survey them, even more so to find them in the first place, and yet the research potential which they contain is substantial. The discipline of ancient battlefield studies had by the 1980s previously reached a point of stagnation, based on a continued and unmerited reliance on the literary record from antiquity. Fieldwork at Kalkriese, Harzhorn, and Baecula, not to mention numerous siege sites such as Dura-Europos and Gamla, has demonstrated that there is an alternative methodology for the study of Greek and Roman conflict which focuses on the archaeological evidence. This thesis has aimed to build on this basis to develop a methodology which can be applied to locate and explore classical open-field conflict sites more widely. In adapting the conceptual approach towards the archaeology of Greek and Roman battle, the archaeology of battlefields from antiquity can be drawn into the mainstream of battlefield archaeology. At the very least, it can be taken now as certain that there was an archaeology of ancient battle, that its formation was not entirely reliant on the wholesale defeat of a Roman army (*cf.* Coulston 2001: 44-45). Further, the investigative methodologies of wider battlefield archaeology can be adapted to detect the lead *glandes*, iron projectiles, and *caligae* nails which form the basis of this archaeology - the lost, unrecovered detritus of ancient battle.

Bibliography.

Ancient sources.

All ancient references and quotations are taken from the LOEB editions, excepting:

Vegetius (Translated by N.P. Milner 1996). *Epitome of Military Science*. (Liverpool).

Modern sources.

Alcock, L. (1972). *'By South Cadbury is that Camelot...': the excavation of Cadbury Castle, 1966-1970*. (London).

Allason-Jones, L. (1988). 'Small finds from the turrets on Hadrian's Wall'. In Coulston, J.C.N. (ed.) *Military equipment and the identity of Roman soldiers: Proceedings of the fourth Roman military equipment conference*. BAR Int. Series 394. (Oxford): 197-233.

Allason-Jones, L. & Bishop, M. (1988). *Excavations at Roman Corbridge: the Hoard*. (London).

Allison, P.M. (2013). *People and Spaces in Roman Military Bases*. (Cambridge).

Anderson, J.K. (1970). *Military Theory and Practice in the Age of Xenophon*. (Berkeley).

Anderson, J.K. (1989). 'Hoplite Weapons and Offensive Arms'. In Hanson, V.D. (ed.) *Hoplites: The Classical Greek Battle Experience*. (London): 15-37.

Ash, R. (1999). 'An Exemplary Conflict: Tacitus' Parthian Battle Narrative ("Annals" 6.34-35)'. *Phoenix* 53 (1/2): 114-135.

Ash, R. (2007). 'Tacitus and the Battle of Mons Graupius: An Historiographical Route Map?' In Marincola, J. (ed.) *Blackwell Companion to Ancient Historiography*. (Oxford, 2 volumes): 434-440.

Atwood, R. (2014). 'An Epic Conflict'. *Archaeology* 67 (1): 31-36.

Austin, N.J.E., & Rankov, N.B. (1995). *Exploratio: Military and Political Intelligence in the Roman World from the Second Punic War to the Battle of Adrianople*. (London).

Aviam, M. (2006). 'The Archaeological Illumination of Josephus' Narrative of the Battles at Yodefath and Gamla'. In Rodgers, Z. (ed.) *Making History: Josephus and Historical Method*. (Leiden) 372-384.

Azam, J., & Hoeffler, A. (2002). 'Violence against Civilians in Civil Wars: Looting or Terror?' *Journal of Peace Research* 39 (4): 461-485.

Babits, L.E. (1998). *A Devil of a Whipping: The Battle of Cowpens*. (Chapel Hill, NC).

Babits, L. (2011). 'Battlefield Recoveries, Recycling, Looting, or Souveneering: A view from American Wars'. Unpublished paper given at the 6th Fields of Conflict Conference, University of Osnabrück, April 2011.

Babits, L.E. (2014). 'METT-T, KOCOA, and the Principles of War: A Template Guiding a Better Understanding of Battlefield Behavior and Detritus'. In Geier, C.R., Scott, D.D., & Babits, L.E. (eds.) *From these Honored Dead: Historical Archaeology of the American Civil War*. (Gainesville, FL): 263-270.

Babits, L., Espenshade, C.T., & Lowry, S. (2011). 'Battlefield Analysis: Six Maritime Battles in Maryland, Revolutionary War and War of 1812'. Report submitted to the Maryland Historical Trust and the American Battlefield Preservation Program of the National Park Service.

Babits, L.E., & Gandulla, S. (2013). *The Archaeology of French and Indian War Frontier Forts*. (Gainesville, FL).

Baddeley, A.D. (1972). 'Selective Attention and Performance in Dangerous Environments'. *British Journal of Psychology* 63 (4): 537- 546.

Ball, J. (2015). 'To the Victor the Spoils? Post-Battle Looting in the Roman World'. In Lee, G., Whittaker, H., & Wrightson, G. (eds.) *Ancient Warfare: Introducing Current Research*. (Cambridge): 309-330.

Barrett, A.A. (1991). 'Claudius' British Victory Arch in Rome'. *Britannia* 22: 1-19.

Barrett, J.C., Freeman, P.W.M., & Woodward, A. (2000). *Cadbury Castle Somerset. The later prehistoric and early historic archaeology*. (London).

Beard, M. (2007). *The Roman Triumph*. (Cambridge, MA).

De Beer, G.R. (1955). *Alps and Elephants: Hannibal's March*. (London).

De Beer, G.R. (1969). *Hannibal. The Struggle for Power in the Mediterranean*. (London).

Bekker-Nielsen, T. (1988). 'Terra Incognita: the Subjective Geography of the Roman Empire'. In Damsgaard-Madsen, A., Christiansen, E., & Hallager, E. (eds.) *Studies in Ancient History and Numismatics presented to Rudi Thomsen*. (Aarhus): 148- 161.

Bellino, V. (2011). 'Romans, Silures and Ordovices: the experience of low intensity warfare in Wales'. *Archaeologia Cambrensis* 160: 13-38.

Bellón Ruiz, J.P. (2012). 'Estudio de los escenarios bélicos anibólicos de Numistro y Grumentum (Basilicata, Italia)'. *Informes y Trabajos* 7: 216-230.

Bellón, J.P., Gómez, F., Gutiérrez, L., Rueda, C., Ruiz, A., Sánchez, A., Molinos, M., Wiña, L., García, M.A., & Lozano, G. (2004). "Baecula: Arqueología de una batalla". *Proyectos de Investigación 2002-2004*, Universidad de Jaén.

Bellón, J.P.R., Gómez Cabeza, F., Ruiz, A., Molinos, M., Sánchez, A., Gutiérrez, L., Rueda, C., Wiña, L., Antonia García, M., Martínez, A.M., Ortega, C., Lozano, G. & Fernández, R. (2009). 'Baecula. An Archaeological Analysis of the Location of a Battle of the Second Punic War'. In Morillo, Á., Hanel, N., & Martín, E. (eds.) *Limes XX*. (Madrid): 253–266.

Bellón Ruiz, J.P., Gómez Cabeza, F., Ruiz Rodríguez, A., Cárdenas Anguita, I., Molinos Molinos, M., & Rueda Galán, C. (2012). 'Un escenario bélico de la Segunda Guerra Púnica: Baecula'. In Remedios, S., Prados, F., & Bermejo, J. (eds.) *Aníbal de Cartago: Historia y Mito*. (Madrid) 345-378.

Berger, F. (1996). *Kalkriese 1: die römischen Fundmünzen: Text und Tafeln*. (Mainz).

Berger, F., Bittman, F., Geschwind, M., Lönne, P., Meyer, M., & Moosbauer, G. (2010/13). 'Die römisch-germanische Auseinandersetzung am Harzhorn, Lkr. Northeim, Niedersachsen'. *Germania* 88: 313-402.

Berger, F., Geschwinde, M., Meyer, M., & Moosbauer, G. (2013). 'Die Datierung des Fundmaterials: Ist es wirklich der Feldzug des Maximinus Thrax 235/236 n. Chr.?' In Pöppelmann, H., Deppmeyer, K., & Steinmetz, W-D. (eds.) *Roms Vergessener Feldzug. Die Schlacht am Harzhorn*. (Darmstadt): 66-70.

Bevan, B.W. (1998). *Geophysical Exploration for Archaeology: An Introduction to Geophysical Exploration*. Midwest Archaeological Centre Special Report 1.

Biddle, M., & Kjølbye-Biddle, B. (2001). 'Repton and the 'great heathen army', 873-4'. In Graham-Campbell, J., Hall, R., Jesch, J., & Parsons, D.N. (eds.) *Vikings and the Danelaw. Selected Papers from the Proceedings of the Thirteenth Viking Congress*. (Oxford): 45-96.

Binder, M., Saki-Oberthaler, S., Czeika, S., & Penz, M. (2014). 'The Battle of Aspern in 1809. Archaeological Observations'. In Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf): 365-375.

Birley, A.R. (1998). 'A New Tombstone from Vindolanda'. *Britannia* 29: 299-306.

Birley, A. (2002). *Garrison Life at Vindolanda: A Band of Brothers*. (Stroud).

Bishop, M.C. (1985). 'The military *fabrica* and the production of arms in the early principate'. In Bishop, M.C. (ed.) *The Production and Distribution of Roman Military Equipment. Proceedings of the Second Roman Military Equipment Research Seminar*. BAR Int. Series 275. (Oxford): 1-42.

Bishop, M.C. (2002). *Lorica Segmentata Volume I: A Handbook of Articulated Roman Plate Armour*. (Chirnside).

Bishop, M.C. (2011). 'Weaponry and military equipment'. In Allason-Jones, L. (ed.) *Artefacts in Roman Britain: The Purpose and Use*. (Cambridge): 114-132.

Bishop, M.C. (2014). 'The Corbridge Hoard Revisited'. In Collins, R., & McIntosh, F. (eds.) *Life in the Limes: Studies of the people and objects of the Roman frontiers*. (Oxford): 79-86.

Bishop, M.C., & Coulston, J.C.N. (2006). *Roman Military Equipment from the Punic Wars to the Fall of Rome*. (Oxford, 2nd Edition).

Ble, E., Campillo, X. R., Matías, P. V., & Gómex, M. Y. (2012). 'Tracing a Roman siege from Late Roman Republican Wars: Puigciutat (NE Iberian Peninsula). Unpublished paper given at the 7th Fields of Conflict Conference, Military History Institute and Museum, Budapest, October 2012.

Ble, E., Lacruz, S., Noguera, J., & Valdés, P. (2011). 'La Palma - Nova Classis: Archaeological evidences of war booty in a Roman encampment during the Second Punic War'.

Unpublished paper given at the 6th Fields of Conflict Conference, University of Osnabrück, April 2011.

Böedecker, S. (2014). 'Airborne Laserscanning am Niedergermanischen Limes. Ein Übungslagerareal im Hochwald bei Xanten'. In Henrich, P. (ed.) *Der Limes in Raetien und den germanischen Provinzen im 1.–4. Jh.* (Stuttgart): 166-171.

Bosman, A.V.A.J. (1995). 'Pouring lead in the pouring rain. Making lead slingshot under battle conditions'. *Journal of Roman Military Equipment Studies* 6: 99-103.

Bosman, A.V.A.J. (1999). 'Battlefield Flevum. Velsen 1, the latest excavations, results and interpretations from features and finds'. In Schülter, W., & Wiegels, R. (eds.) *Rom, Germanien und die Ausgrabungen von Kalkriese.* (Osnabrück): 91-96.

Bosworth, A.B. (1980). *A Historical Commentary on Arrian's History of Alexander.* (Oxford. 2 volumes).

Bosworth, A.B. (1988). *From Arrian to Alexander.* (Oxford).

Bowman, A.K. (1998). *Life and Letters on the Roman frontier: Vindolanda and its People.* (London).

Bowman, A.K., & Thomas, J.D. (1984). *Vindolanda: The Latin Writing-Tablets.* (Sutton).

Bradford Churchill, J. (1999). 'Ex qua quod vellent facerent: Roman Magistrates' Authority over *Praeda* and *Manubiae*'. *Transactions of the American Philological Association* 129: 85-116.

Breeze, D.J. (1986/87). 'The Logistics of Agricola's Final Campaign'. *Talanta* 18/19: 7-28.

Breeze, D. (2005). 'Death or Decay: Interpretations of Destruction on Hadrian's Wall'. *Carnuntum Jahrbuch*: 33-42.

Breeze, D.J. (2011). 'Burnswark: Roman Siege or Army Training Ground?' *Archaeological Journal* 168: 166-180.

Brock, T., & Homann, A. (2011). *Schlachtfeld-Archäologie: Auf den Spuren des Krieges*.

Brunt, P.A. (1971). *Italian Manpower, 225 B.C.-A.D.14*. (London).

Buchanan, J. (1997). *The Road to Guilford Courthouse: The American Revolution in the Carolinas*. (New York).

Burgess, A. (2000). 'The excavation and finds'. In Fiorato, V., Boylston, A., & Knüsel, C. (eds.) *Blood Red Roses. The Archaeology of a Mass Grave from the Battle of Towton AD 1461*. (Oxford): 29-35.

Burn, A.R. (1953). 'In Search of a Battlefield: Agricola's Last Battle'. *Proceedings of the Society of Antiquaries of Scotland* 87: 127-133.

Burn, A.R. (1969). 'Hammond on Marathon: A Few Notes'. *Journal of Hellenic Studies* 89: 118-120.

Burne, A. (1950). *The Battlefields of England*. (London, 2nd Edition).

Burne, A. (1952). *More Battlefields of England*. (London).

Camp, J., Ierardi, M., McInerney, J., Morgan, K., & Umholtz, G. (1992). 'A Trophy from the Battle of Chaironeia of 86 B.C.' *American Journal of Archaeology* 96 (3): 443-455.

Campbell, B. (1987). 'Teach Yourself How to be a General'. *Journal of Roman Studies* 77: 13-29.

Campbell, D.B. (2003). 'The Roman Siege of Burnswark'. *Britannia* 34: 19-33.

Campbell, D.B. (2010). *Mons Graupius AD83. Rome's battle at the edge of the world.* (Oxford).

Campbell, D.B. (2015). 'A Note on the Battle of Mons Graupius'. *Classical Quarterly* 65 (1): 407-410.

Canto, A.M. (2011). 'La Batalla de Baecula no pudo ser en Santo Tomé'. Accessed online 07/08/2014

http://api.ning.com/files/V1PY9HD8ZcBIFJ7KFikxjCcO6kaJbuKewegRQUWM4rlaeW0T2q8OzlzVo4RbWcpxH9gmD2a7MmaUIQ3YGZCcR0GssbPYh-9L/LabatalladeBaecula_artenrevistaAytoBailnJulio2011_def.pdf.

Cárdenas Anguita, I., Mozas Martínez, F., & Valderrama Zafra, J. M. (2011). 'BAECULA battle: Geographic Information System'. In Concheri, G., Meneghello, R., & Savio, G. (eds.) *IMProVe 2011: Proceedings of the International conference on Innovative Methods in Product Design.* (Venice): 920-925.

Carlson-Drexler, C.G., Scott, D.D., & Roeker, H. (2008). "The battle raged... with terrible fury". *Battlefield Archeology of Pea Ridge National Military Park*". Midwest Archaeological Center Technical Report 112.

Carman, J. (2013). *Archaeologies of Conflict.* (London).

Carman, J., & Carman, P. (2001). "Beyond Military Archaeology': battlefields as a research resource'. In Freeman, P.W.M., & Pollard, A. (eds). *Fields of Conflict: Progress and Prospect in Battlefield Archaeology.* BAR Int. Series 958. (Oxford): 275-282.

Carman, J., & Carman, P. (2005). 'Ancient Bloody Meadows: Classical Battlefields in Greece'. *Journal of Conflict Archaeology* 1: 19-44.

Carman, J., & Carman P. (2006). *Bloody Meadows: Investigating Landscapes of Conflict.* (Stroud).

Carroll, M. (2009). 'Dead Soldiers on the Move: Transporting bodies and commemorating men at home and abroad'. In Morillo, Á., Hanel, N., & Martín, E. (eds.) *Limes XX*. (Madrid): 823-832.

Carson, R.A.G. (1959). 'The Bredgar Treasure of Roman Coins'. *Numismatic Chronicle* 19: 17-22.

Cassidy, N. (2001). 'Application of numerical modelling for the interpretation of near-surface ground penetrating radar'. In Daniels, D.J. (ed.) *Ground Penetrating Radar*. (London, 2nd Edition): 47-58.

Cavill, P. (2011). 'The Place-Name Debate'. In Livingston, M. (ed.) *The Battle of Brunanburh: A Casebook*. (Liverpool): 327-349.

Cerdán, A.M., Martín, G.R., Hernández, E.M., & Cabello, R.D. (2011). 'The Roman Republican battlefield at Pedrosillo (Casas de Reina, Badajoz, Spain)'. *Conimbriga* 50: 59-78.

Chaniotis, A. (1991). 'Gedenktage der Griechen: Ihre Bedeutung für das Geschichtsbewußtsein griechischer Poleis'. In Assmann, J. (ed.) *Das Fest und das Heilige. Religiöse Kontrapunkte zur Alltagswelt*. (Gütersloh): 123-145.

Civil War Sites Advisory Commission (1993). 'Report on the Nation's Civil War Battlefields'. Accessed online 14/11/2014 <http://www.nps.gov/abpp/cwsac/cws0-1.html>.

Clairmont, C.W. (1983). *Patrios Nomos. Public Burial in Athens during the Fifth and Fourth Centuries B.C.* BAR Int. Series 161. (Oxford, 2 volumes).

Clark, J.H. (2014). *Triumph in Defeat: Military Loss and the Roman Republic*. (Oxford).

Clarke, E.D. (1812-1819). *Travels in various countries of Europe Asia and Africa*. (London, 6 volumes).

Clifford, B.R., & Scott, J. (1978). 'Individual and Situational Factors in Eyewitness Testimony'. *Journal of Applied Psychology* 63 (3): 352-359.

Cline, E.H., & Sutter, A. (2011). 'Battlefield Archaeology at Armageddon: Cartridge Cases and the 1948 Battle for Megiddo, Israel'. *Journal of Military History* 75 (1): 159-190.

Clunn, T. (2005). *The Quest for the Lost Roman Legions. Discovering the Varus Battlefield*. (New York).

Clüver, P. (1616). *Germania Antiqua*. (Leiden).

Cohen, G. (1996). *Memory in the Real World*. (Hove).

Connor, M., & Scott, D.D. (1998). 'Metal Detector Use in Archaeology'. *Historical Archaeology* 32 (4): 76-85.

Cooley, A. (2012). 'Commemorating the war dead of the Roman world'. In Low, P., Oliver, G.J., & Rhodes, P.J. (eds.) *Cultures of Commemoration. War memorials, ancient and modern*. (Oxford): 61-86.

Coulston, J.C.N. (2001). 'The archaeology of Roman conflict'. In Freeman, P.W.M., & Pollard, A. (eds.). *Fields of Conflict: Progress and Prospect in Battlefield Archaeology*. BAR Int. Series 958. (Oxford): 23-49.

Coulston, J.C.N. (2005). 'Roman Military Equipment and the Archaeology of Conflict'. *Carnuntum Jahrbuch*: 19-32.

Coulston, J.C.N. (2007). 'By the sword united: Roman fighting styles on the battlefield and in the arena'. In Molloy, B. (ed.) *The Cutting Edge: Studies in Ancient and Medieval Combat*. (Stroud): 34-51.

Crawford, O.G.S. (1949). *Topography of Roman Scotland North of the Antonine Wall*. (Cambridge).

Creasy, E.S. (1851). *The Fifteen Decisive Battles of the World: from Marathon to Waterloo*. (London).

Creighton, J. (2006). *Britannia: The Creation of a Roman Province*. (London).

Crowley, J. (2012). *The Psychology of the Athenian Hoplite: The Culture of Combat in Classical Athens*. (Cambridge).

Cubitt, G. (2007). *History and Memory*. (Manchester).

Cunha, E., & Silva, A.M. (1997). 'War lesions from the famous Portuguese Medieval battle of Aljubarrota'. *International Journal of Osteoarchaeology* 7 (6): 595-599.

Daly, G. (2002). *Cannae: The Experience of Battle in the Second Punic War*. (London).

Davies, J.L., & Jones, R.H. (2006). *Roman Camps in Wales and the Marches*. (Cardiff).

Delbrück, H. (1975). *History of the Art of War Within the Framework of Political History*. (London, 4 volumes. 3rd Edition. English translation by W. J. Renfro).

Devine, A.M. (1986). 'Demythologizing the Battle of the Granicus'. *Phoenix* 49 (3): 265-278.

Dickon, C. (2011). *The Foreign Burial of American War Dead*. (Jefferson, NC).

Dilke, O.A.W. (1985). *Greek and Roman Maps*. (London).

Dodwell, E. (1819). *A Classical and Topographical Tour through Greece during the years 1801, 1805 and 1806*. (London, 2 volumes).

Dueck, D. (2012). *Geography in Classical Antiquity*. (Cambridge).

Dyson, S.L. (1993). 'From New to New Age Archaeology: Archaeological Theory and Classical Archaeology - A 1990s Perspective'. *American Journal of Archaeology* 97 (2): 195-206.

Eickhoff, S. (2014). 'Die Schlacht von Wittstock am 24. September/4. Oktober 1636. Landschaftsgeografische und sozialhistorische Aspekte'. In Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf): 247-284.

Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf).

English Heritage (2012). *Designation Selection Guide: Battlefields*. Accessed online 23/10/2013 <https://content.historicengland.org.uk/images-books/publications/dsg-battlefields/battlefields-sg.pdf/>.

Erdkamp, P. (2006). 'Late-Annalistic Battle Scenes in Livy (Books 21-44)'. *Mnemosyne* 59 (4): 525-63.

Engels, D.W. (1978). *Alexander the Great and the Logistics of the Macedonian Army*. (Berkeley).

Evans, R. (2013). *Fields of Death: Retracing Ancient Battlefields*. (Stroud).

Farnum, J.H. (2005). *The Positioning of the Roman Imperial Legions*. BAR Int. Series 1458. (Oxford).

Feachem, R.W. (1970). 'Mons Craupius = Duncrub?' *Antiquity* 44: 120-124.

Felton, D. (2007). 'The Dead'. In Ogden, D. (ed.) *A Companion to Greek Religion*. (Oxford): 86-99.

Ferguson, L.G. (1977). 'An Archaeological-Historical Analysis of Fort Watson: December 1780-April 1781'. In South, S. (ed.) *Research Strategies in Historical Archaeology*. (New York): 41-71.

Ferguson, N. (2013). *An assessment of the positive contribution and negative impact of hobbyist metal detecting to sites of conflict in the UK*. Unpublished PhD thesis submitted to the University of Glasgow.

Fields, N. (2014). *Alésia 52BC: The Final Struggle for Gaul*. (Oxford).

Fernandez Uriel, P. (2006). 'The Roman conquest and organisation of the Iberian peninsula'. In Morillo, Á., & Aurrecochea, J. (eds.) *The Roman Army in Hispania. An Archaeological Guide*. (Leon): 53-64.

Fink, R.O. (1971). *Roman Military Records on Papyrus*. (Cleveland, OH).

Fiorato, V., Boylston, A., & Knüsel, C. (2000). *Blood Red Roses. The Archaeology of a Mass Grave from the Battle of Towton AD 1461*. (Oxford).

Foard, G. (1995). *Naseby: The Decisive Campaign*. (Barnsley).

Foard, G. (2008). 'Conflict in the pre-industrial landscape of England: a resource assessment'. Report prepared for the University of Leeds and English Heritage, accessed online 24/04/2015 <http://ads.ahds.ac.uk/>.

Foard, G. (2009). 'English Battlefields 991-1685: A review of problems and potentials'. In Scott, D.D., Haecker, C., & Babits, L. (eds.) *Fields of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 133-159.

Foard, G. (2012). *Battlefield Archaeology of the English Civil War*. (Oxford).

Foard, G., & Curry, A. (2013). *Bosworth 1485: A Battlefield Rediscovered*. (Oxford).

Foard, G., & Morris, R. (2012). *The Archaeology of English Battlefields: Conflict in the Pre-Industrial Landscape*. (York).

Foley, R.T. (2003). *Alfred von Schlieffen's Military Writings*. (London).

Fox, R.A. (1993). *Archaeology, history, and Custer's last battle: the Little Big Horn reexamined*'. (Norman, OK).

Fox, R.A. (2006). 'Custer's Last Battle: Struggling with Scale'. In Lock, G., & Molyneaux, B.L. (eds.) *Confronting Scale in Archaeology: Issues of Theory and Practice*. (New York): 163-180.

Fraser, J.E. (2005). *The Roman Conquest Of Scotland: The Battle Of Mons Graupius AD 84*. (Stroud).

Fraser, A.H., & Brown, M. (2007). 'Mud, Blood and Missing Men: Excavations at Serre, Somme, France'. *Journal of Conflict Archaeology* 3: 147-171.

Freeman, P.W.M. (2010). 'Archaeology, history and the Battle of Balaclava (Crimea 1854)'. In Geier, C.R., Babits, L.E., Scott, D.D., & Orr, D.G. (eds.) *Historical Archaeology of Military Sites: Method and Topic*. (College Station, TX): 149-164.

Freeman, P.W.M., & Pollard, A. (2001). *Fields of Conflict: Progress and Prospect in Battlefield Archaeology*. BAR Int. Series 958. (Oxford).

Frere, S.S., & Lepper, F.A. (1988). *Trajan's Column: a new edition of the Cichorius plates*. (Sutton).

Frere, S. S., & St Joseph, J. K. (1983). *Roman Britain from the Air*. (Cambridge).

Fruzzetti, A.E., Toland, K., Teller, S.A., & Loftus, E.F. (1992), 'Memory and Eyewitness Testimony'. In Gruneberg, M., & Morris, P. (eds.) *Aspects of Memory. Volume 1: The Practical Aspects*. (London, 2nd Edition): 18-50.

Fuller, J.F.C. (1958). *The Generalship of Alexander the Great*. (London).

Funke, P., & Haake, M. (2006) 'Theatres of War: Thucydidean Topography'. In Rengakos, A., & Tsakmakis, A. (eds.) *Brill's Companion to Thucydides*. (Leiden): 369-384.

Gabriel, R.A., & Boose, D.W. (1994). *The Great Battles of Antiquity: A Strategic and Tactical Guide to Great Battles That Shaped the Development of War*. (Westport, CT).

Gabrielsen, V. (2007). 'Warfare and the State'. In Sabin, P., van Wees, H., & Whitby, M. (eds.) *The Cambridge History of Greek and Roman Warfare Volume 1: Greece, The Hellenistic World and the Rise of Rome*. (Cambridge): 248-272.

Gay, M.A.H. (1894). *Life in Dixie During the War: 1861-1862-1863-1864-1865*. (Atlanta, GA).

Geier, C.R., Babits, L.E., Scott, D.D., & Orr, D.G. (eds.) *Historical Archaeology of Military Sites: Method and Topic*. (College Station, TX).

Geier, C.R., Scott, D.D., & Babits, L.E. (eds.) *From these Honored Dead: Historical Archaeology of the American Civil War*. (Gainesville, FL).

Gell, W. (1827). *The Itinerary of Greece; Containing One Hundred Routes in Attica, Boeotia, Phocis, Locris, and Thessaly*. (London).

Geschwinde, M., & Lönne, P. (2013). 'Relikte einer Schlacht: Die Funde vom Harzhorn'. In Pöppelmann, H., Deppmeyer, K., & Steinmetz, W-D. (eds.) *Roms Vergessener Feldzug. Die Schlacht am Harzhorn*. (Darmstadt): 272-284.

Gibson, T.A. (1835). *Etymological Geography*. (Edinburgh).

Gilliver, C.M. (2007). 'Battle'. In Sabin, P., van Wees, H., & Whitby, M. (eds.), *The Cambridge History of Greek and Roman Warfare Volume 2: Rome from the Late Republic to the Early Empire* (Cambridge): 122-157.

Gilpin Faust, D. (2006). "'Numbers on Top of Numbers": Counting the Civil War Dead'. *Journal of Military History* 70 (4): 995-1009.

Goldsworthy, A.K. (1996). *The Roman Army at War, 100 BC-AD 200*. (Oxford).

Goldsworthy, A.K. (2003). *The Complete Roman Army*. (London).

Goodyear, F.R.D. (1982). 'History and Biography'. In Kenney, E.J., & Clausen, W.V. (eds.) *The Cambridge History of Classical Literature. Volume 2: Latin Literature*. (Cambridge): 639-666.

Grainge, G. (2002). *The Roman Channel Crossing of A.D. 43: the constraints on Claudius' naval strategy*. BAR British Series 332. (Oxford).

Grainger, J., Hawkins, D., Cowal, L., & Mikulski, R. (2008). *The Black Death cemetery, East Smithfield, London*. (London).

Greene, J.A., & Scott, D.D. (2006). *Finding Sand Creek: History, Archeology, and the 1864 Massacre Site*. (Norman, OK).

Großkopf, B. (2007). 'Die Menschliche Überreste vom Oberesch in Kalkriese'. In Wilbers-Rost, S. (ed.) *Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese*. (Mainz am Rhein): 157-178.

Großkopf, B. (2012). 'The Human Remains from the Oberesch Site'. In Harbeck, M., von Hayking, K., & Schwarzberg, H. (eds.), *Sickness, Hunger, War and Religion: Multidisciplinary perspectives*. (Munich): 97-101.

Großkopf, B. (2014). 'Menschliche Überreste auf dem Schlachtfeld von Kalkriese'. In Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf): 53-58.

Grundy, G.B. (1901). *The Great Persian War*. (London).

Grundy, G.B. (1948). *Thucydides and the History of His Age*. (London, 2 volumes. 2nd Edition).

Grünwald, M., & Richter, A. (2006). 'Zeugen Caesars schwerster Schlacht? Beschriftete andalusische Schleuderbleie aus der Zeit des Zweiten Punischen Krieges und der Kampagne von Munda'. *Zeitschrift für Papyrologie und Epigraphik* 157: 261-269.

Guillén, J. N. (2009). 'Los Campamentos Romanos en el Curso Inferior del Río Ebro durante la Segunda Guerra Púnica'. In Morillo, Á., Hanel, N., & Martín, E. (eds.) *Limes XX*. (Madrid): 329-338.

Haecker, C.M. (2001). 'The official explanation versus the archaeological record of a US-Mexican War battle'. In Freeman, P.W.M., & Pollard, A. (eds.) *Fields of Conflict: Progress and Prospect in Battlefield Archaeology*. BAR Int. Series 958. (Oxford): 135-142.

Haecker, C.M., & Mauck, J.G. (2009). *On the Prairie of Palo Alto: Historical Archaeology of the U.S.-Mexican War Battlefield*. (College Station, TX, 2nd Edition).

Haglund, W.D., Connor, M., & Scott, D.D. (2001). 'The Archaeology of Contemporary Mass Graves'. *Historical Archaeology* 35 (1): 57-69.

Hammer, K. (1976). *Men with Custer*. (Fort Collins, CO).

Hammond, N.G.L. (1968). 'The Campaign and the Battle of Marathon'. *Journal of Hellenic Studies* 88: 13-57.

Hammond, N.G.L. (1980). 'The Battle of the Granicus River'. *Journal of Hellenic Studies* 100: 73-88.

Hammond, N.G.L. (1988a). 'The Campaign and the Battle of Cynoscephalae in 197 BC'. *Journal of Hellenic Studies* 108: 60-82.

Hammond, N.G.L. (1988b). 'The Royal Journal of Alexander'. *Historia* 37 (2): 129-150.

Hammond, N.G.L. (1988c). 'The Expedition of Datis and Artaphernes'. In Boardman, J., Hammond, N.G.L., Lewis, D.M., & Ostwald, M. (eds.) *The Cambridge Ancient History: Volume 4. Persia, Greece and the Western Mediterranean, c.525 to 479 BC*. (Cambridge): 491-517.

Hammond, N.G.L. (1992). 'Alexander's Charge at the Battle of Issus in 333 B.C.'. *Historia* 41 (4): 395-406.

Hammond, N.G.L. (1993). *Sources for Alexander the Great: An Analysis of Plutarch's Life and Arrian's Anabasis Alexandrou*. (Cambridge).

Hanson, V.D. (1989). *Hoplites: The Classical Greek Battle Experience*. (London).

Hanson, V.D. (1998). *Warfare and Agriculture in Classical Greece*. (Berkeley, Revised Edition).

Hanson, V.D. (2001). *Why the West has Won: Carnage and Culture from Salamis to Vietnam*. (London).

Hanson, W.S. (1987). *Agricola and the Conquest of the North*. (London).

Hanson, W.S., & Oltean, I.A. (2013). *Archaeology from Historical Aerial and Satellite Archives*. (London).

Harnecker, J. (1997). *Katalog der römischen Eisenfunde von Haltern*. (Mainz).

Harnecker, J., & Franzius, G. (2008). *Kalkriese 4. Kataloge Der Römischen Funde Vom Oberesch. Die Schnitte 1 Bis 22.* (Mainz).

Harnecker, J., & Mylo, D. (2011). *Kalkriese 5. Kataloge Der Römischen Funde Vom Oberesch. Die Schnitte 23 Bis 39.* (Mainz).

Harnecker, J., & Tolksdorf-Lienemann, E. (eds.) *Kalkriese 2: Sondierungen in der Kalkrieser-Niewedder Senke : Archäologie und Bodenkunde.* (Mainz)

Harnecker, J., & Wilbers-Rost, S. (2004). 'Suchgrabungen und weitere Grabungen außerhalb des Oberesches 1987-2000'. In Harnecker, J., & Tolksdorf-Lienemann, E. (eds.) *Kalkriese 2: Sondierungen in der Kalkrieser-Niewedder Senke : Archäologie und Bodenkunde.* (Mainz): 29-107.

Harrison, S. (2008). 'War Mementos and the Souls of Missing Soldiers: Returning Effects of the Battlefield Dead'. *Journal of the Royal Anthropological Institute* 14 (4): 774-790.

Hawkes, C.F.C., & Hull, M.R. (1947). *Camulodunum. First Report on the Excavations at Colchester 1930-1939.* (Oxford).

Haynes, I.P. (2013). *Blood of the Provinces: the Roman auxilia and the making of provincial society from Augustus to the Severans.* (Oxford).

Hind, J.G.F. (1989). 'The Invasion of Britain in AD 43'. *Britannia* 20: 1-21.

Hingley, R., & Unwin, C. (2005). *Boudica: Iron Age Warrior Queen.* (London).

Historic Scotland (2011). *The Inventory of Historical Battlefields in Scotland: An Introductory Guide.*

Van Hook, L. (1932). 'On the Lacedaemonians Buried in the Kerameikos'. *American Journal of Archaeology* 36 (3): 290-292.

Hope, V. (2003). 'Trophies and Tombstones: commemorating the Roman soldier'. *World Archaeology* 35 (1): 79-97.

Hornblower, S. (2000). *Thucydides*. (London, 3rd Edition).

Horsfall, N. (1985). 'Illusion and Reality in Latin Topographical Writing'. *Greece & Rome* 32 (2): 197-208.

Horvat, J. (2002). 'The Hoard of Roman Republican Weapons from Grad near Šmihel'. *Arheološki Vestnik* 53: 117-192.

Hoyos, D. (2002). 'The battle-site of Ilipa'. *Klio* 84 (1): 101-113.

Hoyos, D. (2015). *Mastering the West: Rome and Carthage at War*. (Oxford).

Hunt, P. (2006). 'Warfare'. In Rengakos, A., & Tsakmakis, A. (eds.) *Brill's Companion to Thucydides*. (Leiden): 385-413.

Hunter, F. (2001). 'Roman and native in Scotland: new approaches'. *Journal of Roman Archaeology* 14: 289-309.

Isaac, B. (1996). 'Eusebius and the Geography of Roman Provinces'. In Kennedy, D. (ed.) *The Roman Army in the Near East*. (Ann Arbor, MI): 153-167.

Jackson, A.H. (1991). 'Hoplites and the Gods: the dedication of captured arms and armour'. In Hanson, V. D. (ed.) *Hoplites. The Classical Greek Battle Experience*. (London): 228-249.

James, S. (2001). 'Soldiers and civilians: identity and interaction in Roman Britain'. In James, S., & Millett, M. (eds.) *Britons and Romans: Advancing an Archaeological Agenda*. (York): 77-89.

James, S. (2002). 'Writing the Legions: The Development and Future of Roman Military Studies in Britain'. *Archaeological Journal* 159 (1): 1-58.

James, S. (2007). 'A Bloodless Past: The Pacification of Early Iron Age Britain'. In Haselgrove, C., & Pope, R. (eds.) *The Earlier Iron Age in Britain and the Near Continent*. (Oxford): 160-173.

James, S. (2010). 'The point of the sword: what Roman-era weapons could do to bodies – and why they often didn't'. In Busch, A.E., & Schalles, H.J. (eds.) *Waffen in Aktion. Akten der 16. Internationalen Roman Military Equipment Conference (ROMECE)*. Xantener Berichte 16. (Xanten): 41-54.

James, S. (2011a). *Rome and the Sword: How Warriors & Weapons Shaped Roman History*. (London).

James, S. (2011b). 'Stratagems, combat, and "chemical warfare" in the siege mines of Dura-Europos'. *American Journal of Archaeology* 115 (1): 69-101.

James, S. (2013). 'The Archaeology of War'. In Campbell, B., & Tritle, L. (eds.) *The Oxford Handbook of Warfare in the Classical World*. (Oxford): 91-127.

James, S. (2015). 'Of Colossal Camps and a New Roman Battlefield: remote sensing, archival archaeology and the 'conflict landscape' of Dura-Europos, Syria'. In Breeze, D.J., Jones, R.H., & Oltean, I.A. (eds.) *Understanding Roman Frontiers*. (Edinburgh): 328-345.

Jantzen, D., Brinker, U., Orschiedt, J., Heinemeier, J., Piek, J., Hauenstein, K., Krüger, J., Lidke, G., Lübke, H., Lampe, R., Lorenz, S., Schult, M., & Terberger, T. (2011). 'A Bronze Age

battlefield? Weapons and trauma in the Tollense Valley, north-eastern Germany'. *Antiquity* 85: 417–433.

Johne, K.-P. (2006). *Der Römer an der Elbe*. (Berlin).

Johns, C. (1996). 'The Classification and Interpretation of Romano-British Treasures'. *Britannia* 27: 1-16.

Johnston, S. I. (1999). *Restless Dead. Encounters between the Living and the Dead in Ancient Greece*. (London).

Jones, C. (2011). *Finding Fulford: The Search for the First Battle of 1066*. (London).

Jones, R.H. (2011). *Roman Camps in Scotland*. (Edinburgh).

Jones, N. (1977). 'The Topography and Strategy of the Battle of Amphipolis in 422 B.C.'. *California Studies in Classical Antiquity* 10: 71-104.

Jørgensen, L. (2001). 'The "Warriors, Soldiers and Conscripts" of the Anthropology in Late Roman and Migration Period Archaeology'. In Storgaard, B. (ed.) *Military Aspects of the Aristocracy in Barbaricum in the Roman and Early Migration Periods*. (Copenhagen): 9-19.

Joseph, T.A. (2012). '*Repetita bellorum civilium memoria*: The remembrance of civil war and its literature in Tacitus, Histories 1.50'. In Grethlein, J., & Krebs, C.B. (eds.) *Time and Narrative in Ancient Historiography: The 'Plupast' from Herodotus to Appian*. (Cambridge): 156-174.

Junkelmann, M. (1986). *Die Legionen des Augustus: Der römische Soldat im archäologischen Experiment*. (Mainz).

Kagan, K. (2006). *The Eye of Command*. (Ann Arbor, MI).

Kaul, F. (2003). 'The bog - the gateway to another world'. In Jørgensen, J., Storgaard, B., & Thomsen, L.G. (eds.) *The Spoils of Victory. The North in the shadow of the Roman Empire*. (Copenhagen): 18- 43.

Kaye, S. (2011). 'Finding the Site of Boudica's Last Battle: An approach via terrain analysis'. Accessed online 05/09/2012 <http://www.bandarcgeophysics.co.uk/Boudica/Boudica-terrain-analysis.pdf>.

Keegan, J. (1976). *The Face of Battle*. (London).

Keeley, L.H. (1996). *War Before Civilization: The Myth of the Peaceful Savage*. (New York).

Kehne, P. (2000). 'Zur Datierung von Fundmünzen aus Kalkriese und zur Verlegung des Enddatums des Halterner Hauptlagers in die Zeit der Germanienkriege unter Tiberius und Germanicus (10-16 n.Chr.)'. In Wiegels, R. (ed.) *Die Fundmünzen von Kalkriese und die frühkaiserzeitliche Münzprägung*. (Möhnesee): 47-79.

Kehne, P. (2003). Vermarktung contra Wissenschaft: Kalkriese und der Versuch zur Vereinnahmung der Varusschlacht. *Die Kunde, N.F.* 54: 93-112.

Kennedy, D.L., & Bewley, R. (2004). *Ancient Jordan from the Air*. (London).

Keppie, L. (1981). 'Mons Graupius: The Search for a Battlefield'. *Scottish Archaeological Forum* 12: 79- 88.

Kiesling, E.C. (2003). 'The Oldest 'New' Military Historians: Herodotos, W. G. Forrest, and the Historiography of War'. In Derow, P., & Parker, R. (eds.) *Herodotos and his World. Essays from a Conference in memory of George Forrest*. (Oxford): 88-100.

Kraft, J.C., Rapp, G., Szemler, G.J., Tziavos, C., & Kase, E.W. (1987). 'The Pass at Thermopylae, Greece'. *Journal of Field Archaeology* 14 (2): 181-198.

Krebs, C.B. (2006). "Imaginary Geography" in Caesar's *Bellum Gallicum*'. *American Journal of Philology* 127 (1): 111-136.

Krentz, P. (1985). 'Casualties in Hoplite Battles'. *Greek, Roman & Byzantine Studies* 26 (1): 13-20.

Krentz, P. (2002). 'Fighting by the Rules: The Invention of the Hoplite Agôn'. *Hesperia* 71: 23-39.

Krentz, P. (2010). *The Battle of Marathon*. (London).

Krentz, P. (2013). 'Hoplite Hell: How Hoplites Fought'. In Kagan, D., & Viggiano, G.F. (eds.) *Men of Bronze: Hoplite Warfare in Ancient Greece*. (Princeton): 134-146.

Kromayer, J., & Veith, G. (1903-1931). *Antike Schlachtfelder in Griechenland*. (Berlin, 4 volumes).

Kromayer, J., & Veith, G. (1922-1929). *Schlachten-Atlas zur Antiken Kriegsgeschichte*. (Leipzig, 5 volumes).

Kurtz, D.C., & Boardman, J. (1971). *Greek Burial Customs*. (London).

Lane Fox, R. (1973). *Alexander the Great*. (London).

Leake, W. M. (1830). *Travels in the Morea*. (London, 3 volumes).

Leake, W. M. (1835). *Travels in Northern Greece*. (London, 4 volumes).

Leake, W. M. (1841). *The Topography of Athens and the Demi of Attica*. (London, 2 volumes).

Lee, J.W.I. (2001). 'Urban Combat at Olynthos, 348 BC'. In Freeman, P.W.M., & Pollard, A. (eds.). *Fields of Conflict: Progress and Prospect in Battlefield Archaeology*. BAR Int. Series 958. (Oxford): 11-22.

Lee, J.W.I. (2007). *A Greek Army on the March: Soldiers and Survival in Xenophon's Anabasis*. (Cambridge).

Lee, J.W.I. (2011). 'The Fight for Ancient Sicily'. *Archaeology* 64 (1): 38-41.

Legg, J.B., Smith, S.D., & Wilson, T.S. (2005). *Understanding Camden: The Revolutionary War Battle of Camden as Revealed Through Historical, Archaeological, and Private Collections Analysis*. (Columbia, SC).

Legg, J.B., & Smith, S.D. (2009). 'Camden: Salvaging Data from a Heavily Collected Battlefield'. In Scott, D., Babits, L., & Hacker, C. (eds.) *Fields of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 208-234.

Lendon, J.E. (1999). 'The Rhetoric of Combat. Greek Military Theory and Roman Culture in Julius Caesar's Battle Descriptions'. *Classical Antiquity* 18: 273-329.

Lindemann, K. (1967). *Der Hildesheimer Silberfund. Varus und Germanicus*. (Hildesheim).

Lloyd, D.W. (1998). *Battlefield Tourism: Pilgrimage and the Commemoration of the Great War in Britain, Australia, and Canada, 1919-1939*. (Oxford).

Low, P. (2003). 'Remembering war in fifth-century Greece: ideologies, societies and commemoration beyond democratic Athens'. *World Archaeology* 35 (1): 98-111.

Low, P. (2006). 'Commemorating the Spartan war dead'. In Powell, A., & Hodkinson, S. (eds.) *Sparta and War*. (Swansea): 85-109.

Low, P. (2012). 'The monuments to the war dead in Classical Athens: Form, contexts, meanings'. In Low, P., Oliver, G.J., & Rhodes, P.J. (eds.) *Cultures of commemoration. War memorials ancient and modern*. Proceedings of the British Academy 160. (Oxford): 13-40.

Ma, J. (2008). 'Chaironeia 338: Topographies of commemoration'. *Journal of Hellenic Studies* 128: 72-91.

Mac Ginty, R. (2005). 'Looting in the Context of Violent Conflict: A Conceptualisation and Typology'. *Third World Quarterly* 25 (5): 857-70.

Mahaney, W.C. (2004). 'A Geological/Topographical Reconnaissance of Hannibal's Invasion Route into Italia in 218 BC'. In Caldwell, D.R. (ed.), *Studies in Military Geography and Geology*. (London): 67-78.

Mahaney, W.C., Milner, M.W., Kapran, B., Tricart, P., Schwartz, S., Barendregt, R.W., Krinsley, D.H., Dorn, R. I., Trapido-Lurie, B., Boccia, S., Sodhi, R.N.S., Kalm, V., & Beukens, R. (2008a). 'Historical Archaeology of the Hannibalic Invasion of Italia: Technical Applications'. *Technical Briefs in Historical Archaeology* 3: 39-47.

Mahaney, W.C., Kalm, V., Dirszowsky, R.W., Milner, M.W., Sodhi, R., Beukens, R., Dorn, R., Tricart, P., Schwartz, S., Chamorro-Perez, E., Soccia, S., Barendregt, R.W., Krinsley, D.H., Seaquist, E.R., Merrick, D., & Kapran, B. (2008b). 'Hannibal's Trek Across the Alps: Geomorphological Analysis of Sites of Geoarchaeological Interest'. *Mediterranean Archaeology and Archaeometry* 8 (2): 39-54.

Manning, W.H. (1972). 'Ironwork hoards in Iron Age and Roman Britain'. *Britannia* 3: 224-250.

Manolaraki, E. (2005). 'A Picture Worth a Thousand Words: Revisiting Bedriacum (Tacitus *Histories* 2.70)'. *Classical Philology* 100 (3): 243-267.

Masters, P., & Enright, C. (2011). 'Mass Graves on Historic Battlefields'. Unpublished paper given at the 6th Fields of Conflict Conference, University of Osnabrück, April 2011.

Maxwell, G.S. (1981). 'Agricola's Campaigns: the evidence of the temporary camps'. *Scottish Archaeological Forum* 12: 25-54.

Maxwell, G.S. (1990). *A Battle Lost: Romans and Caledonians at Mons Graupius*. (Edinburgh).

McNutt, R. (2014). *Finding forgotten fields: a theoretical and methodological framework for historic landscape reconstruction and predictive modelling of battlefield locations in Scotland, 1296-1650*. Unpublished PhD thesis submitted to the University of Glasgow.

Melchior, A. (2011). 'Caesar in Vietnam: Did Roman Soldiers Suffer from Post-Traumatic Stress Disorder?'. *Greece & Rome* 58 (2): 209-223.

Mellor, R. (1999). *The Roman Historians*. (London).

Mercer, C. (1870). *Journal of the Waterloo Campaign: kept through the campaign of 1815*. (Edinburgh).

Meyer, M., & Moosbauer, G. (2013). 'Römisch oder germanisch? Wer kämpfte am Harzhorn?'. In Pöppelmann, H., Deppmeyer, K., & Steinmetz, W.-D. (eds.) *Roms Vergessener Feldzug. Die Schlacht am Harzhorn*. (Stuttgart): 71-75.

Millar, F. (1964). *A Study of Cassius Dio*. (Oxford).

Milner, N.P. (1993). *Vegetius: Epitome of Military Science. Translated with Notes and Introduction*. (Liverpool).

Molloy, B.P.C., & Grossman, D. (2007). 'Why can't Johnny kill?: The psychology and physiology of interpersonal combat'. In Molloy, B. (2007), *The Cutting Edge: Studies in Ancient and Medieval Combat*. (Stroud): 188-202.

Momigliano, A. (1972). 'Tradition and the Classical Historian'. *History and Theory* 11 (3): 279-293.

Mommsen, T. (1885). *Zur Örtlichkeit der Varusschlacht*. (Berlin).

Moosbauer, G. (2005). 'Der römische Kampfplatz bei Kalkriese, Stadt Bramsche, Ldkr. Osnabrück'. *Carnuntum Jahrbuch*: 89-98.

Morgan, J.D. (1983). 'Palaepharsalus - The Battle and the Town'. *American Journal of Archaeology* 87 (1): 23-54.

Morgan, P. (2000). 'The Naming of Battlefields in the Middle Ages'. In Dunn, D. (ed.) *War and Society in Medieval and Early Modern Britain*. (Liverpool): 34-52.

Müller, M. (2002). *Die römischen Buntmetallfunde von Haltern*. (Mainz).

Nash, S. (2004). 'Battles over Battlefields'. *Archaeology* 57 (5): 24-29.

Nash Williams, V.E. (1969). *The Roman Frontier in Wales*. (Cardiff. 2nd Edition. Revised by M. G. Jarrett).

Newman, P. (1981). *The Battle of Marston Moor, 1644*. (Chichester).

Newman, P.R., & Roberts, P.R. (2003). *Marston Moor 1644: The Battle of the Five Armies*. (Pickering).

Nielsen-Marsh, C., Gernaey, A., Turner-Walker, G., Hedges, R., Pike, A., & Collins, M. (2006). 'The chemical degradation of bone'. In Cox, M., & Mays, S. (eds.) *Human Osteology in Archaeology and Forensic Science*. (Cambridge): 439-454.

Noguera, J., Asensio, D., Ble, E., & Jorney, R. (2014). 'The beginnings of Rome's conquest of *Hispania*: archaeological evidence for the assault on and destruction of the Iberian town Castellet de Banyoles'. *Journal of Roman Archaeology* 27: 59-81.

Noy, D. (2000). 'Half-Burnt on an Emergency Pyre': Roman Cremations Which Went Wrong'. *Greece & Rome* 47 (2): 186-196.

Ogilvie, R.M., & Richmond, I.A. (1967). *Tacitus: Agricola. Text, Introduction and Commentary*. (Oxford).

O'Gorman, E. (1995). 'Shifting ground: Lucan, Tacitus and the landscape of civil war'. *Hermathena* 158 (1): 117-131.

O'Keefe, P. (2014). *Waterloo: The Aftermath*. (London).

Oliver, G.J. (2012). 'Naming the dead, writing the individual: Classical traditions and commemorative practices in the nineteenth and twentieth centuries'. In Low, P., Oliver, G.J., & Rhodes, P.J. (eds.) *Cultures of commemoration. War memorials ancient and modern*. Proceedings of the British Academy 160. (Oxford): 133-135.

Pagán, V. (1999). 'Beyond Teutoburg: Transgression and Transformation in Tacitus *Annales* 1.61-62'. *Classical Philology* 94 (3): 302-320.

Pagán, V.E. (2000). 'The Mourning After: Statius "Thebaid" 12'. *American Journal of Philology* 121 (3): 423-452.

Pavlopoulos, K., Karkanias, P., Triantaphyllou, M., Karymbalis, E., Tsourou, T., & Palyvos, N. (2006). 'Paleoenvironmental Evolution of the Coastal Plain of Marathon, Greece, During the Late Holocene: Deposition Environment, Climate, and Sea Level Changes'. *Journal of Coastal Research* 22: 424-38.

Pelling, C.B.R. (1981). 'Caesar's Battle-Descriptions and the Defeat of Ariovistus'. *Latomus* 40 (4): 741-766.

Peretz, D. (2005). 'Military Burial and the Identification of the Roman Fallen Soldiers'. *Klio* 87 (1): 123-138.

Pirling, R. (1974). *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 1964-1965*. (Stuttgart).

Pluskowski, A. (2013). *The Archaeology of the Prussian Crusade*. (London).

Podruczny, G., & Wrzosek, J. (2014). 'Lone Grenadier: An Episode from the Battle of Kunersdorf, 12 August 1759'. *Journal of Conflict Archaeology* 9 (1): 33-47.

Pollard, T. (2003). 'The value of enmity: re-making and re-visiting historic battlefields in the United States and Britain'. *Landscapes* 4 (2): 25-34.

Pollard, T. (2009a). 'Introduction: The Battle of Culloden- more than a difference of opinion'. In Pollard, T. (ed.) *Culloden: The History and Archaeology of the Last Clan Battle*. (Barnsley): 1-16.

Pollard, T. (2009b). 'Capturing the Moment: the archaeology of Culloden battlefield'. In Pollard, T. (ed.) *Culloden: The History and Archaeology of the Last Clan Battle*. (Barnsley): 130-162.

Pollard, T. (2009c). 'Mapping Mayhem: Scottish Battle Maps and their Role in Archaeological Research'. *Scottish Geographic Journal* 125 (1): 25-42.

Pollard, T., & Banks, I. (2010). 'Now the Wars are Over: The past, present and future of Scottish battlefields'. *International Journal of Historical Archaeology* 14 (3): 414-441.

Pollard, T., & Barton, P. (2013). 13) The Use of First World War Aerial Photographs by Archaeologists: A Case Study from Fromelles, Northern France'. In Hanson, W.S., & Oltean, I.A. (eds.) *Archaeology from Historical Aerial and Satellite Archives*. (New York): 97-103.

Pollard, T., & Oliver, N. (2002). *Two Men in a Trench. Battlefield Archaeology: The Key to Unlocking the Past*. (London).

Pollard, T., & Oliver, N. (2003). *Two Men in a Trench II: Uncovering the Secrets of British Battlefields*. (London).

Poller, T. (2012). 'Rossie Law Geophysical Survey'. Accessed online 14/07/2015 http://www.gla.ac.uk/media/media_296365_en.pdf.

Pratt, G.M. (2009). 'How Do You Know it's a Battlefield?' In Scott, D., Babits, L., & Haecker, C. (eds.) *Fields of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 5-38.

Preston, P. (2005). 'The Traditional Battlefield of Crécy'. In Ayton, A., & Preston, P. (eds.) *The Battle of Crécy, 1346*. (Woodbridge): 109-137.

Pritchett, W.K. (1960). *Marathon*. (Berkeley).

Pritchett, W.K. (1965-1992). *Studies in Ancient Greek Topography*. 8 Volumes: I-VI (Berkeley); Volumes VII and VIII (Amsterdam).

Pritchett, W.K. (1974-1991). *The Greek State at War*. (Berkeley, 5 volumes).

Pritchett, W.K. (1994). *Essays in Greek History*. (Amsterdam).

Radoslavova, G., Dzanev, G., & Nikolov, N. (2011). 'The Battle at Abritus in AD 251: Written Sources, Archaeological and Numismatic Data'. *Archaeologia Bulgarica* 15 (3): 23-49.

Raffield, B. (2013). *Landscapes of conflict and control : creating an archaeological atlas of Scandinavian occupied England, AD 878-954*. Unpublished PhD thesis submitted to the University of Aberdeen.

Reardon, C., & Vossler, W.T. (2013). *A Field Guide to Gettysburg: Experiencing the Battlefield through Its History, Places and People*. (Chapel Hill, NC).

Redfern, R.C. (2011). 'A Re-appraisal of the Evidence for Violence in the Late Iron Age Human Remains from Maiden Castle Hillfort, Dorset, England'. *Proceedings of the Prehistoric Society* 77: 111-138.

Redfern, R.C., & Chamberlain, A.T. (2011). 'A demographic analysis of Maiden Castle hillfort: evidence for conflict in the late Iron Age and early Roman period'. *International Journal of Paleopathology* 1: 68-73.

Reece, R. (1988). 'Interpreting Roman Hoards'. *World Archaeology* 20 (2): 261-269.

Reeves, M.B. (2010). 'Civil War Battlefield Archaeology: Examining and Interpreting the Debris of Battle'. In Geier, C.R., Babits, L.E., Scott, D.D., & Orr, D.G. (eds.) *Historical Archaeology of Military Sites: Method and Topic*. (College Station, TX): 87-98.

Reichmann, C. (1997). 'Das Mithräum'. In Pirling, R., Grodde, B., & Reichmann, C. (eds.) *Das römisch-fränkische Gräberfeld von KrefeldGellep 1975-1982*. (Stuttgart): 21-24.

Reichmann, C. (1999). 'Archäologische Spuren der sogenannten Bataverschlacht vom November 69 n.Chr. und von Kämpfen des 3. Jahrhunderts n.Chr. im Umfeld des Kastells Gelduba (Krefeld-Gellep)'. In Schlüter, W., & Wiegels, R. (eds.) *Rom, Germanien und die Ausgrabungen von Kalkriese*. (Osnabrück): 97-115.

Renshaw, L. (2011). *Exhuming Loss: Memory, Materiality and Mass Graves of the Spanish Civil War*. (Walnut Creek, CA).

- Reuter, M. (2005). 'Gefallen für Rom: Beobachtungen an den Grabinschriften im Kampf getöteter römischer Soldaten'. In Visy, Z. (ed.) *Limes XIX*. (Pécs): 255-263.
- Rice, E. (1995). 'The Glorious dead: Commemoration of the fallen and portrayal of victory in the Late Classical and Hellenistic World'. In Rich, J., & Shipley, G. (eds.) *War and Society in the Greek world*. (London): 224-257.
- Richmond, I.A. (1967). 'Adamklissi'. *Papers of the British School at Rome* 35: 29-39.
- Riggsby, A.M. (2006). *Caesar in Gaul and Rome. War in Words*. (Austin, TX).
- Rihll, T. (2009). 'Lead 'slingshot' (*glandes*)'. *Journal of Roman Archaeology* 22: 146-169.
- Rivet, A.L.F., & Smith, C. (1979). *The place-names of Roman Britain*. (London).
- Robertson, W.G. (1987). *The Staff Ride*. (Washington D.C.).
- Romero, A-M. (2006). *Bibracte. Archéologie d'une ville gauloise*. (Glux-en-Glenne).
- Romm, J. S. (1992). *The Edges of the Earth in Ancient Thought. Geography, exploration, and fiction*. (Princeton).
- Rosenstein, N.S. (2004). *Rome at War: farms, families and death in the Middle Republic*. (Chapel Hill, NC).
- Ross, D. (2005). *Khor Klib and the Battle of Zama*. BAR Int. Series 1399. (Oxford).
- Rost, A. (2009a). 'Characteristics of Ancient Battlefields: Battle of Varus (9 AD)'. In Scott, D., Babits, L., & Haecker, C. (eds.) *Fields of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 50-57.

Rost, A. (2009b). 'The Battle between Romans and Germans in Kalkriese: Interpreting the Archaeological Remains from an Ancient Battlefield'. In Morillo, Á., Hanel, N., & Martín, E. (eds.) *Limes XX*. (Madrid): 1339-1345.

Rost, A. (2009c). 'Alesia, Kalkriese, Little Big Horn. Das neue Forschungsgebiet der Schlachtfeldarchäologie'. *Varusschlacht im Osnabrücker Land* (Mainz): 100-117.

Rost, A. (2012/13). 'Methods in Battlefield Archaeology: A Critical Analysis of the Distributional Pattern'. In Harbeck, M., von Heyking, K., & Schwarzberg, H. (eds.) *Sickness, Hunger, War and Religion: Multidisciplinary Perspectives*. (Munich): 92-111.

Rost, A. (2014). 'Schlachtfeld und Massengrab'. In Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf): 9-15.

Rost, A., & Wilbers-Rost, S. (2010). 'Weapons at the Battlefield of Kalkriese'. *Gladius* 30: 117-136.

Rost, A., & Wilbers-Rost, S. (2012). *Kalkriese 6. Verteilung der Kleinfunde auf dem Oberesch in Kalkriese, Kartierung und Interpretation der römischen Militaria unter Einbeziehung der Befunde*. (Mainz).

Rost, A., & Wilbers-Rost, S. (2014a). 'The Battlefield of Kalkriese: Archaeological Evidence of a Total Roman Defeat'. In Cadiou, F., & Caballero, M.N. (eds.) *La guerre et ses traces: conflits et sociétés en Hispanie à l'époque de la conquête romaine (IIIe-ler s. a. C.)*. (Bordeaux): 499-506.

Rost, A., & Wilbers-Rost, S. (2014b). 'The ancient battlefield at Kalkriese: Recent results'. Unpublished poster presentation at the 8th International Fields of Conflict Conference, Columbia, South Carolina, March 2014.

Roth, J.P. (1999). *The Logistics of the Roman Army at War (264 B.C.-A.D. 235)*. (Leiden).

Roy, W. (1793). *Military Antiquities of the Romans in North Britain*. (London).

Roymans, N., & Fernández-Götz, M. (2015). 'Caesar in Gaul: New Perspectives on the Archaeology of Mass Violence'. In Brindle, T., Allen, M., Durham, E., & Smith, A. (eds.) *TRAC 24*. (Oxford): 70-80.

Sabin, P. (2000). 'The Roman Face of Battle'. *Journal of Roman Studies* 90: 1-17.

Sabin, P. (2007). 'Land Battles'. In Sabin, P., van Wees, H., & Whitby, M. (eds.) *The Cambridge History of Greek and Roman Warfare Volume 1: Greece, The Hellenistic World and the Rise of Rome*. (Cambridge): 399-433.

Sabin, P. (2009). *Lost Battles: Reconstructing the Great Clashes of the Ancient World*. (London).

Saliola, M., & Casprini, F. (2012). *Pugio – Gladius Brevis Est. History and technology of the Roman battle dagger*. BAR. Int. Series 2404. (Oxford).

Sallmann, K. (1984). 'Der Traum des Historikers: Zu den 'Bella Germaniae' des Plinius und zur julisch-claudischen Geschichtsschreibung'. *Aufstieg und Niedergang der römischen Welt* 2.32.1. (1): 578-601.

Von Schlieffen, A. (1931). *Cannae*. (Fort Leavenworth, Kansas, Translated Edition).

Schliemann, H. (1884). 'Das Sogenannte Grab der 192 Athener in Marathon'. *Zeitschrift für Ethnologie*: 85-88.

von Schnurbein, S. (2008). 'Alise-Sainte-Reine: Die Spuren der Belagerungswerk', In Reddé, M., & von Schnurbein, S. (eds.) *Alésia et la Bataille du Teutoburg: Un parallèle Critique des Sources*. (Ostfildern): 195-208.

Schofield, J. (2005). *Combat Archaeology: Material Culture and Modern Conflict*. (London).

Schwartz, A. (2009). *Reinstating the Hoplite. Arms, Armour, and Phalanx Fighting in Archaic and Classical Greece*. (Stuttgart).

Scott, D.D. (2013). *Uncovering History: Archaeological Investigations at the Little Bighorn*. (Norman, OK).

Scott, D.D., Fox, R.A., & Connor, M.A. (1989). *Archaeological Perspectives on the Battle of the Little Bighorn*. (Norman, OK).

Scott, D.D., & McFeaters, A.P. (2011). 'The Archaeology of Historic Battlefields: A History and Theoretical Development in Conflict Archaeology'. *The Journal of Archaeological Research* 19 (1): 103-132.

Scott, D.D., Willey, P., & Connor, M.A. (1998). *They Died with Custer: Soldiers' Bones from the Battle of the Little Bighorn*. (Norman, OK).

Sears, M.A. (2011). 'The Topography of the Pylos Campaign and Thucydides' Literary Themes'. *Hesperia* 80 (1): 157-168

Semmel, S. (2000). 'Reading the Tangible Past: British Tourism, Collecting, and Memory after Waterloo'. *Representations* 69: 9- 37.

Sguaitamatti, L. (2006). 'Battlefields'. In Landfester, M., Cancik, H., & Schneider, H. (eds.) *Brill's New Pauly. Encyclopaedia of the Ancient World. Classical Tradition. Vol. 1 (A-Del)*. (Leiden): 467-483.

Sharples, N. (1991). 'Warfare in the Iron Age of Wessex'. *Scottish Archaeological Review* 8: 79-89.

Shatzman, I. (1972). 'The Roman General's Authority over Booty'. *Historia: Zeitschrift für Alte Geschichte* 21 (2): 177-205.

Sheldon, R. M. (2012). *Ambush: Surprise Attack in Ancient Greek Warfare*. (London).

Seidman, J. (2014). 'Remembering the Teutoburg Forest: *Monumenta* in *Annals* 1.61'. *Ramus* 43 (1): 94-114.

Sievers, S. (2008). 'Waffen und Kleinfunde aus Alesia Möglichkeiten der Interpretation'. In Reddé, M., & von Schnurbein, S. (eds.) *Alésia et la Bataille du Teutoburg: Un parallèle Critique des Sources*. (Ostfildern): 245-259.

Sim, D.N., & Ridge, I. (2002). *Iron for the Eagles*. (Stroud).

Smith, S.D., Legg, J.B., & Leader, J. (2009). 'Results of Ground Penetrating Radar Search for Unmarked Graves, Camden Battlefield'. Report prepared by the South Carolina Institute of Archaeology and Anthropology for the Palmetto Conservation Foundation. (Columbia, SC).

Snow, P., & Snow, D. (2002). *Battlefield Britain: From Boudicca to the Battle of Britain*. (London).

Sotiriadis, G. (1903), 'Das Schlachtfeld von Chäronea und der Grabhügel der Makedonen'. *Mitteilungen des Kaiserlich Deutschen Archäologischen Instituts, Athenische Abteilung (Ath. Mitt.)* 28: 301-330.

St Joseph, J.K. (1978). 'The Camp at Durno, Aberdeenshire, and the Site of Mons Graupius'. *Britannia* 9: 271-287.

Staïs, V. 1893. 'Ο εν Μαραθώνι τύμβος'. *Mitteilungen des Deutschen Archäologischen Instituts, Athenische Abteilung* 18: 46-63.

Starbuck, D.R. (2011). *The Archaeology of Forts and Battlefields*. (Gainesville, FL).

Stefan, A.S. (2005). *Les Guerres daciques de Domitien et de Trajan*. (Rome).

Storgaard, B. (2003). 'Cosmopolitan aristocrats'. In Jørgensen, J., Storgaard, B., & Thomsen, L.G. (eds.) *The Spoils of Victory. The North in the shadow of the Roman Empire*. (Copenhagen): 106- 125.

Susini, G. (1960). *Ricerche Sulla Battaglia del Trasimeno*. (Cortona).

Sutherland, T.L. (2000). 'The archaeological investigation of the Towton Battlefield'. In Fiorato, V., Boylston, A., & Knüsel, C. (eds.) *Blood Red Roses. The Archaeology of a Mass Grave from the Battle of Towton AD 1461*. (Oxford): 155-168.

Sutherland, T.L. (2004). 'Topsoil: Key Battlefield Layer'. *British Archaeology* 79: 15.

Sutherland, T.L. (2005). 'The Battle of Agincourt: An Alternative Location?' *Journal of Conflict Archaeology* 1: 245-263.

Sutherland, T.L. (2009). 'Archaeological Evidence of Medieval Conflict - Case Studies from Towton, Yorkshire, England (1461) and Agincourt, Pas de Calais, France (1415)'. In Meller, H.H. (ed.) *Schlachtfeldarchaogie*. (Salle): 109-116.

Sutherland, T.L. (2012). 'Conflicts and Allies: Historic Battlefields as Multidisciplinary Hubs — A Case Study from Towton AD 1461'. *Arms & Armour* 9 (1): 69-82.

Sutherland, T.L. (2015). 'The Battle'. In Curry, A., & Mercer, M. (eds.) *The Battle of Agincourt*. (New Haven): 190-201.

Sutherland, T.L., & Holst, M.R. (2014). 'Demonstrating the value of battlefield archaeology. War graves on Towton field- their location and excavation'. In Eickhoff, S., & Schopper, F. (eds.) *Schlachtfeld und Massengrab*. (Wünsdorf): 87-96.

Sutherland, T., & Richardson, S. (2009). 'Arrows Point to Mass Graves: Finding the Dead from the Battle of Towton, 1461 AD'. In Scott, D., Babits, L., & Haecker, C. (eds.) *Fields of Conflict. Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 160-173.

Sutherland, T.L., & Schmidt, A. (2003). 'A multidisciplinary approach to battlefield archaeology'. *Landscapes* 4 (2): 15-25.

Sweet, R. (2004). *Antiquaries: the discovery of the past in eighteenth-century Britain*. (London).

Syme, R. (1988). 'Military Geography at Rome'. *Classical Antiquity* 7 (2): 227-251.

Szemler, G.J., Cherf, W.J., & Kraft, J.C. (1996). *Thermopylai. Myth and Reality in 480 B. C.* (Chicago).

Thordeman, B. (1939). *Armour from the Battle of Wisby, 1361*. (Uppsala, 2 volumes).

Thorne, J. (2007). 'The Chronology of the Campaign against the Helvetii: A Clue to Caesar's Intentions?' *Historia* 56 (1): 27-36.

Tolksdorf-Lienemann, E. (2004). 'Naturräumliche Situation und Böden ausgewählter Fundstellen in den Landschaftseinheiten'. In Harnecker, J., & Tolksdorf-Lienemann, E. (eds.) *Kalkriese 2: Sondierungen in der Kalkrieser-Niewedder Senke : Archäologie und Bodenkunde*. (Mainz): 108-119.

Toynbee, J.M.C. (1971). *Death and Burial in the Roman World*. (London).

Traill, D. (1995). *Schliemann of Troy*. (London).

Tritle, L. (2004). 'Xenophon's Portrait of Clearchus: A Study in Post-Traumatic Stress Disorder'. In Tuplin, C. (ed.) *Xenophon and his World*. (Stuttgart): 325-339.

Tuplin, C.J. (1993). *The Failings of Empire: A Reading of Xenophon Hellenica 2.3.11-7.5.27*. (Stuttgart).

Turner, B. (2015). 'The Provinces and Worldview of Velleius Paterculus'. In Brice, L.L., & Sootjes, D. (eds.) *Aspects of Ancient Institutions and Geography: Studies in Honor of Richard J. A. Talbert*. (Leiden): 260-279.

Tusa, S., & Royal, J. (2012). 'The Landscape of the Naval Battle at the Egadi Islands (241 B.C.)'. *Journal of Roman Archaeology* 25: 7-48.

Uerpmann, H.-P., & Uerpmann, M. (2007). 'Tierknochfunde aus den Grabungen auf dem Oberesch'. In Wilbers-Rost, S. (ed.) *Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese*. (Mainz am Rhein): 126-144.

Van der Veer, J.A.G. (1982). 'The Battle of Marathon: a Topographical Survey'. *Mnemosyne* 35 (3/4): 290-321.

Vanderpool, E. (1966). 'A Monument to the Battle of Marathon'. *Hesperia* 35 (2): 93- 106.

Vansina, J. (1961). *Oral Tradition: A Study in Historical Methodology*. (London).

Vansina, J. (1985). *Oral Tradition as History*. (Oxford).

Vaughn, P. (1991). 'The Identification and Retrieval of the Greek Battle-Dead'. In Hanson, V. D. (ed.) *Hoplites. The Classical Greek Battle Experience*. (London): 38-62.

Vogels, C. (2003). 'Fallen Heroes?: Winlock's 'Slain Soldiers' Reconsidered'. *Journal of Egyptian Archaeology* 89: 239-245.

Wagstaff, M. (2008). 'Colonel Leake and the Historical Geography of Greece'. In Moore, J., Macgregor Morris, I., & Bayliss, A.J. (eds.), *Reinventing History. The Enlightenment origins of ancient history*. (London): 169-183.

Walbank, F. W. (1957). *A Historical Commentary on Polybius*. (Oxford, 3 volumes).

Walbank, F.W. (2002). *Polybius, Rome, and the Hellenistic world: essays and reflections*. (Cambridge).

Walser, G. (1998). *Bellum Helveticum: Studien zum Beginn der caesarischen Eroberung von Gallien*. (Stuttgart).

Wason, D. (2003). *Battlefield Detectives*. (London).

Webster, G. (1978). *Boudica. The British Revolt Against Rome AD 60*. (London).

Webster, G. (1993). *The Roman Invasion of Britain*. (London).

Webster, G. (1998). *The Roman Imperial Army of the First and Second Centuries A.D.* (Norman, OK, Third Edition).

van Wees, H. (2004). *Greek Warfare: Myth and Realities*. (London).

Wellesley, K. (1969). 'Tacitus as a Military Historian'. In Dorey, T.A. (ed.) *Tacitus*. (London): 63-97.

Wescott, D.J., Baker, L.E., Clark Wernecke, D., & Collins, M.B. (2012). 'A Mass Grave of Mexican Soldiers from the Resaca de la Palma Battlefield (41CF3): Demography and Battle-Related Injuries'. *Bulletin of Texas Archaeology* 83: 1-21.

Whatley, N. (1964). 'On the Possibility of Reconstructing Marathon and Other Ancient Battles'. *Journal of Hellenic Studies* 84: 119-39.

Wheeler, R.E.M. (1943). *Maiden Castle, Dorset*. (Oxford).

Wheeler, E.L. (2007). 'Land Battles'. In Sabin, P., van Wees, H., & Whitby, M. (eds.), *The Cambridge History of Greek and Roman Warfare Volume 1: Greece, The Hellenistic World and the Rise of Rome*. (Cambridge): 186-223.

Whitby, M. (2007). 'Reconstructing ancient warfare'. In Sabin, P., van Wees, H., & Whitby, M. (eds), *The Cambridge History of Greek and Roman Warfare Volume 1: Greece, The Hellenistic World and the Rise of Rome*. (Cambridge): 54-82.

Wiegels, R., Moosbauer, G., Meyer, M., Lönne, P., & Geschwinde, M. (2011). 'Eine römische Dolabra mit Inschrift aus dem Umfeld des Schlachtfeldes am Harzhorn (Lkr. Northeim) in Niedersachsen'. *Archäologisches Korrespondenzblatt* 41 (4): 561-570.

Wilbers-Rost, S. (2003). 'Der Hinterhalt gegen Varus. Zu Konstruktion und Funktion der Germanischen Wallanlage auf dem ‚Oberesch‘ in Kalkriese'. *Die Kunde, N.F.* 54: 123-142.

Wilbers-Rost, S. (2007). 'Die archäologischen Befunde'. In Wilbers-Rost, S., Uerpman, H.-P., Uerpman, M., Grosskopf, B. & Tolksdorf-Lienemann, E. (eds.) *Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese. Archäologische Befunde und naturwissenschaftliche Begleituntersuchungen*. Mainz: 1-107.

Wilbers-Rost, S. (2009a). 'Total Roman Defeat at the Battle of Varus (9 AD)'. In Scott, D., Babits, L., & Haecker, C. (eds.) *Fields of Conflict: Battlefield Archaeology from the Roman Empire to the Korean War*. (Washington D.C.): 121-132.

Wilbers-Rost, S. (2009b). 'The Site of the Varus Battle at Kalkriese: recent results from archaeological research'. In Morillo, Á., Hanel, N., & Martín, E. (eds.) *Limes XX*. (Madrid): 1347-1352.

Wilbers-Rost, S. (2012/13). 'Results of Excavations on the Oberesch Site'. In Harbeck, M., von Hayking, K., & Schwarzberg, H. (eds.), *Sickness, Hunger, War and Religion: Multidisciplinary perspectives*. (Munich): 93-97.

Willemsen, F. (1977). 'Zu dem Lakedämoniergräbern im Kerameikos'. *Athenische Abteilung* 92: 117-157.

Winlock, H.E. (1945). *The Slain Soldiers of Neb-Hepet-Re' Mentu-Hotpe*. (New York).

Wolters, R. (2003). 'Hermeneutik des Hinterhalts: die antiken Berichte zur Varuskatastrophe und der Fundplatz von Kalkriese'. *Klio* 85 (1): 131-170.

Woodman, A.J. (1998). *Tacitus Reviewed*. (Oxford).

Woodward, R. (2014). 'Military landscapes: Agendas and approaches for future research'. *Progress in Human Geography* 38 (1): 40-61.

Wright, R., Hanson, I., & Sterenberg, J. (2005). 'The archaeology of mass graves'. In Hunter, J., & Cox, M. (eds.) *Forensic Archaeology: Advances in Theory and Practice*. (London): 137-158.

Zambrini, A. (2007). 'The Historians of Alexander the Great'. In Marincola, J. (ed.) *Blackwell Companion to Ancient Historiography*. (Oxford, 2 volumes): 210-220.

Zelle, M. (2008). 'Überlegungen zum Grabtumulus für die Varusschlacht'. *Lippische Mitteilungen aus Geschichte und Landeskunde* 77: 13-21.