

Mobility, Transition and Change in Prehistory and Classical Antiquity

Proceedings of the Graduate Archaeology
Organisation Conference on the Fourth and Fifth
of April 2008 at Hertford College, Oxford, UK

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KEYWORDS: Mobility, change, social dynamics, material culture, transition, environment chronology, trade, and exchange

“Le seul véritable voyage... ce ne serait pas d’aller vers de nouveaux paysages, mais d’avoir d’autres yeux, de voir l’univers avec les yeux d’un autre, de cent autres, de voir les cent univers que chacun d’eux voit, que chacun d’eux est...”

“The only true voyage of discovery... would be not to visit strange lands but to possess other eyes, to behold the universe through the eyes of another, of a hundred others, to behold the hundred universes that each of them beholds, that each of them is...”

Marcel Proust 1871

‘La Prisonnière’
À la recherche du temps perdu
(‘The Captive’ In Search of Lost Time /the Remembrance of Things Past)

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Chapter 1 Challenging the Frontiers of Mobility in Archaeology

Paul R Preston and Katia Schörle

Keywords: mobility, transition, change, Prehistory, Classical Antiquity

1.1. INTRODUCTION

This volume stems from the proceedings of the third conference of the Graduate Archaeology Organisation at Oxford (GAO) held 4-5 April, 2008 at Hertford College, Oxford. The conference title was *Challenging Frontiers: Mobility, Transition and Change*, and aimed to address the question of mobility in the archaeological record from an inter-disciplinary perspective, and hence to encourage dialogue between the more artistic and scientific sub-disciplines of archaeology. This conference built on and advanced mobility themes developed in the first GAO conference and publication (Schroeder et al. 2007), albeit with a slightly different emphasis in topic. The 2008 conference was based on the premise that the physical remains of the past are fixed in archaeological contexts rather than the product of a static environment; they are the result of dynamic cultural, taphonomic, and environmental processes involving mobility, transitions, and culture changes.

Whilst rarely acknowledged, the concept of mobility is central in archaeological research with many differing definitions deeply embedded in our theories and interpretations of the past. These concepts are crucial to our understanding of diachronic change in societies and groups. Indeed, the contributions at the conference by well-established academics as well as doctoral students are a testament to the importance and relevance of mobility in our explanations of human behaviour in the past.

Traditionally, mobility has been considered as synonymous with movement. In the study of earlier periods, such as the Palaeolithic and Mesolithic, mobility has tended to be associated with the movement of hunter-gatherer groups (Klein 1999; Preston 2008, 2011; Smith 1992; Tolan-Smith 2008). However, due to the increasing sedentarisation evident during the Neolithic throughout Europe, North Africa and the Near East, the movement of groups as an economic lifeway is less important (Barker 2006; Maisels 1990). Instead, in the later periods (including the Neolithic and beyond), mobility is viewed in terms of population migrations, the transport of commodities like flint or chert, pottery or food (directly or through exchange), or in cultural terms of social dynamics concerned, for instance, with social mobility and rank (Cauvin 2000; de Marrais et al. 1996; Maisels 1990; Valla 1998).

In prehistory (i.e. the Palaeolithic through to the Iron Age), the debate often focuses on what can be inferred about mobility patterns from material culture; for instance, how lithic raw materials, manufacture, and use

relate to or tell us about hunter-gatherer mobility. A central component to this is the concept of *chaînes opératoires*, first described by André Leroi-Gourhan (1943), forms the basis of the approach to the study of prehistoric technologies. It is the concept that considers technology as a system and examines the dynamic processes of sub-systems, stages, or literally operational chains within a lithic's 'life cycle'—from raw material procurement, its manufacture, use, and discard (Barton 1999; Inizan et al. 1992; Preston 2009, 2011). Warren (2006) describes this as 'exploding' artefacts across the Mesolithic landscape, a process that affords real behavioural information about the scheduling and organisation of technical activities of prehistoric people. Thus, from this point of view, the recording and analysing of technological attributes can yield vital behavioural information and enable reliable data-based reconstructions of how hunter-gatherers moved in the landscape.

Likewise, classical antiquity (defined broadly from the seventh century BC to the seventh century AD) was marked and defined by a high degree of mobility and exchange. From the movement of Phoenician traders to the spread of Greek colonies, the expansion of Rome's empire to its contraction centuries later, the networks created by political, demographic, military, and economic factors shaped the lives of the various peoples dwelling around the sea and in its hinterlands. Movement, in particular, has always been a key interest to studies of classical antiquity; from the 'Dorian invasion' of nineteenth-century scholarship to the network theory of the modern era (e.g. Horden and Purcell 2000; Malkin 2003a, b, 2005; Malkin, Constantakopoulou and Panagopoulou 2009). That goods, people, technologies, and ideas were highly mobile in the ancient world does not need to be established; given that copious amounts of literary, epigraphic, and archaeological data attest to movement, the challenge and problematique which this volume focuses on is defining different and under-explored forms of mobility, and understanding the results of these on ancient cultures and societies.

The differing concepts of mobility have therefore created an ideological divide between earlier prehistory, later prehistory, and classical antiquity, with scholars in each sub-discipline having a completely different understanding of the human condition in the past and present, as well as differing approaches to archaeological research. Nonetheless, it is clear that whilst each approach has merit, both prehistoric and classical archaeologists can learn from each other's research.

Whilst it is convenient and logical to partition analyses topically, periodically, or methodologically, this can often have the effect of narrowing our perspective. Indeed, as Bill Lovis, Randy Donahue, and Robert Whallon (Lovis et al. 2006) noted, there are multiple interdependent dimensions of human culture which cannot be revealed by any single approach, and alone cannot provide an adequate explanation for the panoply of behaviours observed in the past. Clearly, the traditional approaches of prehistoric and classical archaeologists have their strengths and weaknesses, but when considered in context, each approach can be viewed as an independent test of the way we think human societies operated in the past. Thus, the science of archaeology should therefore aim to pursue research agendas that bring our understanding of each of these dimensions into accord (and hence the different approaches used by prehistorians and classical antiquarians). When we find that there is agreement between two or more of these dimensions, it provides increased weight to our reconstructions, or at least that they are a good approximation of what might have happened in the past. Unfortunately, whilst these discussions undoubtedly occur within the separate sub-disciplines, they rarely happen between archaeologists studying prehistory and those studying classical antiquity.

As a consequence, this volume aims to reconcile the conceptual divide through creating a mutually beneficial and interactive forum for the cross-fertilisation of ideas and perspectives. Thus this volume transcends both national and periodic boundaries, including a diverse range of work by researchers—from Europe, Asia, Australasia, and North America—covering a comprehensive chronological range from the Palaeolithic through to late classical antiquity. Moreover, the contributions in this volume exemplify approaches that encompass perspectives from archaeology, classics, science, and anthropology. In doing so, this collection attempts to provide a wide-ranging yet detailed examination of mobility, transitions, and changes in human behaviour, and aims to be a key contribution to the ongoing debates concerning the interpretation of mobility in prehistoric and classical research. It is hoped that it will also encourage further dialogue between the arts and sciences.

1.2. RESEARCH THEMES AND PERSPECTIVES ON MOBILITY

Other than the differing periodic and national focus of the contributions in this volume, three main themes can be discerned in approaches to mobility. The first focuses on the *chaînes opératoires* of mobility and material culture in the landscape, the second is concerned with the mobility models used to explain movement and settlement patterns in the landscape, and the third concentrates on social dynamics and culture change. These three themes are not mutually exclusive and a number of papers consider the relationships between them.

Ladislav Nejman takes up the first theme with an economic-lithics-centred approach, and considers how lithics can be directly used by archaeologists to infer the mobility of past hunter-gatherers in the landscape. He is concerned with the operational stages of lithic raw material acquisition, manufacture, use, and discard, and describes how these suggest movements in the landscape.

Like Nejman's economic-lithics-centred approach, Thomas Kador, Paul R. Preston, Brooke Milne, Douglas Stenton and Robert Park consider mobility and lithics. Yet, as well as lithic *chaînes opératoires*, Preston considers the second theme of the mobility models, that is, how various different mobility models have been used to describe the settlement patterns in Northern England during the Mesolithic, and also considers the role of lithics in these explanations. He shows that the traditional over-dependence on ethnographic parallels and biological material has caused archaeologists to neglect lithic evidence and to view mobility on too small a scale. As a proof of concept he challenges the existing orthodoxy by using *chaînes opératoires* of lithic assemblages as proxies for mobility and demonstrates they are vital to understanding Mesolithic mobility.

In contrast, whilst Kador also considers the common ways of discussing movement in the Mesolithic and describes Mesolithic lithic assemblages from Ireland, he emphasises an alternative, more socially mediated way of conceiving of movement. Specifically, he argues that human movement represents both everyday routine activities but also provides a force for social, economic, and political change. Clearly, both authors arrive at significantly different interpretations from diametrically opposed theoretical standpoints, but both describe significant and inter-related elements of human behaviour. Perhaps more importantly, they emphasise the role of lithic artefacts in describing and understanding mobility. Moreover, these three papers are particularly relevant at this juncture, as over the last 20 years the relationship between lithics and mobility has become an increasingly important focus for the study of Palaeolithic and Mesolithic cultures (e.g. Donahue and Lovis 2006; Evans et al. 2007; Feblot-Augustins 1993; Hershkovitz 1989; Lhomme 2007; MacDonald 1995; Nash 1998; Preston 2009, 2011; Schick and Toth 1995).

In contrast, rather than just reconstructing mobility patterns, Elisa Guerra-Doce and Germáne Delibes-de Castro, and Erik Johansson and Michelle Machicek, as well as Milne and others, use the concept of *chaînes opératoires* to establish how the mobility of people or materials affected or contributed to culture change. For instance, Guerra-Doce and Delibes-deCastro consider the processes involved in the acquisition and use of prestige objects with an emphasis on how these contributed to changes in social hierarchy and the burgeoning elites during the Neolithic and early Bronze Age periods. Similarly, Johansson and Machicek explore the role of the increasing mobility of Bronze Age and Iron Age pastoralists in China and how this contributed to cultural development. They argue that the mortuary remains of

the nomadic pastoralists reveal evidence of culture change and a society that was becoming considerably more mobile over time. In the same way, Milne, Stenton, and Park use faunal and lithic evidence to identify the migration of Palaeo-Eskimos into the eastern Arctic as well as mobility patterns within that region. This paper makes a vital contribution to a key debate identifying mobility as a key factor in influencing the cultural change of Palaeo-Eskimo groups and thereby explaining the differing facies evident in the archaeology.

Similar themes are also covered in the papers by Alejandro Garcia-Moreno and Jeffrey Rose, which consider the roles of mobility, migration, and colonisation on the evident culture change in the archaeology of Palaeolithic and Mesolithic Cantabria (Spain) and Palaeolithic-Epipalaeolithic Southern Arabia respectively. Rose marshals diverse strands of evidence from genetics, environmental reconstructions, archaeology, and philology to argue for the existence of refugia around the Red Sea and Persian Gulf, which both played pivotal roles in the movement of anatomically modern human populations out of Africa as well as the spread of agriculture. Garcia-Moreno's paper takes a slightly different angle using environmental evidence to assess extant mobility models that explain the changes between Palaeolithic and Epipalaeolithic settlement patterns. Clearly, mobility can be seen as a potential influence on cultural change as well as being an economic or social factor.

Instead of focusing on the movements of groups of people and portable objects per se, Gavin Speed, Itamar Taxel, Matthew McCarty, and Giulia Saltini-Semerari examine the non-mobile built environment and its relationship to the movement of people and cultural change. For instance, Speed and Taxel examine how settlement landscapes themselves could be open to dramatic transition, and focusing on late antiquity they examine how physical and cultural continuities and discontinuities can be measured, evaluated, and interpreted. Semari's paper considers movement as a recurrent catalyst for change, while distinguishing indigenous features in the archaeological record from imported material. In particular, she examines the implications of Greek colonisation in Italy and considers the effect that the movement of people may have had on both autochthonous population and the colonisers. Likewise, McCarty considers the movement of the Roman army in North Africa and its effect on culture and ideas. Unlike the prehistoric papers in this volume, these papers offer a methodologically different perspective and provide alternative solutions to tackling the similarly difficult question of mobility and change. These alternative solutions both complement and challenge those taken by the prehistorians (and vice versa).

Finally, Gavin King outlines a radically different approach compared to the other research described in this volume. In this paper he examines the role that palaeoentomology may play in the study of human movement and trade (the movement of objects).

Specifically, he describes a number of potentially useful techniques, and argues that the study of insect remains is fundamental to the understanding of human interaction during the Roman and medieval periods in Britain.

1.3. CONCLUDING THOUGHTS

The contributions in this volume should make a significant impact in the various ongoing debates for three main reasons. Firstly, it is effectively showcasing new innovative research on mobility, transition, and change in archaeology. Secondly, the papers in this volume not only provide new evidence and original interpretations of material related to their individual fields, but they cohere around a set of key problems faced by archaeologists in understanding the ways in which mobility, transition, and change have affected both the archaeological record and ancient culture. Thirdly, and perhaps most importantly, there has been an acute need for a collection of work that allow academics from a particular field not only to find information about what they are interested in but also glance at the direction and research agendas of other sub-disciplines in archaeology. This is especially relevant as those studying late antiquity have little recourse to read about research into prehistoric periods, in particular the analysis of lithic and faunal assemblages. Likewise, many prehistorians pay little attention to research into classical antiquity. As a result, scholars in both fields do not have the opportunity to read about the theoretical developments of these fields and hence apply them to their own research.

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Chapter 2 The Lithic Evidence for Differing Mobility Strategies of Neanderthals and Anatomically Modern Humans during the Middle-Upper Palaeolithic Transition in Moravia, Czech Republic

Ladislav Nejman

ABSTRACT

New data from analyses of stone artefacts from four large sites in Moravia indicate significant differences between the mobility patterns of Neanderthals and those of anatomically modern humans in this region during the Middle-Upper Palaeolithic transition. Lithic variables, such as the proportions of imported raw materials, assemblage diversity, the ratio of unretouched to retouched flakes, flake breakage patterns, and flake size, are used to examine mobility levels and strategies. Economic flexibility played an important role in the survival of hominin groups during the prolonged period of increasingly cold temperatures and high environmental instability during Oxygen Isotope Stage 3. It is argued that the particular mobility patterns adopted by Neanderthals, as inferred from the lithic evidence, had direct implications for their eventual extinction.

Keywords: Middle-Upper Palaeolithic transition, mobility, lithics, Neanderthals, Anatomically Modern Humans

2.1. INTRODUCTION

In this paper I argue that the mobility patterns adopted by Neanderthals, as inferred from the lithic evidence, had direct implications for their eventual extinction. Thus, using lithic variables, such as the proportions of imported raw materials, assemblage diversity, the ratio of unretouched to retouched flakes, flake breakage patterns, and flake size, are used as a proxy to compare the level of mobility and strategies of both Anatomically Modern Humans (AMH) and Neanderthals during the Middle-Upper Palaeolithic Transition (MUP).

The archaeological sites selected for study in this paper are Kůlna, Stránská Skála, Bohunice, and Vedrovice V (eastern Czech Republic) (see figure 1). They have the potential to throw new light on the issue of economic behavioural differences between the Neanderthals and AMH. By analysing lithic assemblages, it is possible to elucidate the issue of the differences in mobility patterns between the two hominid groups. This paper focuses on how the different lithic patterns evident at each site inform us about the mobility levels of the different hominid groups who used those sites and who manufactured the assemblages. A concomitant underlying theme explored is the way in which the lithic evidence can be used for interpretations of mobility patterns in the Moravian Palaeolithic landscape.

The focus of this paper is pertinent because the period concerned—the Middle-Upper Palaeolithic (MUP) transition—is often considered one of the most significant periods in European prehistory. A large amount of archaeological evidence from sites located in various parts of Europe points to two major parallel events: the arrival of the AMH, and a proliferation of new and distinct stone artefact assemblages (see Churchill and Smith 2000). The last recorded remains of Neanderthals are dated to around 28,000 years ago (Carrión et al. 2008; Carbonell et al. 2000; Finlayson et al. 2008, 2006;

Ovchinnikov et al. 2000; Smith et al. 1999). After over 200,000 years of occupation in Europe, the Neanderthals disappeared from the record for reasons which are still being debated.

Other important issues in this debate focus on a period of coexistence between AMH and Neanderthals, and the degree of cultural mixing between these hominins. In fact, some researchers argue for a long period of coexistence (e.g. Churchill and Smith 2000), while others argue for either a very short period of coexistence or no temporal overlap at all (e.g. Zilhao and d'Errico 1999). Yet there is almost unanimous agreement that the Neanderthals disappeared during Oxygen Isotope Stage 3 (OIS) (i.e. 50-25000 BP), while leaving the reasons for their extinction still unresolved.

Explanations offered for extinction usually focus on the Neanderthals' inability to compete effectively with AMH technologically, linguistically, cognitively, or demographically (e.g. Stewart et al. 2003, chapter 12). However, it is very difficult to test whether Neanderthals and AMH were actually in competition; even if they were, this was likely to have been a minor factor in their extinction (Finlayson 2004). Various historical examples show that human population expansions, collapses, and extinctions have occurred independently of competitive processes. For competition to occur, the competing populations must be at the environmental carrying capacity and be exploiting similar resources concurrently in order to have a significant effect on one another. If these conditions are not met, then the populations are not in competition (Finlayson 2004).

2.1.1. *The Study Area*

The study area focuses on southern Moravia within a 40km radius of the city of Brno (see Figure 1) in the eastern part of the Czech Republic. This area has a particularly high concentration of archaeological sites

dating to the MUP transition. Four sites were selected for detailed analysis: Kůlna, Stránská Skála, Bohunice, and Vedrovice V were chosen because they have surviving stratigraphic profiles and all contain significantly large lithic assemblages that have secure stratigraphic provenances with reliable radiocarbon dates. Other MUP transition assemblages are known from this region, but are not from secure stratified contexts, or from surface sites which cannot be dated conclusively.

2.1.2. The Archaeological Sites

Stránská Skála is an open site on the eastern edge of the city of Brno. It is situated at a chert source that was used by people from the Early Palaeolithic to the Neolithic as indicated by the numerous stratigraphic levels and their associated artefact assemblages, recovered mostly in controlled excavations (Svoboda et al. 1996, 2002). There are no hominin remains associated with any of the assemblages. The Early Upper Palaeolithic (EUP) levels are well dated, with two different types of dating methods, radiocarbon dating (Svoboda 2003) and OSL (Nejman et al. 2011). Faunal remains are rare, yet when found, include two species, horse and mammoth. The upper layers have produced assemblages typologically classified as Aurignacian and the assemblages from the lower layers have been classified as Bohunician—a local industry which is considered to be transitional tradition between the Middle and Upper Palaeolithic. The Aurignacian deposits have been dated to 31-33 ky BP (Svoboda 2003) so they are somewhat younger than many other Aurignacian assemblages.

Aurignacian assemblages in general tend to be characterised by carinated end scrapers, blades with heavy marginal retouch, burins, split-based bone points, and decorative objects interpreted as beads and bracelets. There are various controversies about which assemblages can be considered Aurignacian or Aurignacian-like because the various assemblages labelled as Aurignacian show so much variability (Blades 1999; Teyssandier 2006, 2008). It is generally accepted that the Aurignacian assemblages were manufactured by AMH (e.g. Churchill and Smith 2000).

The implements which predominate in typical Bohunician assemblages, and are present in the Bohunician levels at Stránská Skála, are end scrapers and, to a lesser extent, burins. The main distinguishing characteristic of the Bohunician industry is a unique reduction method where blades and flakes are produced using a combination of Levallois and blade flaking (Škrdla 1999, 2000a, b). The identity of the makers of the Bohunician assemblages is more controversial, but several lines of indirect evidence indicate that they were also manufactured by AMH; for example, Tostevin (2000) argues this based on lithic operational sequences and Nejman (2006, 2008) on the basis of the similarity of economic behaviour to the overlying Aurignacian assemblages.

Bohunice is a type site of the Bohunician industry, located 7km from Stránská Skála on the opposite side of

Brno. Almost all 11,000-12,000 artefacts from the site have been recovered from a single archaeological horizon, designated as Layer 4 (Valoch 1976; Škrdla and Tostevin 2005; Tostevin and Škrdla 2006). The assemblages have been dated to 33-43 ky BP (uncalibrated) and 48.2 ± 1.9 ky by thermoluminescence (Richter et al. 2008), and all are classified as Bohunician (Valoch 1976; Svoboda 1980; Oliva 1981). Most of the artefacts from the site were made from a chert which was brought from Stránská Skála, but other types of chert, some of which were brought from a distance of up to 100km, were also used (Valoch 1976). The Bohunice assemblages here also contain bifacially flaked artefacts (locally called leaf points), whereas at Stránská Skála leaf points are completely absent. Faunal remains are also very rare at Bohunice, but when found include horse and mammoth.

Vedrovice V is located approximately 40km southwest of Brno. Over 17,000 artefacts, mostly made from a local chert, were recovered during excavation, and all from a single archaeological horizon in the lower part of a palaeosol (Valoch 1984, 1993). Radiocarbon dating suggests an age of 35-40 ky BP (Valoch 1984, 1993) but recent OSL dating results suggest a Middle Palaeolithic age (Nejman et al. 2011). The large assemblage recovered from this site has been typologically classified as Szeletian. Szeletian technology is based on flake and blade production by non-Levallois methods of reduction (Svoboda 1993) and is characterised by a high proportion of end scrapers and side scrapers compared to burins (Oliva 1991). Denticulates, notches, and bifacially retouched leaf points are also common. The Szeletian is also a local variant of a transitional industry but is far more similar typologically and technologically to the local Middle Palaeolithic assemblages, especially the Micoquian assemblages at Kůlna. This has given rise to claims of a local 'evolutionary continuity' of the lithic industries (Valoch 1990a, b). Based on its OSL age and strong affinities with the Middle Palaeolithic, it is likely that this assemblage was manufactured by the Neanderthals, but this conclusion is still controversial.

The fourth site, Kůlna, is a limestone cave located in the Moravian Karst, 30km north of Brno. The sediments in the Kůlna cave are up to 15m deep and many of the layers have yielded stone artefacts and faunal remains (Valoch 1988); only the Micoquian assemblages from the late Middle Palaeolithic layers 6a and 7a directly pertain to the questions examined here. Organic preservation in the cave is good, and mammoth is the most common species represented in both layers (Valoch 1988). In addition, Neanderthal bones were recovered from Layer 7a (Jelínek 1988); their Middle Palaeolithic date has been confirmed by ESR (Rink et al. 1996), C^{14} (Valoch 1988) and OSL dating (Nejman et al. 2011). Characteristics of the Micoquian assemblages typically include a lack of Levallois technology with the discoid method of reduction preferred. The dominant implement type in Micoquian assemblages is the side scraper, often with flat retouch (Svoboda et al. 1996). Most of the raw material in Kůlna used by the hominins was obtained locally, usually from within 5-10km from the cave (Valoch 1988;

Neruda 2001). Compared to the open sites, the Kůlna hominins utilised a large variety of raw material types, but this is probably because there were many types of raw material available within a short distance from the cave, rather than due to a particular raw material procurement strategy. Despite this difference, there are clear similarities between the Kůlna Micoquian and the Vedrovice V Szeletian assemblage, including an emphasis on the use of local raw material sources, an absence of the Levallois technique of reduction (Valoch 1988), comparable implement typology, and similarities in the size and shape of retouched flakes (Nejman 2006).

2.1.3. *The Concept of Mobility*

Hunter-gatherers are always mobile to some extent, as they need to move around in the landscape in order to exploit natural resources. The concept of mobility was applied to hunter and gatherer behaviour most famously by Binford (1977, 1979, 1980), who made a distinction between residential mobility and logistical mobility. He defined residential mobility as movement of the entire group from one location to another, whereas logistical mobility was defined as the movement of individuals or small groups who returned to the home base after the task was performed (Binford 1980). It is important to remember that these two different mobility strategies occur in a continuum and very often in combination at every site, so sites cannot usually be expressed as having only one type of mobility.

To begin the task of exploring the patterns of hominin mobility in the landscape, it is necessary to consider the location of the raw material sources in relation to the sites where the artefacts have been recovered by archaeologists. Patterns of raw material exploitation and artefact transport are a function of where people go and how they move about a landscape, coupled with their ability to plan around future contingencies (Kuhn 1995). The information gleaned from the sourcing of raw materials found at archaeological sites is often used to make inferences about the mobility levels of the hominin groups that used those sites by measuring the distance between the likely raw material source and the sites to which the material was transported. Although many archaeologists use the distance from the find spot to source as a proxy for raw material cost, there is actually little consensus on the significance of these 'transfer distances' (Kuhn 2004). After the raw material was carried to these sites, it was often curated (e.g. Binford 1980; Rensink et al. 1991; Féblot-Augustins 1993). Kuhn (2004) points out that the issue of distance from the find spot is not as simple as is often portrayed in the literature. He argues that the distances over which raw materials were moved has no intrinsic meaning, because artefacts can be transferred from their source to a site in many different ways and the relationship between distance and cost varies according to how the transfer took place. The 'cost' of moving the exotic lithic material can depend on territoriality, social networks, practical limits on travel, and time allocation which either hinder or facilitate

access to the source. Kuhn further argues that it is analytically useful to focus on the relationship between material transfer distances and lithic reduction, rather than on the distances themselves. This can be informative of the use the artefacts underwent on their journey from source to the point of discard.

2.2. RAW MATERIAL EXPLOITATION AND MOBILITY

2.2.1. *The Location of Raw Material Sources*

Table 1 presents the percentages of 'local' and 'imported' material at each site. The definition of 'local' and 'imported' varies slightly in each case, however. At Stránská Skála, for example, raw materials other than the locally available Stránská Skála chert are treated as being imported. There are two main types of imported raw materials at this site: radiolarite and Krumlovský Les (KL) chert. At Bohunice, Stránská Skála chert is treated as local because it is the most frequently used raw material and it can be safely established that it originated at Stránská Skála, 7km away.

There is a general consensus in the literature on the provenance of the raw materials at these sites, but some exceptions exist. For example, the KL chert is the primary raw material at Vedrovice V, but it is also used at Stránská Skála and Bohunice. The source area of this chert has always been considered to be the Krumlovian Forest (Krumlovský Les) to the southwest, approximately 26km from Stránská Skála and 22km from Bohunice in a straight-line distance. However, there are a number of other known sources of KL chert in southern Moravia and recent petrological analyses seem to indicate that the knapped pieces of KL chert found at Bohunice and Stránská Skála may originate from a locality called Hády, which is approximately 7km to the northeast of Bohunice and 3km to the north of Stránská Skála. It is also conceivable that nodules of KL chert could have been collected in the riverbed of the river Svitava (Petr Škrdla, personal communication, 2005). This riverbed is currently also within a distance of 3km from Stránská Skála.

From the data presented in Table 1, it is clear that Stránská Skála (Stránská Skála III is used as a representative assemblage in most of the analyses) has elevated levels of raw materials imported from a long distance. Radiolarite was transported to Stránská Skála from the area of Vlárský Průsmyk, 100 km to the east (Svoboda 1987b). This suggests that the Stránská Skála hominins may have had greater levels of mobility than hominins at the other three sites. Kůlna has by far the greatest variety of raw materials represented in assemblages. However, this may simply be due to the fact that, unlike the other sites, a great variety of material suitable for knapping can be found within a short distance from the site. In other words, it may be the result of local environmental specifics rather than a fundamental difference in raw material procurement strategies. The riverbed outside the Kůlna cave contains nodules of

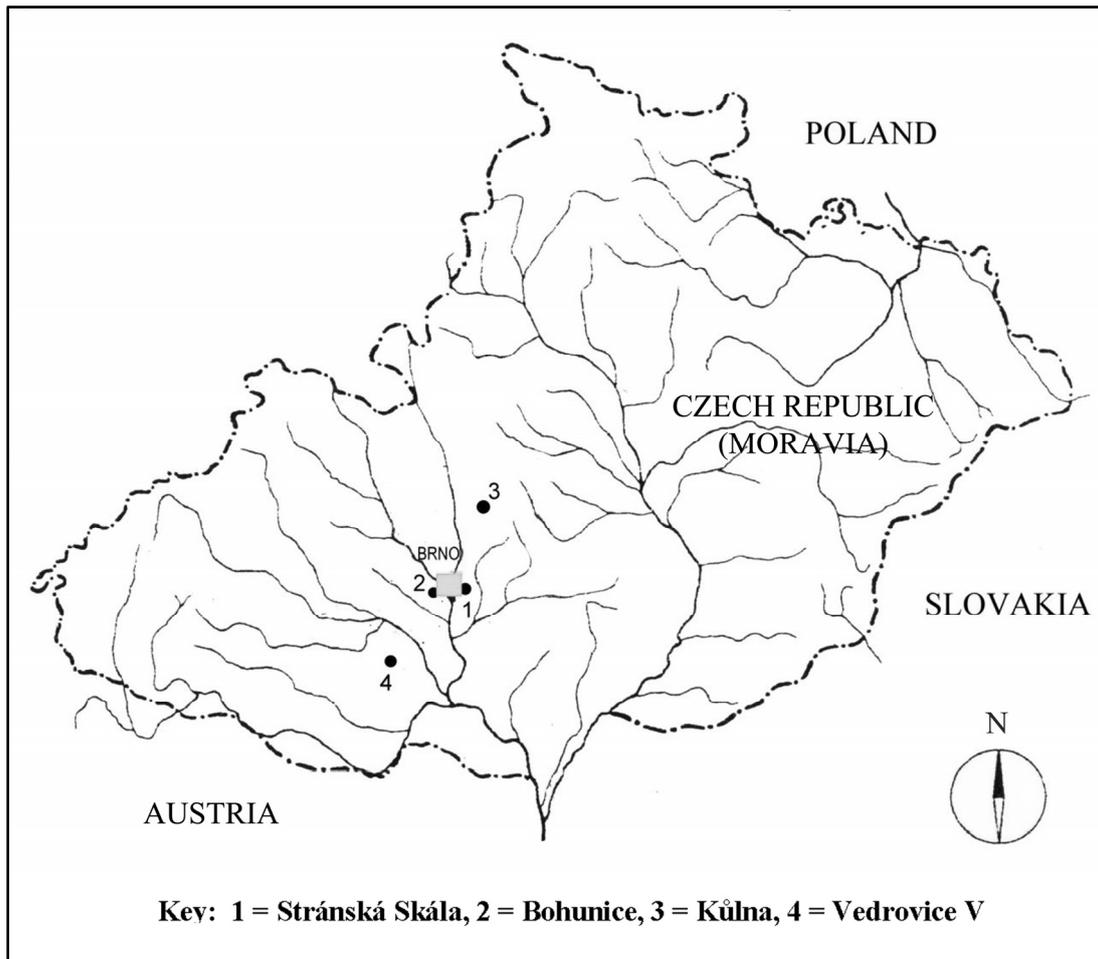


Figure 1. Research area and sites in the Czech Republic

Table 1. Lithic data from Stránská Skála, Bohunice, Kůlna and Vedrovice V in the Czech Republic

<i>Assemblages</i>	<i>RM Local %</i>	<i>RM Exotic %</i>	<i>% Broken Fks</i>	<i>Total Fks</i>	<i>UnRt:Rt Fk Ratio</i>
Stránská Skála III	65	35	40	506	50:1
Bohunice	98	2	29	133	10:1
Vedrovice V	99.6	0.4	41	217	21:1
Kůlna 7a	99.5	0.5	19	458	5:1

Fk = Flake/s, Rt = Retouched, UnRt:Rt Fk = unretouched: retouched flake ratio, RM = lithic raw materials

different types of chert and chert outcrops are also available within several kilometres of the cave (Neruda-2001). Almost all of the raw material used at Vedrovice V is local, obtained from the immediate vicinity of the site. Stránská Skála is similar in this aspect to Vedrovice V, but a greater variety of raw materials is used at Stránská Skála and there is more material obtained from distant sources. A similar range of raw materials is used at Bohunice and Stránská Skála, but Bohunice differs from the other sites because the primary raw material utilised there was not available in the immediate vicinity of the site.

2.2.2. Mobility and Assemblage Diversity

The data presented in Table 2 demonstrates a positive correlation between assemblage diversity and the size of the assemblage. Although there is a functional relationship between assemblage diversity and assemblage size (e.g. Grayson and Cole 1998), several studies also suggest that there is an inverse relationship between assemblage diversity and mobility. In other words, as mobility increases, artefact diversity decreases (e.g. Shott 1986). At this stage we cannot determine whether mobility or assemblage size (or both) which are

responsible for the assemblage diversity in the Moravian assemblages.

Stránská Skála has the highest proportions of imported raw materials (Table 1) but it is interesting to note that it also has the lowest number of implement types (Table 2). The Kůlna assemblages contain the largest spectrum of raw material types and, at the same time, the largest number of implement types. Almost all of the raw material is obtained from less than 50km away from the site, and the majority of the raw material is obtained from within 10km (Neruda 2001). This overwhelming focus on the utilisation of local materials combined with the high number of implement types suggests lower mobility when compared to the hominin groups at Stránská Skála and Bohunice. Vedrovice V also has very little imported material. Based on these particular patterns, it is likely that the hominins at Kůlna and Vedrovice V had lower levels of residential mobility than did the hominins at Stránská Skála and Bohunice.

Andrefsky (1998) also proposes that it is reasonable to assume that greater numbers of tool types may represent larger numbers of types of activities at a site. This postulate fits in with the mobility argument; that is, the Neanderthals at Kůlna and the hominins at Vedrovice had a smaller home-range, lower residential mobility, and performed more tasks at their home base compared to those occupying Bohunice and Stránská Skála.

2.2.3. *Mobility and Raw Material Use*

Although it is relatively difficult to categorise a population as either mobile or sedentary (Andrefsky 1998), Parry and Kelly (1987) argue that relatively sedentary populations will tend to use an expedient technology and a more mobile population will tend to use a formal technology. Andrefsky (1998) continues this argument by equating mobility with relative numbers of retouched tools. Relatively sedentary toolmakers will have fewer retouched tools, whereas populations that are more mobile will have a greater number of retouched tools. Roland and Dibble (1990) argue that elevated proportions of retouched flakes reflect a more intensive use of lithic resources.

There are distinct differences in the unretouched to retouched flake ratios between the sites (Table 3). Stránská Skála, for example, has far fewer retouched flakes (for the number of unretouched flakes) than all other sites. Kůlna has proportionately far more retouched flakes than Bohunice, Vedrovice V, and Stránská Skála.

It is often assumed that, in the French Mousterian, caves were occupied more often and for longer periods than open sites (see Kuhn 1995), but the possibility that this

may be the result of differential preservation must also be considered. Although Neanderthals displayed a range of behavioural flexibility in response to changing environmental conditions, they appeared not to respond to the same forces which led to variation in Upper Palaeolithic and later technologies (Kuhn 1995). A number of similarities are evident from Mousterian sites in all areas, and these include a lack of evidence for any functional or strategic variation in artefact forms on a local or regional scale, the infrequent working of bone, and the scarcity or absence of stone tools employed in extractive technologies (see Kuhn 1995). Given that Mousterian societies throughout Europe were likely to have been similar in many ways (as can be deduced from what has been preserved in the archaeological record), the evidence from French Mousterian sites can be considered relevant to Mousterian sites in other regions such as central Europe.

Assuming that the differences between open sites and cave sites are real, the evidence for raw material use intensity in Moravia is also consistent with the mobility patterns outlined above. It appears that the lithic resources at Kůlna were exploited more intensely than the lithic resources at the open sites; this is indicated by the higher proportions of retouched flakes at Kůlna compared to the open sites. This could suggest that the Neanderthals at Kůlna were spending relatively more time in the cave (this view is also supported by the relatively high assemblage diversity), performed a greater number of tasks there, and moved around relatively less than the EUP hominins frequenting the open sites. Thus the residential mobility was relatively low but logistical mobility may have been relatively high. Conversely, the high unretouched-to-retouched flake ratios at the open sites suggest that the hominins occupying these sites did not use the lithic resources as intensively, which in turn suggests that they had higher levels of residential mobility, and consequently were spending less time at the site. The lower assemblage diversity pattern also supports this view.

2.2.4. *Mobility and Flake Breakage Patterns*

Differences in flake breakage patterns between the sites can also reveal information pertaining to patterns of land-use and mobility (see Table 1). For example: the specific flake breakage patterns can also be used as corroborative evidence for the argument that the Stránská Skála hominins were more mobile than those at Kůlna. For example, Stránská Skála has the highest number of broken retouched flakes, especially in the Aurignacian assemblages, where 43% of flakes are broken (i.e. only 57 per cent retouched flakes are complete). Thus it is possible that the relatively low proportion of complete flakes here is a consequence of them being transported

Table 2. Numbers of lithics and implement types

<i>Assemblages</i>	<i>N^o Lithics</i>	<i>N^o Types</i>	<i>Types Present</i>
Stránská Skála III	95	7	A, B, C, D, E, F, J
Bohunice	133	9	A, B, C, D, E, F, G, H, L
Vedrovice V	217	10	A, B, C, D, E, F, H, J, K, L
<i>Kůlna 7a</i>	458	17	A, B, C, D, E, F, G, H, I, K, L, M, N, O, P, Q, R

A: Sides scraper. B: End scraper. C: Notch/denticulate. D: Burin. E: Alternate bec. F: Percoir. G: Alternate scraper. H: Leaf Point. I: Alternating scraper. J: Mousterian disc. K: Mousterian point. L: Other biface. M: Limace N: Stemmed scraper. M: Scraper (generalised). P: Chopper. Q: Cleaver. R: Retoucher.

Table 3. Calibrated OSL results
(Data from Nejman *et al.* 2011)

<i>Site</i>	<i>Lab. Code</i>	<i>Layer</i>	<i>Assigned Culture*</i>	<i>Optical Age (Ka)</i>
Kůlna	K0081	6a (cave entrance)	Micoquian	29.70±1.80
Kůlna	K0674	6a (cave interior)	Micoquian	69.20±5.32
Kůlna	K0675	6a (cave interior)	Micoquian	71.42±5.20
Kůlna	K0676	7a (cave entrance)	Micoquian	71.09±4.00
Kůlna	K0677	7a (cave entrance)	Micoquian	63.36±3.83
Stránská Skála	K0087	3	Aurignacian	40.50±3.00
Stránská Skála	K0665	3	Aurignacian	42.60±2.59
Stránská Skála	K0666	4	Bohunician	40.59±3.83
Stránská Skála	K0667	4	Bohunician	45.69±3.61
Stránská Skála	K0088	4	Bohunician	64.00±5.90
Stránská Skála	K0089	5	Sterile	141.90±11.00
Bohunice	K0091	3	Aurignacian?	37.10±3.00
Bohunice	K0679	3	Aurignacian?	46.35±3.33
Bohunice	K0092	4	Bohunician	38.30±3.00
Bohunice	K0680	4	Bohunician	43.70±3.35 minimum
Bohunice	K0681	4	Bohunician	52.89±3.81
Vedrovice V	K0668	4	Sterile	45.09±2.49
Vedrovice V	K0669	5	Szeletian	60.28±3.42
Vedrovice V	K0670	5	Szeletian	102.10±6.97

*Based on lithic artefacts

for off-site tasks. This is independently confirmed from refitted cores that suggest many Levallois flakes were manufactured which are simply missing from the recovered assemblage (Petr Škrdla, personal communication, 2006). As a result, the proportion of broken flakes in the assemblage is inflated, not due to manufacturing activities or site use, but due to removal of certain artefacts from the site. Conversely, using the same logic, Kůlna has the lowest proportion of broken flakes at 19 per cent, thus fewer complete flakes may have been transported away from Kůlna because, (as previously suggested), the Neanderthals here undertook more tasks and activities at the site because they were less residentially mobile than the Stránská Skála hominins.

2.2.5. Flake size

Ebert (1979) argued that tools which are curated would have been smaller than those used at one location. Rather than comparing flake length, width, and thickness between the four sites, weight is used in Table 5 since it covaries with linear dimensions (Shott 1994, 80). Moreover, it is easier for comparative purposes to use a single variable such as weight rather than trying to compare several dimensional characteristics concurrently. The results show that retouched flakes at Kůlna and Vedrovice V are significantly heavier than at Stránská Skála. This finding is also consistent with the proposed model of mobility patterns; i.e., higher residential mobility at Stránská Skála and Bohunice than at Kůlna and Vedrovice V.

Table 4. Uncalibrated radiocarbon dates for the lithic assemblages mentioned in the text(Data compiled from Richter *et al.* 2009; Rink *et al.* 1996; Svoboda 2003; Svoboda *et al.* 2002; Valoch 1976, 1988, 1993, 2008 and author's data)

<i>Site</i>	<i>Sample No.</i>	<i>Date</i>	<i>Material dated</i>	<i>Industry/context</i>
Stránská Skála	GrN 16918	32,600±1700-1400	charcoal	Aurignacian
Stránská Skála	GrN 14829	32,350±900	charcoal	Aurignacian
Stránská Skála	GrN 12605	30,980±360	charcoal	Aurignacian
Stránská Skála	GrN 12606	41,300±3100	charcoal	Bohunician
Stránská Skála	GrN 12298	38,500±1400-1200	charcoal	Bohunician
Stránská Skála	AA 32058	38,300±1100	charcoal	Bohunician
Stránská Skála	GrN 12297	38,200±1100	charcoal	Bohunician
Stránská Skála	AA 32059	37,900±1100	charcoal	Bohunician
Stránská Skála	AA 32060	37,270±990	charcoal	Bohunician
Stránská Skála	AA 41474	37,240±890	charcoal	EUP
Stránská Skála	AA 41476	36,570±940	charcoal	Bohunician
Stránská Skála	AA 41478	36,350±990	charcoal	Bohunician
Stránská Skála	GrA 11808	35,320±320-300	charcoal	Bohunician
Stránská Skála	AA 32061	35,080±830	charcoal	Bohunician
Stránská Skála	AA 41480	34,680±820	charcoal	Bohunician
Stránská Skála	GrA 11504	34,530±830-740	charcoal	Bohunician
Stránská Skála	AA 41477	34,530±770	charcoal	Bohunician
Stránská Skála	AA 41475	34,440±720	charcoal	Bohunician
Bohunice	ANU 12024	32,740±530	charcoal	Bohunician
Bohunice	OxA-18302	34,770±240	charcoal	Bohunician
Bohunice	ANU 27214	35,025±730	charcoal	Bohunician
Bohunice	GrN 16920	36,000±1100	charcoal	Bohunician
Bohunice	OxA-18298	36,050±260	charcoal	Bohunician
Bohunice	OxA-18343	36,540±310	charcoal	Bohunician
Bohunice	OxA-18303	38,200±330	charcoal	Bohunician
Bohunice	OxA-18299	38,690±320	charcoal	Bohunician
Bohunice	OxA-18300	38,770±330	charcoal	Bohunician
Bohunice	OxA-18301	40,050±360	charcoal	Bohunician
Bohunice	Q 1044	40,173±1200	charcoal	Bohunician
Bohunice	OxA-14845	41,250±450	charcoal	Bohunician
Bohunice	OxA-14848	41,350±450	charcoal	Bohunician
Bohunice	GrN 6802	41,400±1400	charcoal	Bohunician
Bohunice	OxA-14847	42,750±550	charcoal	Bohunician
Bohunice	GrN 6165	42,900±1700	charcoal	Bohunician
Bohunice	OxA-14844	43,250±550	charcoal	Bohunician
Bohunice	OxA-14846	43,600±550	charcoal	Bohunician
Bohunice	Wk-17757	>40,000	charcoal	Bohunician
Vedrovice V	GrN 15513	35,150±650	charcoal	Szeletian
Vedrovice V	GrN 15514	37,600±800	charcoal	Szeletian
Vedrovice V	GrN 12374	37,650±550	charcoal	Szeletian
Vedrovice V	GrN 12375	39,500±1100	charcoal	Szeletian
Kůlna	GrN 6024	38,600±950-800	'extract'	Micoquian, Layer 7a ^a
Kůlna	GrN 6060	45,660±2850-2200	burnt bone	Micoquian, Layer 7a ^a
Kůlna	GrN 10347	44,000±12000-5000	charcoal	Micoquian, Layer 7a ^a

^a An ESR date obtained for layer 7a yielded a date of 50,000±5000

Table 5. The mean weight of lithics

<i>Assemblages</i>	<i>Mean weight</i>	<i>Std Dev</i>	<i>n</i>
Stránská Skála III	12.02	11.13	66
Bohunice	16.13	13.04	91
Vedrovice V	26.27	34.79	139
Kůlna 7a	36.21	40.92	207

2.3. DISCUSSION

To sum up, there are several lines of evidence which suggest that the hominins who manufactured the lithic assemblages at the four sites had widely different mobility patterns. The late Middle Palaeolithic assemblages at Kůlna have much higher proportions of retouched flakes than other sites, suggesting more recycling of the available material. Kůlna also has relatively high proportions of complete flakes, suggesting that fewer retouched flakes were transported away from the site. Vedrovice V is more akin to Kůlna in these characteristics than to Bohunice and Stránská Skála.

Combining these findings with the evidence for relatively little long-distance material transport at Kůlna and the relatively large size of retouched flakes at Kůlna and Vedrovice V, the emerging picture indicates that the Neanderthals at Kůlna and the hominins at Vedrovice V had a smaller home range than the AMH at the EUP sites of Bohunice and Stránská Skála. Furthermore, in general the Neanderthals had lower levels of residential mobility and performed more tasks at the site. The hominins at Stránská Skála and Bohunice, on the other hand, travelled much greater distances to obtain foreign raw material and generally had greater levels of residential mobility.

The period between 50,000 and 30,000 years ago experienced frequently alternating climates and was marked by a series of brief warm and cool oscillations (Hoffecker 2005). The climate started to deteriorate from about 44,000 years ago (Barron et al. 2003). This deterioration continued to the end of OIS 3, approximately 28,000 years ago (Davies and Gollop 2003).

A climate-driven model for Neanderthal extinction as presented in Finlayson (2004) links the differences in Neanderthal and AMH land-use adaptations with implications for their survival as a species. The Neanderthal morphology was suited for the rugged terrain and close-quarter hunting that the extant rich heterogeneous landscape demanded. The Neanderthals appeared not to have colonised steppe environments and they had smaller home ranges than AMH. The disadvantage of this type of landscape exploitation is the increased likelihood of population fragmentation and isolation with consequent genetic effects (Finlayson 2004). The AMH did colonise the steppes and consequently had larger home ranges. This is also

indicated by the greater exploitation of foreign stone material obtained from greater distances, compared to the Neanderthals. Although both hominins exploited the same range of food resources and had similar technological abilities, the Neanderthal response to prolonged climatic instability did not match the scale of these events. The AMH coped better with prolonged instability because they operated on larger scales (Finlayson 2004).

Although the Neanderthals had survived the glacial periods prior to OIS 3 in Europe, they contracted their range during each colder episode and then spread north after each cold event and, in this way, they were responding as most other species (Finlayson 2004). The extinction of Neanderthals during the Pleistocene would not have been a singular event (Finlayson 2003); Neanderthal populations in the various refugia became fragmented during the cold and arid events and were unable to recover from the last of these, the last Ice Age (OIS 3). Therefore, even though it was climate that caused the range contractions and population fragmentations, it is likely that the proximate causes of extinction of local Neanderthal populations varied, and would have included factors such as inbreeding, competition, habitat and resource fragmentation, and disease. The overarching cause of Neanderthal extinction, according to this model, was the high environmental instability during OIS 3, which depressed and fragmented the Neanderthal populations beyond recovery (Finlayson 2004). This view has a significant amount of theoretical and empirical support.

Both AMH and Neanderthals displayed a range of behavioural flexibility. However, it is unlikely that Neanderthals were cognitively inferior to anatomically modern humans (see Stinger and Gamble 1993), or that there was a sudden mutation conferring adaptive advantage among the anatomically modern humans (Finlayson 2004; Stewart 2005). Neanderthals were simply different; although their morphology and way of life was sufficient for hundreds of thousands of years, they simply could not cope with the speed and direction of change towards the end of OIS 3 (Finlayson 2004; Stewart 2005). Another strong argument for rejecting modern human involvement in Neanderthal extinction is their lengthy coexistence (possibly up to 10,000 years) in some regions of Europe (Stewart et al. 2003).

2.4. CONCLUSIONS

This author argues that in light of other Late Pleistocene extinctions, the Neanderthals are most similar to other ‘interglacial survivors’ in terms of their frequency and geographic distributions throughout OIS 3. This conclusion supports a case for the extinction of Neanderthals and several other mammal species as a consequence of increasingly cold temperatures. This model also reveals that there was a general decline in the environment’s carrying capacity, suggesting that it was

not simply cold temperatures that were to blame, but a series of ecological repercussions caused by the increasing cold. On this matter John Stewart's conclusion agrees with Clive Finlayson's view that a solely climate-driven extinction mechanism may be sufficient to explain the demise of Neanderthals so it is not necessary to invoke a role for anatomically modern humans

The findings of this research are fully consistent with the view developed by both Clive Finlayson and John Stewart that Neanderthals had different land-use, mobility, and resource exploitation behaviours compared to those of AMH, so competition between the two populations does not need to be advanced as an explanation for Neanderthal extinction. This view would also explain how both species could coexist in a relatively small area such as southern Moravia.

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Chapter 3 Taking on the Final Frontier: Movement, Mobility and Social Change in Early Prehistoric Ireland

Thomas Kador

ABSTRACT

In this paper I review some of the common ways of discussing movement in early prehistory. Following on from this, I suggest an alternative means of conceiving of movement, centring on the fact that, on one hand human movement represents an everyday, routine activity, but on the other it can also provide a force for social, economic, and political change. I contend that this paradox has not received sufficient attention in prehistoric research and call for a debate on the ways in which we approach prehistoric human movement and, by extension, the lives of prehistoric communities more generally. While my discussion draws in the first instance on my own research on early prehistoric Ireland and thus primarily focuses on this particular data set, many of the points discussed have equal relevance in broader geographic and chronological settings.

Keywords: Movement, mobility, Mesolithic, hunter-gatherers, Ireland

3.1. INTRODUCTION: MARKING OUT THE FRONTIER

“The Navajo journey is not, strictly speaking, a pilgrimage resulting in a transcendent experience; it is everyday existence ruled and protected by rites and precautions. [...] The Navajo returns from a journey - whether it occupies a day or a lifetime - with food and resources for the family” (Jackson 1994, 203).

Human movement occupies an interesting position in people’s lives. On the one hand it could be viewed as one of the most routine and everyday activities. But on the other hand, movement also stands at the centre of bringing about social change within and between human communities. Archaeologically movement and mobility are notoriously difficult to detect, as paths and tracks – the physical remains of pedestrian travel – tend to be too ephemeral to stand the test of time. However, given its importance to human lives, it is crucial that we carefully consider how we can most successfully approach past people’s movements archaeologically. This is particularly pertinent in relation to earlier prehistory in northwest Europe, which tends to be marked by poor preservation and thus a rather limited spectrum of material remains available for our interpretation.

Movement in prehistory has primarily been approached from two quite distinct directions. One approach often considers movement as a means to an end, a strategy of moving from one place to another, and thus primarily a vehicle of bringing resources to people (consumers) and people to resources. While such accounts frequently utilise the concept of mobility rather than people’s movements, it has been demonstrated that in reality they are nonetheless primarily concerned with ‘the act of moving’ (Close 2000, 50). Such functionally driven discussions of human movement are particularly strongly represented in hunter-gatherer studies, both in relation to prehistoric Europe and the Americas (e.g. Grove 2009; contributions in Fisher and Eriksen 2002). The second

approach to movement in prehistory commonly found in the literature concerns people’s physical engagements with the world around them. These accounts tend to assume a subjective position and aim to deconstruct the abstract, bird’s-eye gaze traditionally employed in archaeology. They emphasise proximal over ultimate causation (Cartwright 2001) and see human agency as equally driven by social, cultural, or ideological motivations as by economical ones. In practical terms this means such accounts view movement as both a means of expression and a way of getting to know the world by way of physical engagement in and with it. They are commonly found as approaches to space in relation to prehistoric monuments – especially in northwest Europe – such as tombs, enclosures, and linear features (e.g. Tilley 1993; 1994; 2004; Johnston 1999). In chronological terms it appears fair to conclude that the first set of approaches – focusing on a more utilitarian role of movement – tends to be more commonly applied to earlier, pre-Neolithic, prehistory. Conversely, the latter method – foregrounding the ideological aspects of movement – has come to dominate later prehistoric archaeology.

Both of these perspectives are problematic and the difficulties associated with them have been subject to considerable amounts of debate (e.g. Fleming 2005; Cummings and Whittle 2003; Brück 1998; 2005). Also the validity of importing some of the approaches taken to the later periods ‘back’ into research on the earlier ones has recently been questioned (e.g. Jordan 2003; 2006; Warren 2007). This practice has been particularly criticised for a failure to engage with the ‘specificity’ of the material evidence (Jordan 2003). In other words, while there appears to be a clear distinction between how scholars have approached movement in earlier and later prehistory respectively, we cannot simply take approaches modelled for one of these traditions and apply them to the other with a view of overcoming the differences. It seems that if the study of human movement in the past is our key objective, neither of these two sets of approaches provides entirely satisfactory

solutions. Consequently, we must aim to look for additional understandings of people's movements in early prehistory that allow us to bridge these dominant research traditions.

Accepting Peter Jordan's (2003) contention, we must take the specific nature of the available material evidence as a starting point, while also acknowledging that humans are complex and social beings and that it is very difficult to distinguish between which of their decisions are primarily driven by economic and functional considerations, and which by social or ideological ones. Below I aim to outline some possible strategies for moving beyond the currently available options of discussing movement in prehistory, which I illustrate with examples from my own research and other recent archaeological work on early prehistoric Ireland.

3.2. BREAKING DOWN BARRIERS

The frontier of mobility and sedentism that had long existed between discussions of Mesolithic and Neolithic communities has to some extent been broken down, as perhaps best represented by discussions of 'complex hunter-gatherer' communities on one hand (Price and Brown 1985) and a mobile Neolithic lifestyle on the other (e.g. Whittle 1996; 1997; Thomas 1999). However, as I have mentioned above, by and large there remains a relatively clearly defined boundary between how Mesolithic and Neolithic specialists approach human movement. Mesolithic models of mobility have largely been informed from two directions: that of hunter-gatherer anthropology and that of material culture studies. I will briefly deal with these two in turn.

3.3. THE ANTHROPOLOGICAL DIMENSION

Well over a quarter of a century has passed since Binford (1980) outlined the key mobility strategies associated with some of the best studied hunter-gatherer populations and in particular made the distinction between foragers and collectors. The resulting model was subsequently refined and amended (Kelly 1983; 1992; 1995; Bettinger and Baumhoff 1982). Despite the eager embrace of Binford's forager/collector model—not only by North American hunter-gatherer archaeologists, but also by the European Mesolithic research community (Eriksen and Fisher 2002; Lovis *et al.* 2006)—applying the model to specific archaeological datasets has proved rather problematic (see below).

While space does not permit an in-depth review of Binford's models in modern hunter-gatherer research, there clearly is a need for some renewed critical consideration of the impact of his work. Firstly, from the 1960s onwards Binford's '*New Archaeology*' revolutionised prehistoric research and his models successfully challenged the then dominant culture historical paradigm (Trigger 1989). But at the same time we must now place Binford's contribution in its own

historical and socio-political context of 1960s and 1970s North America, dominated by the Vietnam War, the Cold War more generally, and the civil rights movement (e.g. Pauketat and Di Paolo Loren 2005, 11). Clearly the project of the New Archaeology cannot be seen in isolation from these developments. Secondly, Binford himself cautioned against generalisation of his model. He clearly expressed that his categories of foragers and collectors and the associated:

'logistical and residential variability are not to be viewed as opposing principles [...] but as organisational alternatives which may be employed in varying mixes in different settings' (Binford 1980, 18).

However, over three decades later, it seems Binford's categories are almost invariably employed along dichotomous lines (Binford 2002; Eriksen and Fischer 2002) or as opposing ends of a continuum (Donahue and Lovis 2006). In fact, it would be difficult to conceive of a way of employing the model to a specific archaeological case study without creating dichotomies.

3.4. MATERIAL CULTURE STUDIES

While ethnographic observations have long held considerable importance in the study of early prehistoric communities, in some cases the distribution and use of certain object types has played an equally important role. This is particularly the case in relation to models of a seasonal round between different types of environments (Clark 1972; Mellars 1976). Recent research has questioned the premise upon which many of these models have been based (Conneller 2005; Spikins 1999; 2000). This includes the reliability of modern migratory patterns of red deer, which have been employed as indicator of the movements of deer in prehistory (Finlay 2000a), the assumption that red deer provided the main food resource (Spikins 1999, 32–33; Finlay 2000a, b), problems with taphonomy in interpreting artefact distribution (Spikins 1999), and criticisms of an androcentric view of the use of microliths primarily as projectiles (Finlay 2000b; 2003). The preoccupation of Mesolithic researchers with seeking to explain the distribution of lithic artefacts has resulted in much standardised narratives of mobility which tend to overlook the actual movements that people engaged in. As Finlay (2004) has observed, we: '*measure movement not by considering the processes involved: the following of tracks and trails, the paths and routeways, but like the wind, by its effects on other things*' (Finlay 2004, 3).

It would seem obvious that the distribution of artefacts across the landscape should stand in some relationship to the movements of the people who made, used, and transported these objects. The challenge, however, is to identify and further define this relationship with a view of inferring past people's movements. While ethnographic observations may offer vital insights into the relationships between human activities and material

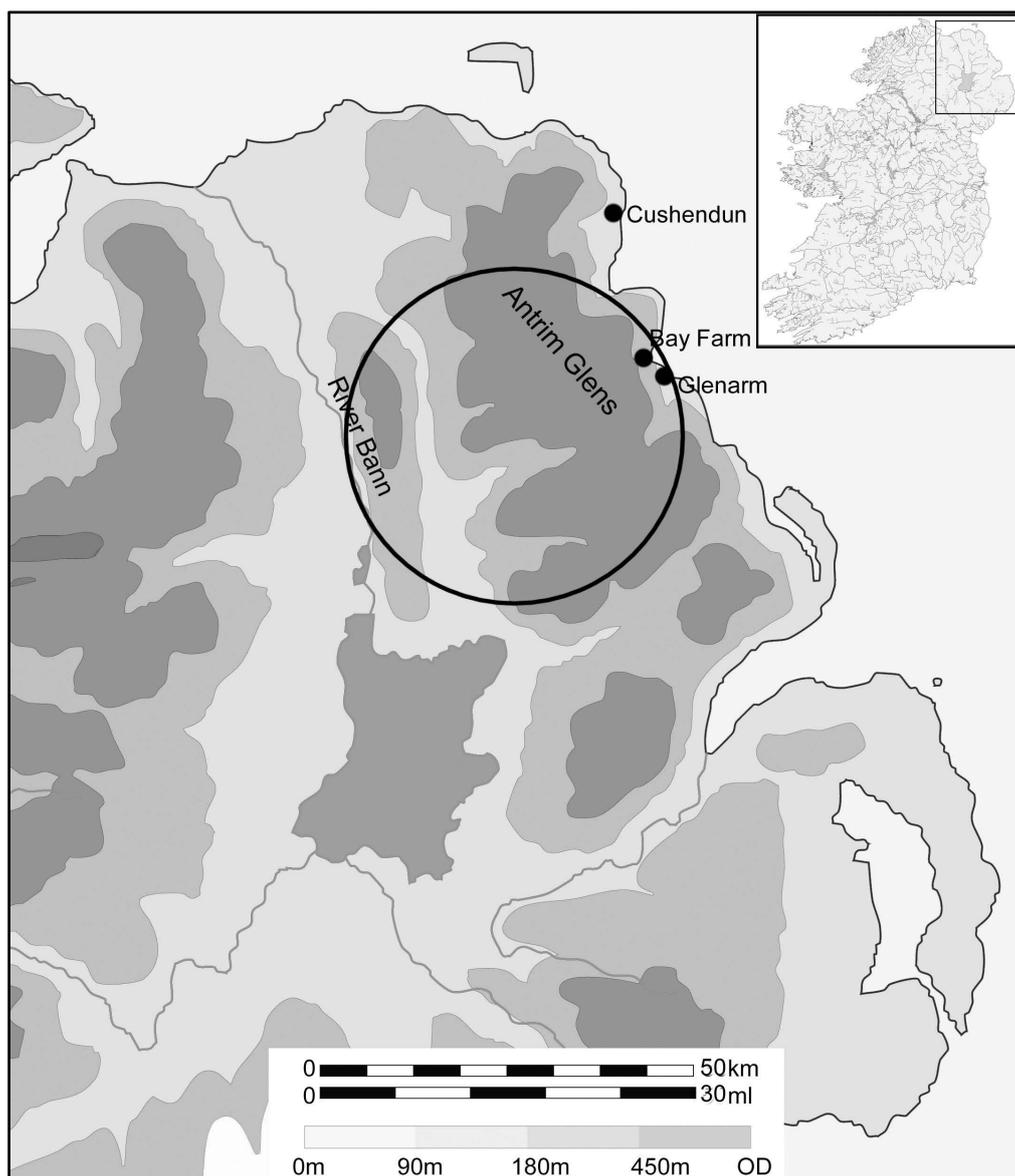


Figure 2. An inferred annual territory based on the movements of flint between the east Antrim coast and the Bann Valley, Northern Ireland

culture, studies of modern hunter-gatherer communities, whether in Eurasia, Africa, or the Americas, cannot provide us with simple explanations or analogies for prehistoric movement patterns. Instead what we should learn to appreciate from hunter-gather ethnography is the substantial amount of diversity among such communities – including the ways in which they organise their daily, seasonal, and annual movements (Binford 2002; 118 – 129; Kelly 1995, 112-115) – even within similar latitudes and environmental settings (cf. Kador 2007b). Jochim (1991) advises that archaeologists should not expect to follow ethnographies in reconstructing the ‘seasonal round’. It may not exist’ (Jochim 1991, 315; see also Conneller 2005, 45 – 46). Neither should we shoehorn the movements of early prehistoric communities of northwest Europe into dichotomous categories of residential and logistic mobility. Instead it would appear much more promising, challenging, and relevant to try

and interpret the apparent diversity of movement patterns among early prehistoric communities of northwest Europe based on the evidence they left behind. Although we cannot use them as templates, ethnographic studies will certainly continue to provide important insights and aid our interpretations as part of this work.

3.5. NEW MEANS OF DISCUSSING MOVEMENT

Looking at movement from a primarily functional and economic perspective can offer us many interesting and important insights about past human behaviour. Equally, approaching movement entirely from an interpretative and ideological point of view can help form a better understanding of how past people interacted with the physical and metaphysical world around them. However,

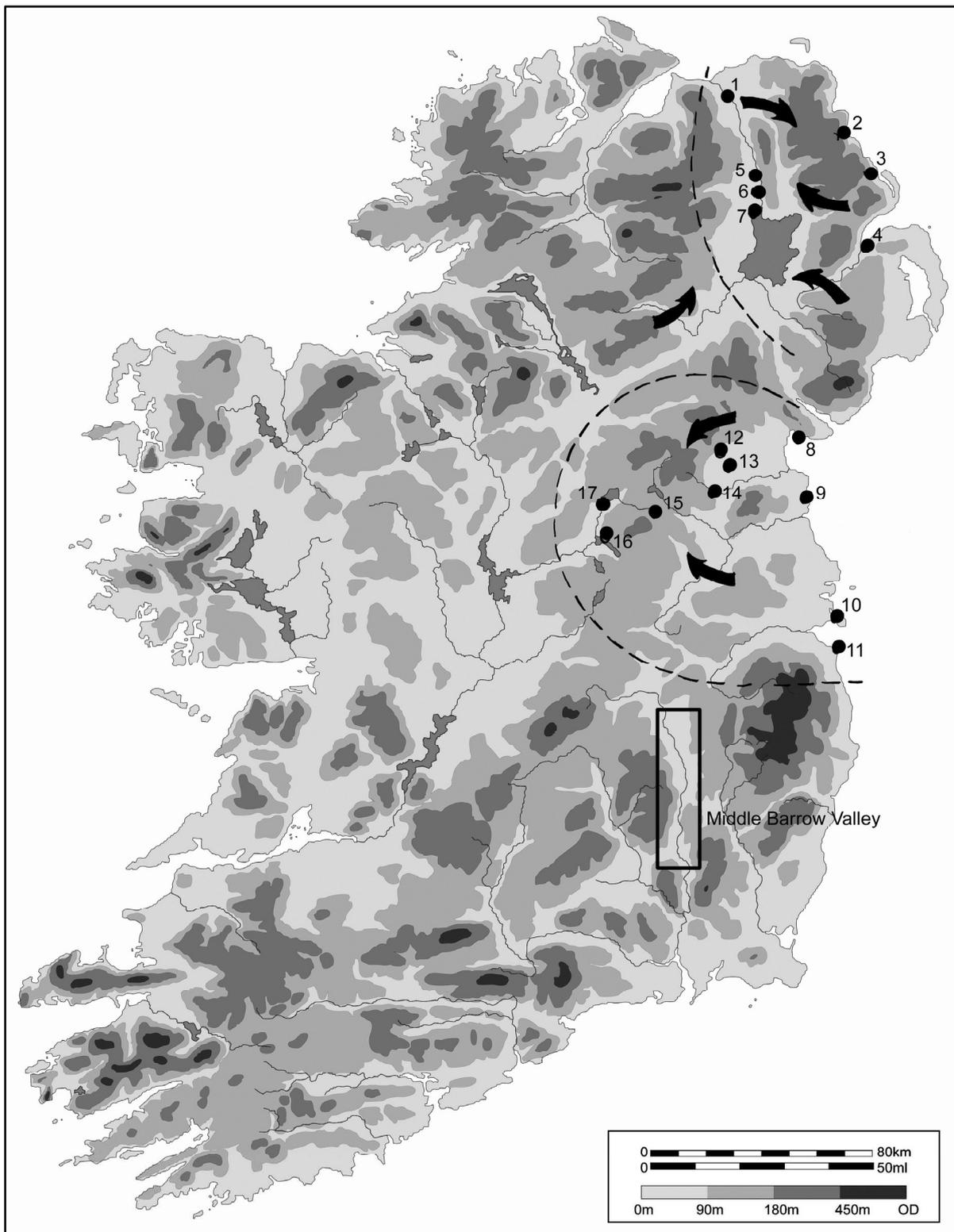


Figure 3. ‘Hypothetical annual territories’ in Northeast and Eastern Ireland and location of Barrow Valley

Antrim coastal sites (2–4): 2 Bay Farm; 3 Curran Point, Larne; 4 Glendhu. Bann Valley sites (1; 5–7): 1 Mount Sandel; 5 Culbane/Portglenone; 6 Newferry; 7 Toomebridge. North Leinster sites (8 –11): 8 Rockmarshall; 9 Clogherhead; 10 Sutton; 11 Dalkey Island. Irish midland sites (12–17): 12 Lough Rahans; 13 Ballyhoe Lough; 14 Moynagh Lough; 15 Whitewood Lake; 16 Lough Derravarragh; 17 Lough Kinale (based on Woodman *et al.* 1999).

neither of these perspectives can on their own entirely grasp the intricacy and significance of movement in our lives. For a more holistic understanding of the motivations and experiences of being on the move, additional perspectives are required.

In order to devise alternative strategies for approaching movement archaeologically we must start by looking for new ways of thinking about movement more generally. To do this I outline two seemingly opposing sets of consideration. The first of these deals with human movement as a quotidian activity that is generally carried out unthinkingly and unconsciously. This often results in an unintentional reproduction of existing ‘structures’ (Giddens 1979, 216–230; Bourdieu 1977, 218), as such routines serve to keep the world as we know it in existence (Whittle 2003, 23). An extension of this view could be described as a ‘dwelling perspective’ (Ingold 1993; 1996; Heidegger 1962; Merleau-Ponty 1962) ‘which brings in a sense of people engaged in dealing with the world, attending to what needs to be done in their *taskscape*’ (Whittle 2003, 23; see also Ingold 1993). In other words, while people engage with the world and do what is needed, some of their activities are carried out tacitly while others are not. Consequently, they may pay active attention to the completion of a wider project while engaging in actions carried out almost entirely unthinkingly; the holding of a knife while consciously sharpening a stick; the breathing, flexing, and relaxing of the appropriate muscles while taking aim and releasing an arrow from a bow; or placing one foot in front of the other while following a path.

“[I]t is only after quite a few steps, when the feet have found their rhythm and the body its momentum, that we discover – without having been aware of any moment of commencement – that we are already walking” (Ingold and Vergunst 2008, 3).

In summary, routines can – and almost invariably do – occupy both the conscious and unconscious domain and human (pedestrian) movement is no exception.

The second view of movement that I present here appears to stand in some conflict to the first. It considers human pedestrian mobility as a powerful catalyst for change. Because everyday tasks such as movement are essential to preserve the *status quo*, even minor modification to such routines could potentially lead to radical changes, as they upset the balance that we usually maintain through our daily actions. With specific reference to movement we can observe that it can bring people to new places that they have never visited, and thus allow them to acquire new perspectives that may transform their worldview. Moreover, movement also brings people together and creates the space for them to exchange knowledge and ideas. This applies both to people from different geographical regions and members of different generations (Legat 2008, 37–40). People coming together and pooling their resources in this way will invariably lead to fresh notions about ways of doing things and thus

bring about change. But the significance of human movement in relation to social change does not end there. It is no coincidence that collectives of people, coming together for a special purpose, are associated with the word ‘movement’, as in political or social movement. In addition, walking itself – taking to the streets – is oftentimes a powerful way of expressing one’s aims.

“[W]alking is a bodily demonstration of political or cultural conviction and one of the most universally available forms of public expression’ [...] ‘When bodily movement becomes a form of speech, then the distinction between words and deeds, between representations and actions, begin to blur, and so marches can themselves be liminal, another form of walking into the realm of representational and symbolic – and sometimes, into history” (Solnit 2001, 217).

While these two perspectives of movement might seem conflicting, they actually tend to complement each other well. In fact, the more habitually and unconsciously an activity is carried out the more powerful a direct challenge or subversion can become. Therefore, this paradoxical perspective of human movement – as both routine and catalyst for change – provides an exciting departure from the commonly employed matter of fact approach to prehistoric mobility, which considers the practice primarily as a means to an end. It forces us to examine the act of moving itself – represented through both a physical and emotional expression – as opposed to utilising people’s movements as index for other archaeologically or economic phenomena. But this perspective also contrasts from the post-processual view of movement as a pilgrimage or ideological journey, as it centres on viewing movement as part of the same set of everyday processes that lead to the production, use, and deposition of artefacts or the gathering of foodstuff.

3.6. MAKING INROADS

This additional dimension to understanding movement opens up the possibility of reappraising the data sets of artefact distribution that have traditionally been interpreted as evidence for a ‘seasonal round’ (e.g. Mellars 1976; Woodman 1978; Woodman et al. 1999) or representing either end of a residential/logistic continuum (Rowley-Conwy 1995; Donahue and Lovis 2006). To illustrate this, I review some aspects of the material evidence from Mesolithic Ireland. Here the strongest case for an assumed seasonal round has been made in relation to northeast Ireland, where Woodman has observed the presence of large amounts of high-quality flint objects primarily of the latter stages of reduction in the Bann Valley (Woodman 1978; Woodman and Anderson 1990) while cores, primary flakes and evidence for artefact production appear to be under-represented. Moreover, this area lacks a natural source of flint. However, some 40km due east along the east Antrim coast, where large flint nodules can be found in abundance, the earlier stages

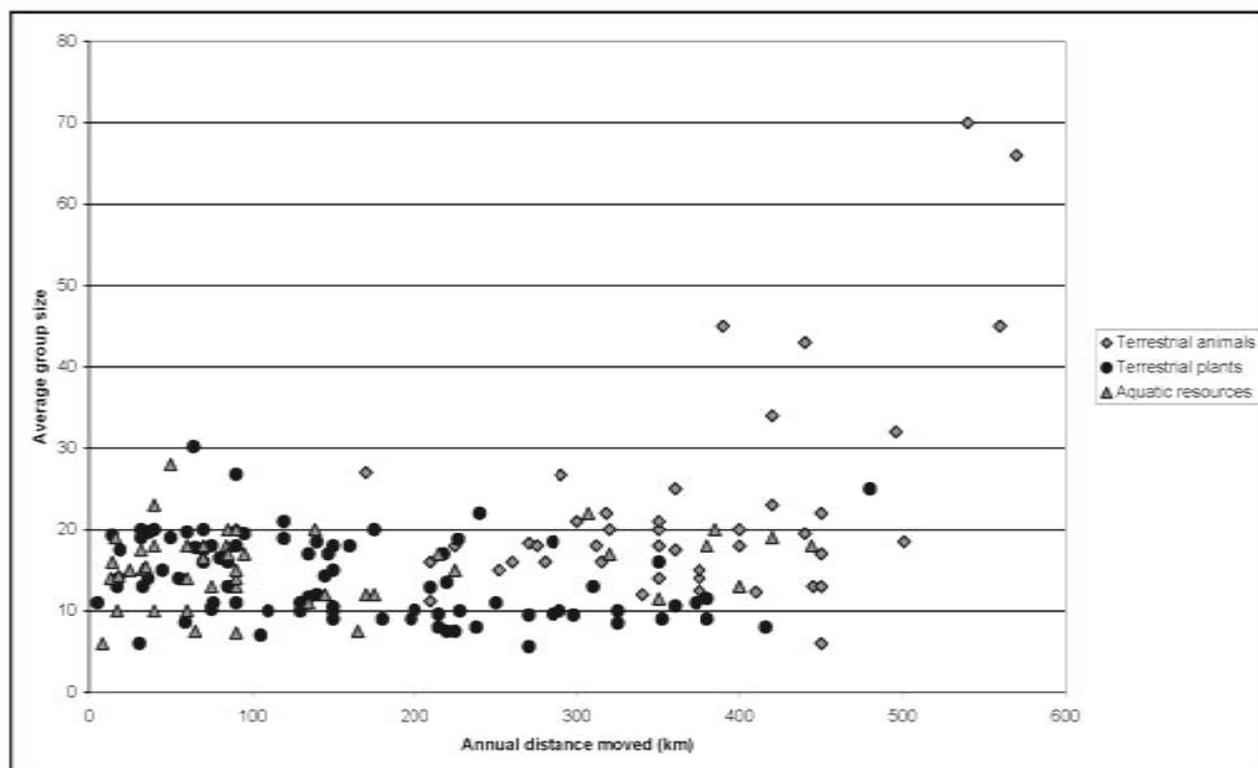


Figure 4. Comparison of annual distance moved and primary subsistence base among hunter gatherer populations

Table 6. Radiocarbon and $\delta^{13}C$ measurements of Later Mesolithic human remains from Ireland (data from Woodman *et al.* 1999), Calibrated using OxCal 4.0 and IntCal 04 (Reimer *et al.*, 2004; Bronk Ramsey, 2001, 1995)

Location	Sample No.	Sample type	Date (BP)	Date cal. BC (95.4% 2 σ)	$\delta^{13}C$ value
Ferriter's Cove	OxA-4918	Human femur	5545±65BP	4523 – 4263 cal BC	-14‰
	OxA-5570	Human tooth	5590±60BP	4541 – 4338 cal BC	-14.1‰
Killuragh Cave	OxA-6749	Human mandible	5455±50BP	4447 – 4174 cal BC	-21.96‰
	OxA-6752	Human tooth	5725±35BP	4686 – 4488 cal BC	-21.3‰
Rockmarshall	OxA-4604	Human femur	5705±75BP	4716 – 4368 cal BC	-18.1‰
Sramore Cave	UB-15772	Human mandible	5227±36BP	4227 – 4203 cal BC	-20.4‰
Stoney Island	UB-15765	Human scapula	6168±31BP	5215 – 5027 cal BC	-21.4‰

of artefact production are well represented, as can be seen at sites such as Bay Farm (Woodman and Johnson 1996), Glenarm (Movius 1942), and Cushendun (Movius 1942). Given this distribution (Figure 2) and an assumption that both the coast and the hinterland would have played significant resource bases at different times of the year (e.g. Woodman 1978), this distribution has traditionally been interpreted as reflecting a seasonal round between the coastal areas and the hinterland (Woodman and Johnston 1991; Griffith and Woodman 1987; Woodman and Anderson 1990).

In the light of my discussion above, concerning other ways of conceiving of movement, we could put forward an alternative interpretation that centres on the importance of people's movements between these regions not only for economic reasons, i.e. concerned with raw

material procurement and food provision, but also for social purposes. Based on the material evidence from Mesolithic county Antrim it would seem easy to justify a seasonal round between the coastal areas and the Bann Valley in the hinterland. If we assume that both the shore locations on the east Antrim coast and the sites along the River Bann belong to the same annual movement cycle it would result in a seasonal round of more than 120km and a territory of over 1200km². One immediate weakness of such a view is the fact that in this case the locations identified lie at the extreme ends of these seasonal movements – i.e. the extreme east and west of the territory respectively. The area in between, (Figure 3) represented by the Antrim uplands, displays surprisingly little evidence for later Mesolithic activity (Woodman *et al.* 2006, 305). Yet even if we ignore this shortcoming

there are further, more important difficulties with viewing later Mesolithic artefact distribution in northeast Ireland as evidence for a seasonal round. Flint, though by far the most dominant lithic raw material in this region, is not the only one. In particular, several locations in the Bann Valley have produced large flakes of chert and significant numbers of baked mudstone axes (Woodman et al. 1999; Woodman and Johnston 1991; Woodman and Anderson 1999). Both types of materials can most probably be traced to a source in the northern midlands located between 80km and 120km due south of the Bann Valley (Woodman and Johnston 1991, 136; Kador 2007b, 36). By contrast, large flint artefacts possibly originating from east Antrim or elsewhere along Ireland's northeast coast have been found at later Mesolithic sites in the northern midlands (Woodman et al. 1999, 142). Thus, if we assume that these movements between the Bann and the midlands were also part of the same annual round it would increase the size of the annual territory dramatically. This area would now cover the entire north-eastern third of the island of Ireland (Figure 3). If the literature on modern hunter-gatherer movement can be used as a guide – while accounting for the huge degree of variation within this literature – we can see that annual movements of more than 150km are quite rare among hunter-gatherers of temperate coastal areas such as those of the north Pacific coastal regions of America and Asia, which have been most commonly employed as analogies for early prehistoric communities in northwest Europe (Binford 2002, 272–274; Kelly 1995, 112–115).

Moreover, communities primarily dependant on aquatic resources – as is generally assumed for Irish Mesolithic populations (Figure 4) – tend to move lesser distances than those living primarily of terrestrial resources (Binford 2002, 275). Therefore an annual round of residential moves exceeding 200km, as would be required to cover such a large territory, would seem rather unusual on a reasonably small island with temperate climate such as Ireland. Alternatively, utilising the forager–collector model we might be inclined to argue that these movements between the Bann Valley and the northern midlands in particular must represent specialist or logistical procurement trips to acquire particular raw material resources. The problem with this conclusion is that it does not square within the generally economist framework of the model. Even the best quality chert from the northern midlands does not rival the large, high-quality flint nodules found in great abundance along the Antrim coast, less than half as far from the Bann valley than the midlands. Therefore, it would be difficult to see a strictly functional or economic motivation behind such journeys. Suggestions for the movement of raw material for non-functional motivations have also been observed elsewhere in Mesolithic Europe, such as those made in relation to the movement of Jurassic chert in Southwest Germany (Kind 2006, 218). Besides, in the light of the quantities of cherts and mudstones of midland origin having been found in the flint rich northeast and vice versa, it would seem more suggestive of the existence of social networks that facilitated the movement of these materials.

This impression becomes even stronger if we consider other parts of Ireland where we can also observe the movement of artefacts made of raw materials that originated from considerable distances. For example, in the Barrow Valley in south-eastern Ireland, a small but regularly occurring proportion of the later Mesolithic assemblage appears to have been made from flint derived from sources in north-eastern Ireland, at least 150km away (Zvelebil et al. 1996; Kador 2007a and b). Equally, some objects made of other raw materials, also of a northern origin, such as a diagnostic later Mesolithic banded rhyolite flake from Clogheen, Co. Kildare, have been encountered in the area (Kador 2007a, 37 – 38; Rynne 1983–84). While in these cases one could argue about the technological superiority of the flints over the locally available carboniferous chert and drift pebble flint, it would seem that it is more the objects' size and strikingly different appearance that marks them out as special (Plate 1). Analysis of the find locations of the large flint and rhyolite objects within the Barrow Valley has led to suggestions that both the artefacts themselves and their find locations at prominent points along one of Ireland's most significant river – and potentially communication – systems may have served to reference people's social contacts with other regions and communities. They may indeed provide evidence for wider social networks that extended even to relatively distant areas such as the northeast, where the raw material originated (Kador 2007b, 2009). Thus, the movement of these objects appears more likely to reflect the importance of movement as a means of forging and maintaining social ties and for staying in touch, rather than being an economically driven procurement practice. In other words, it would seem just as plausible that the presence of flints, cherts, and other materials in large distances from their source reflects the coming together of members of different communities at prominent locations along important routeways such as the River Barrow in the southeast or the Bann Valley in the North.

A further piece of evidence casting doubt on the existence of a seasonal round incorporating the coast and inland areas in later Mesolithic Ireland comes from the stable isotope record. Given the small quantity of human remains that have been dated to the period, this represents a somewhat limited dataset. Yet stable carbon isotope readings ($\Delta^{13}\text{C}$) are at least suggestive that annual movements, if practised at all, took a variety of forms in different parts of Ireland. People in extreme coastal areas, as represented by Ferriter's Cove, Co. Kerry, may have fed on a strongly marine-based diet, showing little evidence for moving inland – although at Rockmarshall, Co. Louth, on the east coast, the diet appears somewhat more mixed – while people in inland areas, as at Killuragh, Co. Limerick, had a primarily terrestrial diet (Woodman et al. 1999; Woodman 2004). Recent analyses of the remains of two further Irish Mesolithic individuals broadly confirm this trend. Both are from



Plate 1. Lithic artefacts found at later Mesolithic find locations in the middle Barrow Valley.

Left: carboniferous chert objects, most probably of local sources. Top right: flint objects, possibly made from local drift and riverine pebbles. Bottom right: large diagnostic later Mesolithic blade most likely of North-eastern coastal flint

inland locations and show a strongly terrestrial diet (see Table 6; Kador 2010 and Kador et al. forthcoming). Clearly these are broad generalisations from only a handful of individuals. However, they appear to indicate that most of the individuals concerned did not have the mixed diet that we might expect if people in later Mesolithic Ireland engaged in regular coastal/inland seasonal movements. As Woodman (2004) put it, ‘it would be tempting to continue with the assumption that all Mesolithic communities [in Ireland] used the sea but this assumption is no longer tenable’ (Woodman 2004, 51). Equally a case could be made for the reverse, as there may have been groups that exclusively utilised marine environments. Apart from possible regional differences, what we should also not forget in relation to these findings is the possibility of differences in diet according to gender, age, and along other now-invisible social lines, which would be very difficult to infer from such a limited dataset. If we were to assume that this limited skeletal record presents a representative sample of the spectrum of diets within later Mesolithic Ireland, it would be possible to suggest, in conjunction with the lithic artefact evidence that people’s lifetime movements occurred within several concentric spheres. Their day-to-day movements may well have been of a rather limited nature, staying largely within similar environments – be they coastal, inland, or intermittent – while more occasional movements may

have taken place over greater distances that brought people from different areas together. These movements are reflected in the movements of raw materials for large distances up, down, and across the island. However, it is not currently possible to demonstrate whether these movements involved large segments of any given community or only a select number of individuals.

3.7. CONCLUSION: FINDING NEW DIRECTIONS

In the above discussion I have attempted to highlight an alternative way of thinking about the people’s movements to the standard approaches to hunter-gatherer mobility in early northwest European prehistory. As my research has primarily focussed on the evidence from early prehistoric Ireland it is in this setting that this approach can be most readily applied. At the same time, I hope that people interested in other parts of Europe, or indeed further afield, will equally be able to find use for some of the ideas outlined.

In conclusion, I suggest that there are a number of simple steps that researchers working on Europe’s early prehistoric communities can take with a view of broadening our understanding of people’s daily lives. One is to critically examine why it is that we keep

referring to 'mobility' if what we really want to discuss is movement. Mobility has an air of the abstract and intangible. If instead we use the term movement in our discussions more readily it would force us to engage more directly with people's physical actions and interactions. Using the human body as analogy (see Tilley 2004), while acknowledging that this brings with it its own set of problems (Brück 1998; 2005), would help us to move away from abstracting movement as lines and arrows connecting points on maps that mark prehistoric find locations. Instead, we would have to start interrogating by what means did people, carrying the objects in question, move between these points, who took part in these movements, and what significance they held in people's lives. In short, this would initiate archaeology of critical and physical engagement with people's daily actions and interactions.

Part of this will also necessitate a revising of some of the longstanding concepts that have come to dominate the archaeological discourse. If we truly are committed to challenge the frontiers of our current perceptions and ruling ideas then we must be prepared to look beyond the here and now. We must critically examine concepts and models that we all take for granted and ask what and how can they contribute to improve our understandings of past people's lives. Clearly many of these approaches still hold value to current archaeological practice. But rather than uncritically accepting them as read we must evaluate what it is that makes them important and how we can build on them to enhance our understandings of past people's daily lives and ensure the relevance of our accounts to the present.

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Chapter 4 Bones, Stones or Ethnography? Challenging the Mesolithic Mobility Models for Northern England

Paul R. Preston

ABSTRACT

This paper evaluates current approaches and offers a critique of the models employed to explain Mesolithic mobility patterns. In particular, it highlights the over-reliance on ethnographic analogies and biological data at the expense of lithic evidence. This paper therefore attempts to redress this by providing a narrative which intimately links Mesolithic mobility and the lithic *chaînes opératoires* based on new evidence from sites in the Central Pennines of Northern England. Specifically it shows that the lithics raw found on these sites have been exclusively procured and imported from a hinterland covering Northern England. This hinterland compares well with population density reconstructions, and contains similar microlithic styles throughout the area for both the Early and Late Mesolithic. Consequently, this hinterland is suggested to reflect a socio-ethnic/linguistic territory and/or that it implies that mobility was throughout Northern England, with the Pennines being a key node of an increasingly logistical resource and mobility networks. This therefore challenges traditional East-West mobility models as well as the suggestions of smaller separate interior and coastal social territories that have been based on ethnographic analogies and biological data.

Keywords: Mesolithic, lithics, *chaînes opératoires*, faunal remains, raw materials, mobility models, England

4.1. INTRODUCTION

This aim of this paper is threefold: to evaluate the models employed to explain mobility patterns in the British Mesolithic, to highlight the neglect of lithic evidence in the construction of these models, and to construct a new mobility model, using lithic data. Mesolithic archaeology is dominated by the lithic assemblages. However, despite the rarity of faunal evidence, many mobility models (e.g. Clark 1972; Legge and Rowley-Conwy 1988) have tended to be almost exclusively based on faunal evidence from only a few sites with favourable conditions of organic preservation, i.e. Star Carr. As a result, the bulk of the data is neglected and difficult to reconcile to the primary models (Evans et al. 2010; Myers 1989b; Preston 2011).

The failure to combine lithic data into Mesolithic mobility models reflects a poverty of understanding of technology as a problem-solving behaviour and of the *chaînes opératoires* that technologies represent. Despite this pretermit, lithic technology has gradually come to play a more central role in interpretations of past hunter-gatherer lifeways (e.g. Binford and Quimby 1972; Torrence 1983, 1989; Zvelebil 1984; Myers 1989a, 1989b). Recently, the author (Preston 2011) demonstrated the potential for lithic analysis in developing and testing Mesolithic mobility models. This paper therefore seeks to outline some of this research that bridges the gap between lithic and landscape perspectives. The paper begins with an assessment of the models that have been traditionally invoked to describe Mesolithic mobility. Following this, lithic evidence from the Central Pennines of Northwest England (Figure 5) is then marshalled to challenge these models leading to the proposal of a new model of Mesolithic mobility.

4.2. MESOLITHIC MOBILITY MODELS

Mobility has been a recurring theme in interpretations of the British Mesolithic, and has been greatly influenced by ethnographic accounts of traditional life-ways. Subsequently, these have pervaded the archaeological consciousness, forming a major component of models, whilst at the same remaining largely unquestioned (Spikins 2000a). As a consequence, together with additional lines of evidence such as biological material, archaeologists have tended to interpret Mesolithic mobility through one of three mobility controlling models (sensu Clarke 1968). These are described and evaluated below.

4.2.1. Clarkian Models

The first mobility model (Figure 6A) was proposed by Graham Clark (1954, 1972) who based his model on three elements: the ethnographic observations of the Wik Monkan by Thomson (1949); a seasonality study on red deer material from Star Carr by Fraser and King (1954); and Clark's assumption of red deer aggregations and dispersals. Clark posited that in the British Mesolithic, highly mobile foragers undertook a predictable 'round' or schedule of activities geared towards the exploitation of seasonal resources. They seasonally occupied different sites with different functions, for varying amounts of time, and with a concomitant variation in band size. This was argued to have taken the form of transhumance between summer upland residential base camps, with smaller satellite inland/upland logistical camps to carry out special tasks (such as hunting sorties and lithic raw material procurement), and larger and long-term 'sheltered' lowland winter residential/base camps on or near to the East coast like Star Carr (Clark 1954, 1972).

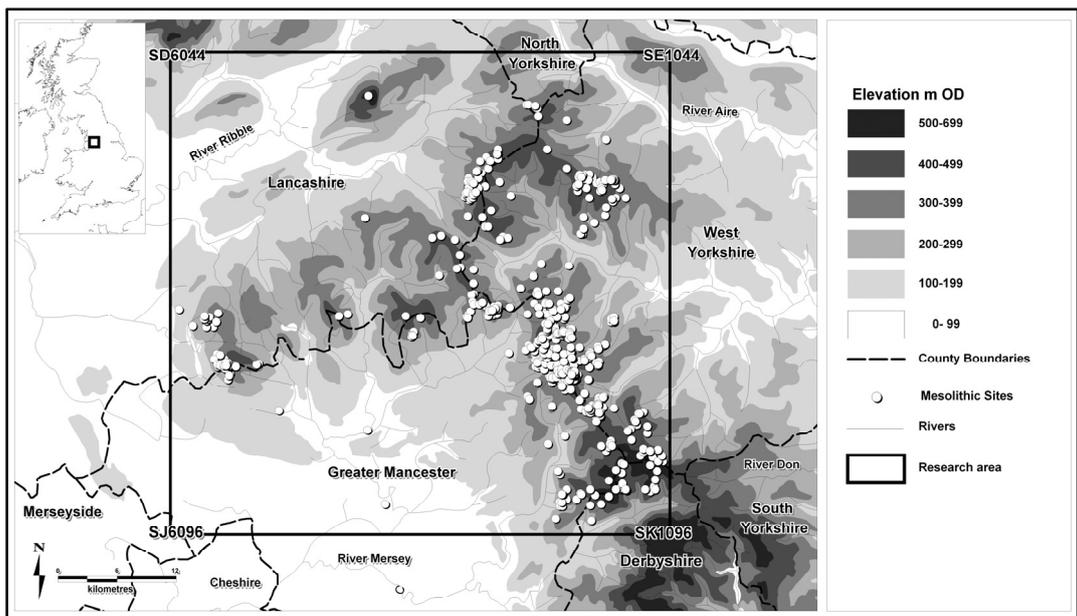


Figure 5. The Central Pennines and Mesolithic sites

The situation of the Central Pennines is illustrated in relation to the county boundaries. In addition, all 802 Mesolithic sites recorded by Preston (2011) are shown. The black square depicts the research area and it has the Ordnance Survey grid references shown at each corner. (After Preston 2011, Fig. 1.2)

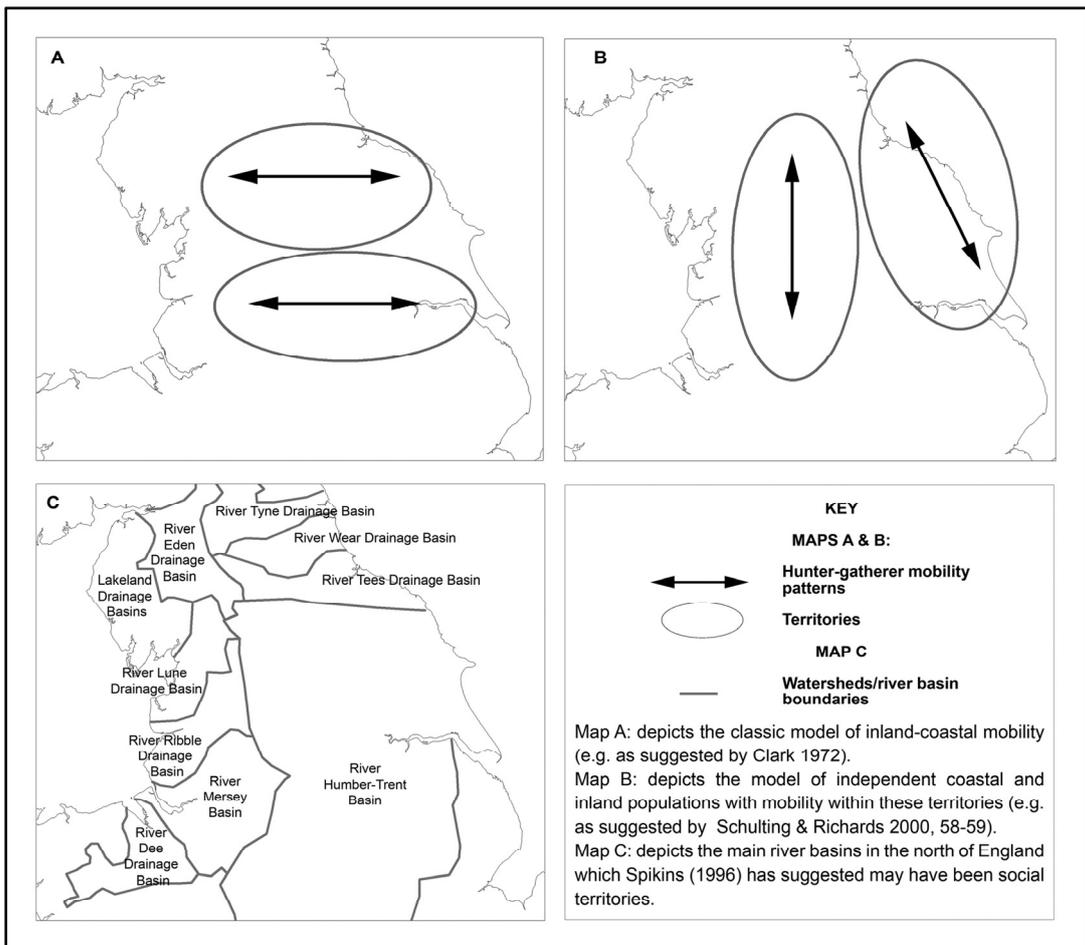


Figure 6. Mesolithic mobility models

(Figures 6A & 6B are based on Preston 2011 Fig 10.3; Evans et al. 2010, Fig. 1; and on information from: Clark 1971; Schulting & Richards 2000, 58-9; Figure 7C is based Preston 2011, Figs. 7.19 & 10.3; and on information from Spikins 1996)

The clear implication is that the Clarkian model has been taken (e.g. by Donahue and Lovis 2003, 2006a, b; Jacobi 1978; Legge and Rowley-Conwy 1988; Mellars 1976; Pitts 1979) to mean that Mesolithic people practised residential mobility (sensu Binford 1980) between different seasonal components of a larger settlement system. Thus, residential sites are expected to be present in both the lowlands and in the uplands, and that each will be associated with a suite of logistical sites at a sub-regional level (Donahue and Lovis 2003, 310).

4.2.2. *Social Territories Models*

The second group of models state that there were different contemporary groups with different social territories. For example, on the basis of stable isotope analyses of human and animal bones from a number of sites, including Star Carr by Rick Schulting and Mike Richards (Richards and Schulting 2000; Schulting and Richards 2000, 2002a,b, 2009), and Juliet Clutton-Brock and Nanna Noe-Nygaard (1990), which has been interpreted to indicate the presence of a coastal population that had a strong marine influence in their diets, and another inland population that predominantly had a terrestrial (plant and animal) diet. This has been taken by Schulting and Richards (ibid.) to mean that there was both a coastal-based and an inland population with separate territories (Figure 6B). This therefore negates the possibility of transhumance from the coast to the Pennines, as implied by the Clarkian model.

Similarly, Penny Spikins (1996) posits that each river basin represents a separate social territory of a band of about 350 people which forms part of a larger group defined by stylistic or linguistic traits (i.e. effectively Figure 6C). This model is based on a consideration of topographic features that determine mobility such as rivers, seasonality of resource availability, and 'dummy' population density estimates of 0.02 people per km² for the Early Mesolithic and 0.1 people per km² for the Late Mesolithic. It assumes that the population is tied to rivers as a means of transport (by foot or water). Within these territories several mobility strategies are perceived to have occurred simultaneously, but since only two resource locations are modelled, some sort of transhumance is implied (though not stated) between the coastal/winter/aggregation sites and upland summer dispersal sites within each territory.

4.2.3. *Binfordian Models*

The third group of models derive from the seminal paper by Lewis Binford (1980), which classified the variability of hunter-gatherer settlement systems into a continuum between foragers and collectors, who practised varying levels of residential or logistical mobility on the basis of ethnographic and ethno-archaeological observations. Residential mobility describes the movements of the entire band or group from one camp to another. Logistical mobility describes the movements of individuals or small task-specific groups from residential (base) camp to

activity camps (and back). Foragers have high residential mobility, move people to food resources, and invest little effort in logistical movements. This pattern occurs where resources are evenly distributed and available year-round, and maximum foraging efficiency comes from the movement of groups to the resource locales. Collectors, on the other hand, move to key resources (such as food, water, fire wood, etc.), make few residential moves, and undertake frequent (often lengthy) logistical forays to bring resources back to the residential camps. This pattern occurs where resources are patchy and seasonal, thus maximum foraging efficiency is obtained by aggregating in a central place and sending out logistical parties. Therefore the collector-forager continuum intimately links hunter-gatherer mobility to the environment. This clearly defined model is versatile and as a result has been widely adopted alongside other mobility models.

4.3. ISSUES WITH CURRENT MOBILITY MODELS

These three mobility controlling models have remained at the core of interpretations of the British Mesolithic because they are perceived to be grounded in scientific fact and sound ethnographic analogy. In reality they are underpinned by a simplistic understanding of this information that has been reduced to binary assumptions (Preston 2011). These problems are compounded further by other issues, including the assumptions made about the orientation, scale, and nature of mobility, as well as issues associated with archaeological resolution, the fact that these models tend to be based on only one or two artefact types, and the multiple interpretations of these artefacts. Therefore, the aim of this section is to outline these issues in turn and in doing so it will demonstrate that the most common Mesolithic mobility models need to be revised.

4.3.1. *Universal and Binary Assumptions*

Perhaps the most persistent feature of the British Mesolithic mobility models is the notion of a seasonal round with winter and summer occupation areas/phases, periods of aggregation and dispersal, a contrast between upland and lowland occupation, and a contrast between residential and logistical sites associated with different activities and site types (e.g. base camps and hunting camps). This has led to the 'standard' interpretation that Mesolithic mobility was the result of a seasonal balance between hunting game in the uplands and more diverse activities such as fowling, fishing, and gathering at lowland camps within various sized territories depending on the model (Preston 2011, 11; Spikins 2000a, 105-10). As a result, only winter base camp aggregations and summer hunting camps are looked for, with other patterns ignored as a result.

In addition, ethnographic sources suggest that multiple strategies operated simultaneously with variation between individuals, families, bands, and seasons (Jochim 1991,

310-315; Spikins 2000a, 111). For instance, in Tierra del Fuego different mobility strategies were observed from the mobile Selk'nam, who exploited a broad range of resources including marine foods, to the more sedentary Yámana, who predominantly exploited marine resources, with the Haush being intermediate between the two (Bridges 1948; Gusinde 1982a,b, 1986; Preston 2011; Spikins 2000a). Even amongst groups of the Inuit or the Caribou Eskimo, where long-term continuity is recognised, substantial variation in mobility over time has been recorded (Burch 1978; Rainey 1971). Thus, the assumption of universal laws is no longer useful, as variation characterises human groups both spatially and temporally.

In addition, whilst ethnographic studies show that amongst a number of hunter-gather groups aggregations can occur where the resources were abundant enough, or to maintain wider social and reproductive contacts, they were rarely for long periods (e.g. see Kelly 1995, 111-160). For example, the default analogue for Mesolithic Europe, the Canadian Boreal hunter-gatherers, occupied separate long-term winter sites and short-term aggregation sites in spring when resources were plentiful (Price 1973).

Clearly, the distinction between long-term occupation and the occupation of a larger group (aggregations) is important, but there are two issues with how current mobility models incorporate these ideas. Firstly, more research needs to be undertaken on the distinction between the whole 'tribe', which might occur only every few years, and the other smaller aggregations on shorter timescales (Spikins pers. comm.). Secondly, long-term occupation and the occupation of aggregations should not be conflated, as they are separate events.

The dichotomy of the summer dispersal-upland-logical/hunting sites and the winter-aggregation-residential base camps is also at odds with the complex variety of site types in the ethnographic literature. For example, Price (1973), Binford (1978), and Spikins (2000a) all emphasise the greater diversity of site types. At issue is that the potential variation in the Mesolithic archaeological record is being obscured through archaeologists seeking to find the 'opposite ends of the seasonal round'. Thus the typological basis of the mobility controlling models requires significant reassessment.

This is compounded further because Binford's (1980) forager-collector and logistical-residential mobility continua are often misinterpreted as separate discrete binary types that can be used to pigeonhole ethnographic or archaeological cases. This is problematic because this misconception has led to a general acceptance of his logistical and residential mobility types as being synonymous with hunting and base camps, which in turn is seen as synonymous with, and has reinforced, the concept of the lowland-upland types (Preston 2011, 16). However, simple patterns of resources and mobility should not be expected (Kelly 1995, 120). This is

complicated further because Binford's model focuses on the frequency of movement rather than the organisation of camp movement relative to resource procurement activities on which most of the mobility controlling models tend to be focused. In addition, not all foragers are highly mobile, nor are all collectors nearly sedentary (e.g. see in Kelly 1983, 1992, 1995). This model as separate 'types' is therefore relatively incompatible with other models.

However, Donahue and Lovis (2003, 310) argue that Binford's logistical-residential continuum (as opposed to discrete types) is more useful than the upland-lowland types in the Clarkian view. They support this claim with archaeological evidence from assemblages from around Malham in the Yorkshire Dales, and the sourcing of lithic resources. Their results showed that the nature of the mobility and social relationships may be more complex than hitherto imagined, and in particular are inconsistent with the binary Clarkian view because they have not been able to identify any of the summer residential sites that Clark expected to be in the uplands. Instead, both Donahue and Lovis (2003) and the author (Preston 2011) have demonstrated that there was regular use of upland habitats in the Early and Late Mesolithic with logistical sites characterised by assemblages reflecting limited activities. This therefore supports the view that the upland-lowland binary types are potentially limiting.

Another problem of the summer-upland and winter-lowland dichotomy is that they rest on two main environmental assumptions. Firstly, given the environmental changes during the Mesolithic, it is likely that mobility strategies did not remain static but changed with the prevailing conditions (Simmons 1975, 1996, 2001). Secondly, it is often assumed that mobility in winter was restricted (as the uplands would have been inhospitable) and that the Eastern lowlands were more hospitable during the winter and hence would have been attractive. However, whilst there has been much environmental research on the seasonality of occupation at Star Carr (an assumed lowland base camp), the same seasonality studies have not been undertaken for the upland sites partly because they tend not to have the same sort of organic preservation. In addition, environmental studies of the upland areas (e.g. Brayshay 1994, 1995; Brown 1982; Simmons 1975a, b, 2003; Spikins 1998, 1999, 2000b; Williams 1985) do not meet these expectations. Finally, if the Mesolithic weather patterns were similar to those today we would expect the Eastern side of England to have been heavily influenced by continental weather systems, which has often meant (but not always) colder conditions compared to the Pennines and western Britain (Lowe and Walker 1997; Roberts 1998). Therefore, these assumptions cannot be substantiated.

Associated with the environment, and key to the concept of a seasonal round, is the assumption of the predictability of the resources. However, a reassessment of ethnographic literature by Spikins (1998, 1999, 2000a) shows that the concept of predictable seasonal rounds

cannot be substantiated. Bridges (1948, 313), for example, showed that the Selk'nam varied their settlement patterns with aggregation episodes sometimes being determined by fortuitous events such as whale beachings. It must also be noted that the ethnographic accounts of seasonal rounds are themselves simplistic interpretations by the ethnographers, who ignore difference between individuals and families over different time-scales (Jochim 1991). It is therefore inappropriate to assume that Mesolithic procurement strategies and settlement systems were seasonally predictable with a standard strategy for all environmental niches.

Nonetheless, other forms of predictability in hunter-gatherer life-ways have been noted. Hugh Brody (2002) noted that the Arctic hunter-gatherers always remembered a route (even after several decades) once it had been travelled. Similarly, the repeated visits to sites and the folk memory of Australian Aborigine songs recall the journeys of ancestors to particular places and resources as a means of mapping onto an environment. Likewise, the author (Preston 2011, 204 & 213-252) has shown that Mesolithic groups regularly revisited persistent places near to conspicuous landmarks in the Central Pennines that were situated on Trans-Pennine transit routes between the major river routes. In addition, other predictable events may have been regular traditions of social gatherings or aggregation times. Of course we cannot explicitly know such Mesolithic traditions, but since they are an inevitable part of the human social world, we know they would have had them. These examples therefore imply that part of Mesolithic mobility patterns had predictable elements, though not necessarily tied to the seasonal availability of resources.

4.3.2. Ethnographic Analogies

Despite the recognition that analogies should be used with care, the use of ethnographic analogues in mobility models has tended to be problematic. The issues surrounding analogies will not be discussed here in detail as they have already been well described (e.g. Binford 1967, 1981; Gifford-Gonzalez 1991; Hodder 1991; Sabo 1982; Wobst 1985; Wylie 1985). However, there are five issues that warrant noting. One is equifinality, which means that a given pattern in the archaeological record may have been created by a process other than the one identified in the ethnographic analogy (Binford 1981; Gifford-Gonzalez 1991). A second is that the groups in ethnographic accounts are presumed to be from homologous environments to the Mesolithic, but are usually only broadly analogous and the behaviours described might not have even existed in the Mesolithic (Jochim 1991, 310-315; Wickham-Jones 2005, 32). A third is the ethnographic analogies that have become common knowledge and the regular citation of them amounts to acceptance of the models themselves (Spikins 2000a, 108). The fourth is that the duration of ethnographic observation is usually only a snapshot of the societies being described, meaning variations are often missed. The fifth issue is that archaeologists have tended

to 'cherry pick' analogies that meet their expectations, leading to inappropriate and misleading interpretations. These issues, taken together, mean that the mobility models traditionally are somewhat compromised. However, if we bear these issues in mind, analogies can be powerful tools that allow us to frame questions and to perceive different life-ways very different to our own.

4.3.3. The Orientation, Scale, and Nature of Mobility

Another problem with current mobility models is their narrow orientation. For instance, the Clarkian and, to a lesser extent, Social Territories Models (Figures 7A & B) are predominantly Eastward facing. They therefore ignore the areas to the West of the Pennines because they perceive movement between the Pennines and the East coast. This bias is because the lion's share of fieldwork has been to the East of the Pennines, and work to the West is not as well published. This means that interpretations of social territories based on microlith styles (e.g. Jacobi 1973, 1976, 1978) for instance are flawed. In addition, occupation of the land exposed prior to the post-glacial inundation of Doggerland (now under the North Sea) and Lower-Fylde (i.e. the Irish Sea off the modern Northwestern coast) are rarely accounted for. Therefore the biased orientation and scope of the mobility models is limiting.

The omission of land offshore and parts of Northern England has also resulted in the perceived territory sizes to be too small, when they are more likely to have been akin to examples from Europe, which cover thousands of kilometres square (Donahue and Lovis 2006b, 248; Wickham-Jones 2005, 31-33). This constrained view is limiting for a two main reasons. Firstly, the ethnography of hunter-gatherers in North America and elsewhere is at odds with interpretations of small British Mesolithic territories. For instance, in middle- and high-latitude forested environments, mobile hunter-gatherers used large areas on a seasonal basis and engaged in long-distance logistic mobility (Donahue and Lovis 2006b, 248). Secondly, territory size and scale of mobility may be affected by the topography, environment, resources, the gene-pool size, and population pressures (Wickham-Jones 2005, 31-33). As a consequence, the sizes of the social territories that have hitherto been proposed are likely to have been grossly underestimated.

The assumption of high-levels of mobility remaining static from generation to generation led many authorities to discount the idea that Mesolithic hunter-gatherers had permanent habitation sites or invested in them to any great extent (Gaffney et al. 2009, 56). However, the discoveries of dwelling structures at Star Carr (Conneller et al. 2010), East Bards (Gooder 2007) and Howick (Waddington 2007), various coastal shell middens (Mellars and Payne 1971) and evidence for site investment on at Central Pennine persistent places near transit routes (Preston 2009, 2011) implies that the assumed variability in Mesolithic mobility strategies may

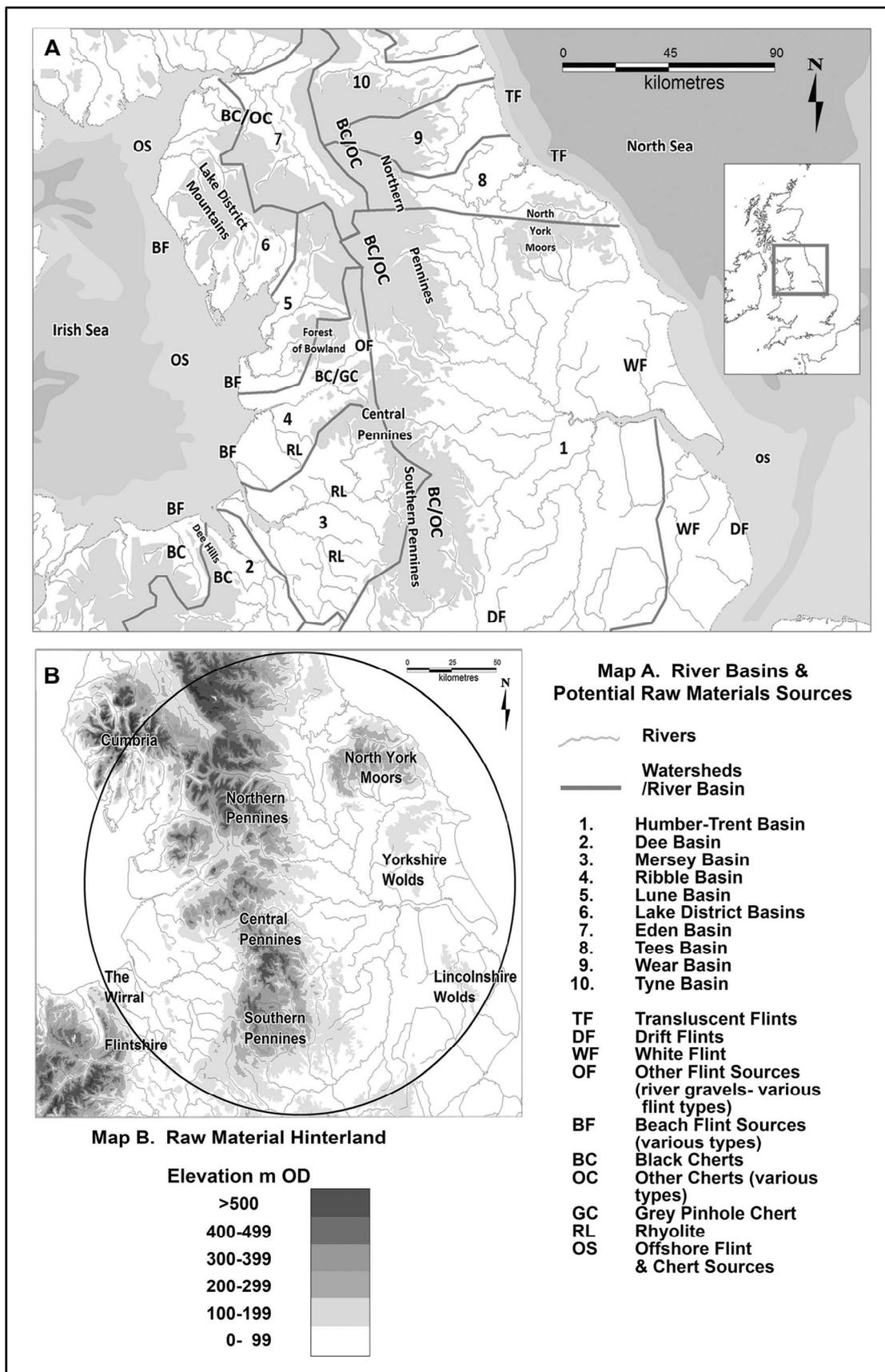


Figure 7. Raw material origins and hinterland (After Preston 2012, Figs. 7.17, 7.19)

be overstated. Moreover, such site investment evidence also implies a greater degree of site re-visitation over a number of generations during both the Early and Late Mesolithic. Thus it is conceivable that some sort of 'semi-permanent base camps' may have existed. Thus, the mobility models (above) as they stand are unable to account for these discoveries.

4.3.4. *Archaeological Resolution & Artefact Analyses*

All the issues with mobility models described above are hampered further by the problems associated with archaeological resolution and sampling. These issues hinder the testing of the mobility models, which means that the site distributions that underpin them are biased. The role of taphonomy has been addressed by a number of authorities (e.g. Binford 1979, 1981, 1983; Schiffer 1987; Schofield 1991; Spikins 1999) as has the influence of archaeological methodology (e.g. Dunnell 1992; Schiffer and Wells 1982; Spikins et al. 1995), and so will not be covered here. However, it should be noted that these factors can emphasise or obscure the type of sites or archaeological evidence recovered. Also, if only a few site types are known in an area that has not been extensively surveyed it is likely that the record is incomplete (Schiffer and Wells 1982). Sampling issues are also overlooked; for instance, many sites have been discovered in the uplands and lowlands but few are known in between, because archaeologists have been preoccupied with looking for the opposite ends of the mobility system. A case in point is the analysis of biological evidence at atypical lowland sites like Star Carr, which tells us nothing about the nature of the upland sites (Donahue and Lovis 2003, 311). Another sampling issue is that most archaeological work has been undertaken in karstic environments from which flint and chert originate, which means the lithic raw material analyses and interpretations are biased if a comparison with non-karstic areas (such as the Central Pennines) is not made (Preston 2011). Clearly, it cannot be assumed that the site distribution is complete.

To date, archaeologists have tended to concentrate on only one or two artefact or ecofact types. An example is the evidence for the Clarkian model, which is exclusively from biological data and often referenced with an over-reliance on one component of the faunal assemblage from a single site Star Carr. The debate on Star Carr has been covered in detail elsewhere (by *inter alia* Caulfield 1980; Clark 1954, 1972; Dark 2003; Fraser and King 1954; Jacobi 1978; Legge and Rowley-Conwy 1988; Mellars and Dark 1998; Pitts 1979; Schulting and Richards 2002a, 2009) so will not be outlined here. However, it is sufficient to note that there has been no agreement on the interpretations from the same evidence. For instance, the red deer bones have been argued (by the archaeologists just cited) to indicate different site types, seasons of occupation, direction of mobility, and site function. Clearly, the apparent 'scientific facts' of seasonal and site function interpretations are contradictory and equivocal.

Therefore, these 'scientific facts' that afford the illusion that the models rest on a firm foundation cannot be sustained. Therefore it cannot be assumed the models are established in fact.

This dependence on biological material and the failure to integrate lithic evidence is surprising because there are multiple interdependent dimensions of hunter-gatherer behaviour and no single analytic approach is capable of explaining them. While it is often convenient to partition analyses topically or methodologically from a heuristic perspective, each approach can be viewed as an independent test (Lovis et al. 2006).

One notable exception is Mellars' (1976) study, which represents an attempt to refine Clark's model through the integration of typological lithic data. Mellars compared the retouched component of lithic assemblages between upland and lowland sites in order to place them on scales of size, permanence, and function. He interpreted the large lowland sites dominated with scrapers and other lithics that imply domestic activities as base camps, whereas the upland sites were hunting camps dominated by microliths. However, there are four main issues with Mellars' study. Firstly, Mellars filtered the results through the Clarkian model. Secondly, his analysis oversimplifies the assemblage diversity (Myers 1987) through the omission of awls, non-formal tools, utilised tools, and debitage types. Thirdly, tool functions are largely assumed, and microwear analyses (e.g. Dumont 1985, 1988) and technological analyses (e.g. Finlay 2000, 2003; Myers 1986; Preston 2011) now show that microliths have not been solely used for arrow armatures (though a great many were), and that scrapers were not just used for hide work. Fourthly, Spikins (2000a) argues that comparisons of tool ratios may give questionable indications of specific activities and have a tendency to create artificial types by default. However, the author (Preston 2011) strongly disagrees: tool ratios are well established as a reliable heuristic way of comparing assemblages provided the comparison is technologically based. They are not meant to recreate the hunter-gatherer site types. Problems occur when only a few types are compared, and erroneous functional interpretations are made, not the use of ratios *per se*. Despite these issues, the value of this study is that it represents the first attempt to integrate into a mobility model a wide-scale synthesis of a number of lithic assemblages from across the landscape.

In this section it has become clear that there has been an over-reliance on one or two types of evidence, problematic uses of ethnographic data, and overly simplistic binary thinking. Importantly, other than Mellars' study, lithics have been neglected in this debate. However, new approaches using the study of lithics can yield crucial information that offer a radically different perspective on Mesolithic mobility. In particular, two distinct lines of enquiry have been fruitful, the first of which is the use of raw materials as a proxy for the identification of group movements and social territories,

and the second is the effect of mobility on lithic technology (Preston 2011). Consequently, in the next section, one of these approaches on raw materials will be outlined as a proof of concept to show that lithics may be successfully and independently employed to construct mobility models.

4.4. LITHICS TO LANDSCAPES

This section will demonstrate one way in which lithic raw materials may be employed as a proxy to elucidate Mesolithic mobility. The principle of their use as a proxy (in this case) is based on the fact that lithic artefacts are found in one geographic location and the material they are made from usually have a separate geological origin, thereby indicating the *chaînes opératoires* and hence implying some sort of group movement, or human interaction (e.g. exchange). They are an attractive proxy because opportunities to study biological material is rare and because the use of lithic styles as a proxy for social territories (e.g. Jacobi 1976) is hampered by a lack of defined typologies, inadequate technological analysis, failure to recognise behaviours that affect tool shape (such as retooling and the modification into other tools - otherwise known as equipotentiality), and biased Eastern-focused datasets (Preston 2009, 2011). Thus, as lithics are the most ubiquitous artefacts on virtually all Mesolithic sites, they represent an excellent (and often the only) potential for identifying group movements and social territories.

The Central Pennines (Figure 5) provide an excellent case study area for the consideration of these issues, as over 802 sites are known (Figure 5) and the bedrock geology of the area is the Namurian Millstone Grit group and Westphalian Coal measures. These bedrocks are non-karstic, which means there is no limestone or chalk from which chert and flint may be obtained, nor are there any superficial deposits or rivers in which they are found (Aitkenhead 2002; Barnes 1982; Crofts 2005; Preston 2011, 337-339). Consequently, all the lithic materials found at the Mesolithic sites must have been imported to the area by human agency. It therefore provides a vital data-based counterpoint to the traditional mobility models grounded on evidence from the karstic areas of Britain (Preston 2011).

4.4.1. Lithic Raw Materials

The author (Preston 2011) has conducted a macroscopic attributes analysis of over 1000 lithics from approximately 200 of the 796 confirmed Early and Late Mesolithic assemblages in the Central Pennines in order to provide replicable definitions of the raw materials encountered in the research area as well as elsewhere in Northern England. The full details of this analysis will be published at a later date, but for now it is sufficient to note that a total of 20 raw materials have been identified and the main types are briefly defined in Table 7.

Most of the primary chert sources are mostly between 40 and 80km from the Central Pennines (Figure 7A). The nearest sources are in the Yorkshire Dales (Northern Pennines), in the Southern Pennines (i.e. the Peak District), and on the Northern flanks of the Pendle Hill. The former two represent one Dinantian limestone bed that dips under the Central Pennines between these regional exposures (Aitkenhead 2002; Sargent 1921, 1929). The next nearest chert sources are in Flintshire (North Wales) about 80km to the Southwest (Preston 2011; Sargent 1923). These limestone formations contain various chert types, the most common being the black shiny and non-shiny types. The black cherts (Table 7 [types 6a-c]) are unevenly distributed in a number of formations in the areas mentioned above (Figure 7A). Key evidence comes from the geo-chemical investigations of Yvonne Wolframm, Adrian Evans, and others (Evans et al. 2007, 2010; Wolframm 2006) which point to a number of specific source locales (that were exploited during the Mesolithic) in Swaledale and the Craven district of North Yorkshire, and in the vicinity of Monsall Dale and Bakewell in the Peak District (Figure 7A). The other chert varieties mainly derive from the same regions as the black chert, but some are more locally specific. For instance, brown-grey flinty-chert (Figure 7A) only originates from the Northern Pennines (Evans et al. 2010), whilst brown pinhole chert (Table 7 [8b], Figure 7A) derives only from the Southern Pennines. Grey pinhole chert (Table 7 [9a] & Figure 7A) appears to have derived from the Southern Pennines but there are also reports of it being found in the Pendleside region. As a result these materials may also be useful indicators of mobility.

In addition, there are two other potential chert sources of interest. The first is the limestone formations flanking Eastern and southern Cumbria and in particular two new Black chert and white flinty chert sources have been found in the Eden valley and near Caldbeck in Cumbria (Evans pers. comm.). The second is the limestone formations that are now under the Irish Sea (off the northwest coast). According to bathymetric data and offshore geological data for the Irish Sea (British Geological Survey pers. comm.; Lambeck 1995, 1996; Shennan et al. 2006a, b; Wessex Archaeology 2006) these limestone formations were probably exposed during the Early Mesolithic until just before the end of the Terminal Mesolithic. These areas have not been adequately studied or ruled out (Figure 7A).

Rhyolites (Table 7 [14acg-14acg-b] & Figure 7A) also provide evidence for human movements for two reasons. Firstly, their primary origin is ultimately the Ordovician Borrowdale Volcanic Series formations in Cumbria about 120km away, so it is plausible that some of this material was directly procured. Secondly, it is more conceivable that this material was obtained as erratic pebbles (that are glacially derived from the Borrowdale Volcanic Series) in the streams on the western flanks of the Central Pennines and the drift deposits Lancashire plain. Thus rhyolite provides potential evidence of movement to the West and the Northwest of the Central Pennines (Preston 2011).

Table 7. The main raw material types found on Mesolithic sites in Northern England

These raw material types have been defined through a macroscopic attributes analysis by the author and so are replicable. (After Preston 2012, 339-350 & 712-749 & Plates 7.1-3; colours defined using Munsell 2000)

<i>RM Code</i>	<i>Raw Material</i>	<i>Munsell Colour Code Range</i>	<i>Transparency</i>	<i>Lustre</i>	<i>Texture*</i>	<i>Inclusions</i>
1a	Yellow-brown translucent flint	10YR 8-7/6-8 7.5YR 5-4/6-8 5YR 5-6/3-4	Transparent/ Translucent	Shiny	Fine	<ul style="list-style-type: none"> • Mostly flawless. • Occasional streaks.
1b	Grey-brown translucent flint	7.5YR 5-7/1 10YR 5-6/1	Translucent	Shiny	Fine	<ul style="list-style-type: none"> • Mostly flawless. • Occasional grey dashes, specks and blotches.
1c	Black-brown translucent flint	2.5YR 2.5-3/1-4	Translucent	Shiny	Fine	<ul style="list-style-type: none"> • Mostly flawless. • Occasional black blotches, grey streaks and fossils.
2	Drift (grey speckled) flint	5YR 5-6/1 7.5YR 5-6/1 7.5YR 6/3-4	Translucent	Medium	Fine-Medium	<ul style="list-style-type: none"> • White and grey specks. • Occasional streaks and blotches.
3	White	N 8/1 2.5YR 8/1 10YR 8/1 10YR 7/1-2 10YR 5/2	Opaque	Shiny-Dull	Fine-Coarse	<ul style="list-style-type: none"> • Grey-brown 'cherty' blotches. • Intermittent fossils, pinholes, and black/grey/white specks and streaks.
6a	Shiny black chert	10YR 2.5/1 5B-5PB 3/1	Opaque	Shiny	Fine	<ul style="list-style-type: none"> • Mostly flawless. • Some coarse spots and an occasional pinhole may be seen.
6b	Non-shiny black chert	10YR 2.5/1	Opaque	Dull	Medium-Coarse	<ul style="list-style-type: none"> • Mostly flawless. • Sporadic flaws, black & white specks/blotches, pinholes, and light grey bands may be seen.
6c	Black pinhole chert	10YR 2.5/1	Opaque	Shiny-Medium	Coarse	<ul style="list-style-type: none"> • Dominated by pinholes (vesicles). • Occasional white streaks.
7a	Brown pinhole chert	10YR 2.5-3/2-3 2.5YR 2.5/1	Opaque	Shiny-Medium	Coarse	<ul style="list-style-type: none"> • Dominated by pinholes (vesicles) • Occasional white streak
8a	Brown-banded chert	2.5YR 2/3 7.5 YR 5/2	Medium-Dull	Shiny-Dull	Fine-Coarse	<ul style="list-style-type: none"> • Very noticeable bands of a different texture and colour (black N 8/1 and grey 5YR 5-6/1).
8b	Grey banded chert	5YR 5-6/1	Opaque	Shiny-Dull	Fine-Medium	<ul style="list-style-type: none"> • Very noticeable bands of a different texture and colour (black N 8/1 and grey 5YR 5-6/1).
9a	Grey pinhole chert	2.5YR 5-6/1	Opaque	Medium	Coarse	<ul style="list-style-type: none"> • Dominated by pinholes.
9b	Blue-grey chert	N 5/1 5PB-10PB 4-6/1 7.5YR 5/1	Opaque	Shiny	Fine	<ul style="list-style-type: none"> • Occasional black specks.
14acg/ 14acg-b	Possible rhyolite A & B	2.5YR 3-4/1-2 5YR 2.5-3/2-4 7.5YR 5-7/1-2	Opaque	Shiny-Dull	Fine-Coarse	<ul style="list-style-type: none"> • The colours reported (left) are for the main groundmass/matrix. Within the matrix there are numerous bluish grey (5PB 7/1), light grey (7.5YR 7/1), white (7.5YR 8/1), reddish-yellow (7.5YR 6/6), brown (7.5YR 4-5/2-4) or black (N) speckles and streaks. • Pinholes may also be seen. • 14acg-b is identical but also has translucent blue areas.

The only primary flint source is approximately 100km to the East of the Central Pennines in the Cretaceous Chalk deposits around the Lincolnshire and Yorkshire Wolds (Figure 7A). Here white flint (Table 7 [3]) nodules are found in the chalk cliffs and scarps. However, there have been suggestions by Conneller (2005), Jacobi (in Mithen 2004), and Preston (Preston 2009, 2011) that other sources of such material existed beyond the modern East coast. This is supported by recent bathymetric data (Gaffney et al. 2007, 2009) and geological evidence (British Geological Survey pers. comm.) which shows that Cretaceous chalk deposits beyond the modern East coast were exposed during the Early Mesolithic. Other potential secondary sources may be in Northern Pennine river valleys where white flint has been reported (Hodgson and Brennand 2006). However, this is most likely to be white flinty chert derived from the limestone in these areas rather than white flint. Clearly, there is evidence for the exploitation of both primary and secondary white flint sources.

According to Conneller (1999), the best evidence for the exploitation of secondary white flint sources comes from the lack of cortex freshness on some pieces from Lominot I (site ?82) and March Hill HA (?83). This implies that the white flint was obtained directly from the rivers that flow from the Wolds areas, as it is absent in any of the till deposits on the East side of the country. However, the analysis of the lithics by the author (Preston 2011) shows that whilst the battered and rolled white flint pieces support this interpretation, there is also a relatively high number pieces with a thick and non-battered cortex, which suggests that some nodules were directly procured from the parent bedrock.

The translucent flints (Table 7 [1a-c]) appear to have been obtained solely from secondary sources along the Durham coastline (Figure 7A). These secondary sources are in glacial deposits including the Warren House Gill ill, which may derive from offshore Cretaceous chalk deposits, but are more likely to have derived from 'Scandinavian Drift' deposits because there is an absence of erratics from Northern England or Scotland. Moreover, the translucent flint and various igneous and metamorphic erratics found in the till are similar to those found near Oslo, Norway (Bridgland 1999; Henson 1985; Huddart 2002; Rankine 1952; Trechmann 1915; Waddington 2004). Whilst direct procurement from Scandinavia is conceivable, given the widespread distribution of the Early Mesolithic techno-complex and the existence of Doggerland, it is more likely that this flint was obtained from the secondary sources on the Durham coast. This is also supported by the thin, battered, and rolled cortex on Central Pennines lithics which suggest a secondary river, beach, or drift source (Preston 2011).

In addition, there are four other possible secondary sources of translucent flint. The first is in the Trent basin, where glacial erratics of this flint tend to have an orange-yellow stain under the cortex. The second alternative source is on the Northwest coast beaches (Figure 7A) between North Wales and the Solway Firth. The third and

fourth sources are reported to be along the River Ribble, and in some of the Northern Pennine river gravels (Cross 1939; Evans pers. comm.; Hodgson and Brennand 2006; Manby 1979; Poole pers. comm. Waddington 2004). It is currently unclear whether the flint from these alternative sources is the same material as that from the Durham coast, but glacial Devensian ice flow reconstructions (Brandon 2002, Figs 32 & 33; Huddart and Glasser 2002, Fig. 5.2; Lowe and Walker 1997, Fig. 3.10A) seem to rule out a Scandinavian source for these 'western' deposits. Instead, these translucent-like-flints may ultimately derive from deposits now under the Irish Sea, southwest Scotland, or Antrim in Northern Ireland (Cross 1939; Hodgson and Brennand 2006). The different potential origins may account for some of the macroscopic differences in the three sub-types identified by the author (Table 7 [1a-c]), but this remains to be proven.

Most of the drift flint (Table 7 [2]) probably derives from the secondary source of the Holderness Till (Skipsea member) of Northeast Yorkshire that stretches from the coast inland to the foot of the Wolds scarps (Catt 2001; Evans 2002; Manby 1979; Waddington 2004). The 'red chalk' exposure just North of Flamborough head has been suggested by Jacobi (1976) as an alternative source but this suggestion has not been verified. Also, similar gravels throughout much of Northern England sometimes contain similar speckled flint (Brandon 2002). For example, drift flint from tills around the Trent System also have the same orange-stain as translucent flint sometimes has. Offshore sources have also been proposed as the till deposits contain similar flint and Cretaceous Chalk to those exposed in Doggerland (David 1998; Henson 1985).

It is therefore clear that lithic materials were transported over significant distances to the Central Pennines from situations throughout Northern England and possibly North Wales (Figure 7B).

4.4.2. Territory size and mobility

This section investigates the implications of the raw material hinterland (Figure 7B) in relation to mobility models.

According to Evans and others (2007, 2010), the Clarkian (Figure 6A) and Social Territories models (Figure 6B) would result in a very different archaeology to that found in the Pennines. For instance, the Social Territories models imply that an interior upland Pennine group would be heavily dependent on the chert resources in the region and would have transported them throughout the Pennines and especially along the river valley systems. This would have resulted in a spatially restricted distribution of chert in the upland zones, recognising that exchange or mobility might produce a sharp North-South fall-off. Their geochemical analysis found no evidence of the Northern Pennines cherts in the Southern Pennines and vice versa, and as a result they concluded that the

East-West model (Figure 6A) was the most likely mobility pattern. Yet, only one raw material Shiny Black Chert (Table 7[6a]) was analysed by them (Evans pers. comm.), and the focus of their study omitted the Central Pennines as well as areas to the West of the Pennines. Nonetheless, the value of Evans and others' studies is that they have been able to verify some of the East-West transit along the river systems in a replicable and quantifiable way.

However, since the Mesolithic hunter-gatherers who visited the Central Pennines exploited a far greater diversity of raw materials from a hinterland (Figure 7B) that encompassed the whole of Northern England (Preston 2011, 340-96), it is clear (assuming direct procurement) that mobility was throughout this region, including over a number of different river basins, rather than being restricted to a single river system (Figure 6C) or to East-West or North-South mobility (Figures 6A & 6B). In addition, on the basis of the hinterland, the author (Preston 2011) proposes that a single Mesolithic ethnic group moved widely across this region and/or that the hinterland (Figure 7B) may represent one social/ethnic territory during both the Early and Late Mesolithic (Figure 8). This therefore provides a crucial challenge to the traditional mobility models.

This may be tested using Smith's (1992, 13-20) population density levels of 0.01 people per km². Smith's estimate is based on the number of people needed for sustainable breeding networks, minimum dietary requirements, and the ecological carrying capacity of the environment. This estimate is also comparable to ethnographically derived estimates of 0.012 people per km² (e.g. see Newell and Constandse-Westermann 1986), and Spikins' (1996) 'dummy' estimates noted above. The population density estimate has two implications.

Firstly, since the 2400km² area of the Central Pennines research area has a carrying capacity for only 24 people, it could not have been a sustainable territory, because at least 200 people are needed to have a genetically viable breeding network. This suggests that the Mesolithic people who visited the Central Pennines were from a much larger linguistic-ethnic group which, according to Kelly (1995), could have been (at the very least) between 300 to 500 people.

Secondly, if the area needed to sustain a group of 300-500 people can be conjectured using Smith's density estimates, the minimum sustainable Early and Late Mesolithic territories can be estimated (Figures 8A & B). It is striking that the area covered by these plots is similar to the raw material hinterland (Figure 7B). Moreover, Figure 8A shows that there was probably insufficient space for two adjacent contemporary Early Mesolithic social territories either side of the Central Pennines, so the most plausible reconstruction is a territory that covers most of Northern England and possibly into Doggerland and Lower Fylde/land (the black circles in Figure 8A). In the Late Mesolithic, the loss of land due to the rise in sea

levels means that separate eastern and western social territories (Figure 7B) were too small to have sustainable populations without extremely high levels of inter-marriage in excess of what might normally be expected in ethnographic recorded societies (Kelly 1995). Such levels of inter-marriage would have had to be beyond a level that would allow them to be independent of each other and so would have ceased to exist as separate entities in a very short space of time. Consequently, the most likely reconstruction (the black circles in Figure 8B) is remarkably similar to that for the Early Mesolithic (Figure 8A). Therefore, the population density evidence concurs with the raw material evidence that there was likely to have been only one population (which may be an ethno-linguistic group) that inhabited Northern England during both the Early and Late Mesolithic periods.

4.5. DISCUSSION AND CONCLUSION

All this evidence combined supports the Pennine Nexus Hypothesis (Figure 9) that has recently been proposed by the author (Preston 2011, 404-408, & 533-540). This hypothesis posits that as the mobility patterns changed over a number of temporal scales (including annually, seasonally, and/or generations), and that different river system transit routes were likely to have been used at different times. These varying routes would have resulted in differential access to the various raw material sources and hence would be reflected in the variation in Central Pennine lithic assemblages of different Mesolithic sub-phases. For example, during mobility cycles that focused on the Pennines, via the Northern Humber basin, to the Wear, Tees, and Tyne basins, the East coast translucent flint sources would have been easily available but other materials would have been less accessible. Hence, the focus on different areas and so mobility within the hypothesised Northern territory would have necessitated the use of different raw material sources at different times. Thus, the Nexus Hypothesis actually explains the variation (identified by the author) in raw materials at Central Pennine Mesolithic sites.

Crucially, given the variation in raw materials, and the situation of the Central Pennines, this hypothesis (Figure 9) implies that these uplands are likely to have been at the nexus of these changing mobility strategies. This is because not only did the Pennines provide important transit routes between the different drainage basins, but also because there would have been important plant and animal resources available on a seasonal basis (Preston 2011; Spikins 1999). Moreover, this hypothesis builds on the territory reconstructions (Figure 8) and the raw material hinterland evidence (Figure 7B). Combined, Figures 7 to 9 strongly imply the existence of a large territory in Northern England and that different parts of it were inhabited at varying times over varying time-scales. Therefore the Pennine Nexus Hypothesis (Figure 9) is presented as a possible explanation for the variation of raw material exploitation over time, and why other mobility models would narrow our view of Mesolithic activity.

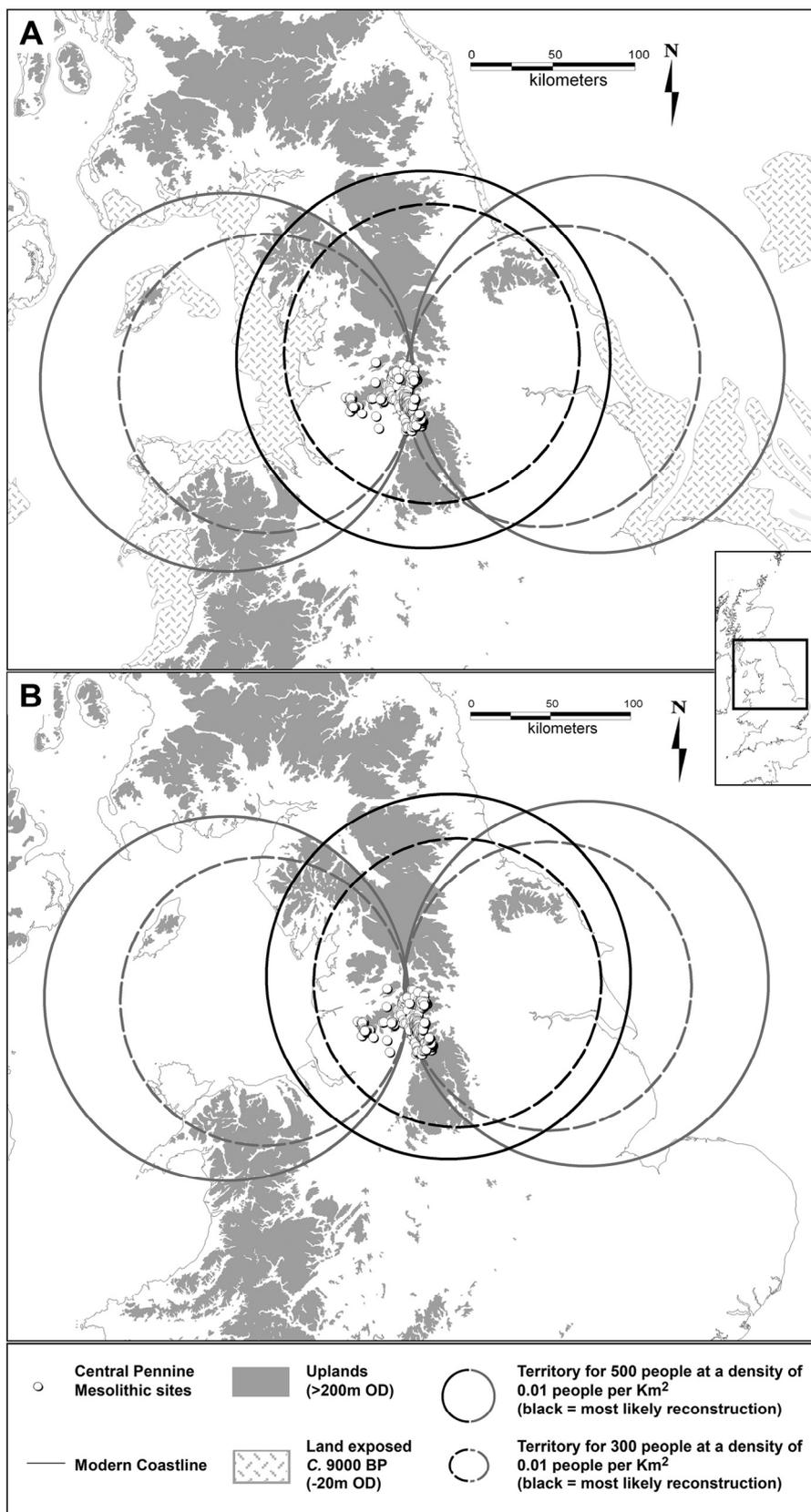


Figure 8. Hypothetical Early and Late Mesolithic territory reconstructions (After Preston 2012, Figs. 7.20-1)

NB: these reconstructions are subject to the assumptions and limitations outlined in the main text.

In this paper the review of mobility models reminds us to ask what the purpose of reconstructing settlement patterns is. Are they to recreate the hunter-gatherer types or are they constructed as a heuristic tool or reductive model that allows us test our assumptions? If it is the former, Spikins (2000a) is right that the Clarkian view is now defunct because it appears to be inconsistent with ethnographic data, and by implication, the potential hunter-gatherer's types. If it is the latter, it has obscured our view, leading us not to expect variation in Mesolithic mobility patterns. At the same time, its enduring value is the persistent evaluation and modification of this model that has revealed the inadequacies of how we interpret the archaeology, and has resulted in a new cycle of testing and reassessment. This is precisely the function a model is supposed to have.

At the same time, the discussions have emphasised the importance of acknowledging the assumptions made and the limitations of various sources of evidence without which we are in danger of the unconscious and unquestioning projection of controlling models onto the archaeological record. Similarly, the issues associated with the use of ethnographic analogies and the reliance on one or two types of biological evidence from only a few sites has been noted. The critique offered is not intended to imply that ethnographic analogies or biological material should not be used, but rather that they should be used with care. Moreover, this paper has emphasised the need for modern technologically-based lithics analyses to test the interpretations based on them.

Here, then, is a good opportunity to consider the assumptions and limitations of the alternative mobility model proposed here. The emphasis of the Pennine Nexus Hypothesis has been on lithics and population density, but there are other factors, including social and functional, that could have been integrated into the model. However, limiting the model to only two variables was by design in order that causality could easily be identified. It is therefore accepted that it is inevitable that as more data is generated (of different types) the assumptions upon which the hypothesis is based will need to be modified. However, this means that through testing it will have served its heuristic provocative purpose as a 'straw man', which challenges us think differently about Mesolithic mobility.

In this paper and the Pennine Nexus Hypothesis it has been assumed that raw materials were acquired directly on the basis that it is currently unclear what the effects of exchange might be on a lithics assemblage. Therefore, more research on the exchange of lithics is needed. In particular, a crucial question is: what are the archaeological effects of exchange and how are they manifested in the archaeological record? How does this differ from the archaeological manifestation of direct procurement? Another related factor that would be productive is a consideration of any possible materialities of the raw materials. In particular, how these can be

evidentially interpreted and integrated into our models is a key problem.

A limiting factor of both the territory reconstructions (Figure 8) and the Pennine Nexus Hypothesis (Figure 9) is that Smith's (1992) population densities may have yielded a population estimate that is too small for the single ethno-linguistic territory suggested (compared to those in ethnographic accounts for the same-sized areas). Conversely, the area proposed is likely to be too large for a band-sized territory.

Moreover, the influence of the changing environment on mobility patterns needs to be considered in more detail. For example, in the territory reconstructions (Figure 8), the changing environment is only partly considered, in the form of the sea level rises and loss of land, but the changing flora and fauna has not been integrated. Also, the population density estimate used assumes a uniform unchanging carrying capacity, which of course is too simplistic. Yet, it is simplistic because it is not meant to replicate reality, but instead is reductionist version of it. Moreover, it would also be impossible to model the carrying capacity for every different niche and habitat. On the other hand, even if other population density estimates were implemented in our model such as those for more wooded environments (e.g. 0.01 people per km²) the results yielded would not been radically different to those shown in Figure 8 and proposed in Figure 9. Nonetheless, it should be accepted that a consideration and comparison of other variables, such a reappraisal of animal and plant resources, including their palaeoecology, would help to more accurately establish the carrying capacities and hence potential population densities of the proposed linguistic area and potential smaller social sub-territories.

These limitations of the territory reconstructions (in Figure 8) are ameliorated by the fact that the Pennine Nexus Hypothesis (Figure 9 which rests on them), accommodates environmental change and hunter-gatherer responses to it. This is because annual, seasonal, and generational changes are incorporated into the model. These mobility changes are assumed to have been due to changes in the environment at different scales, for cultural reasons and traditions, as well as because of fortuitous events, etc. Therefore, the Pennine Nexus Hypothesis and by proxy the territory reconstructions cannot and should not be seen as static -one mobility pattern fits all phases of the Mesolithic- but rather that mobility was dynamic and over a large scale. It implies changing mobility strategies as a result of the changing opportunities available and the risks for the hunter-gatherer groups moving over long distances. Thus the conceit of these models and hypotheses has been to demonstrate that we have been viewing British Mesolithic mobility as too static and on a too small scale.

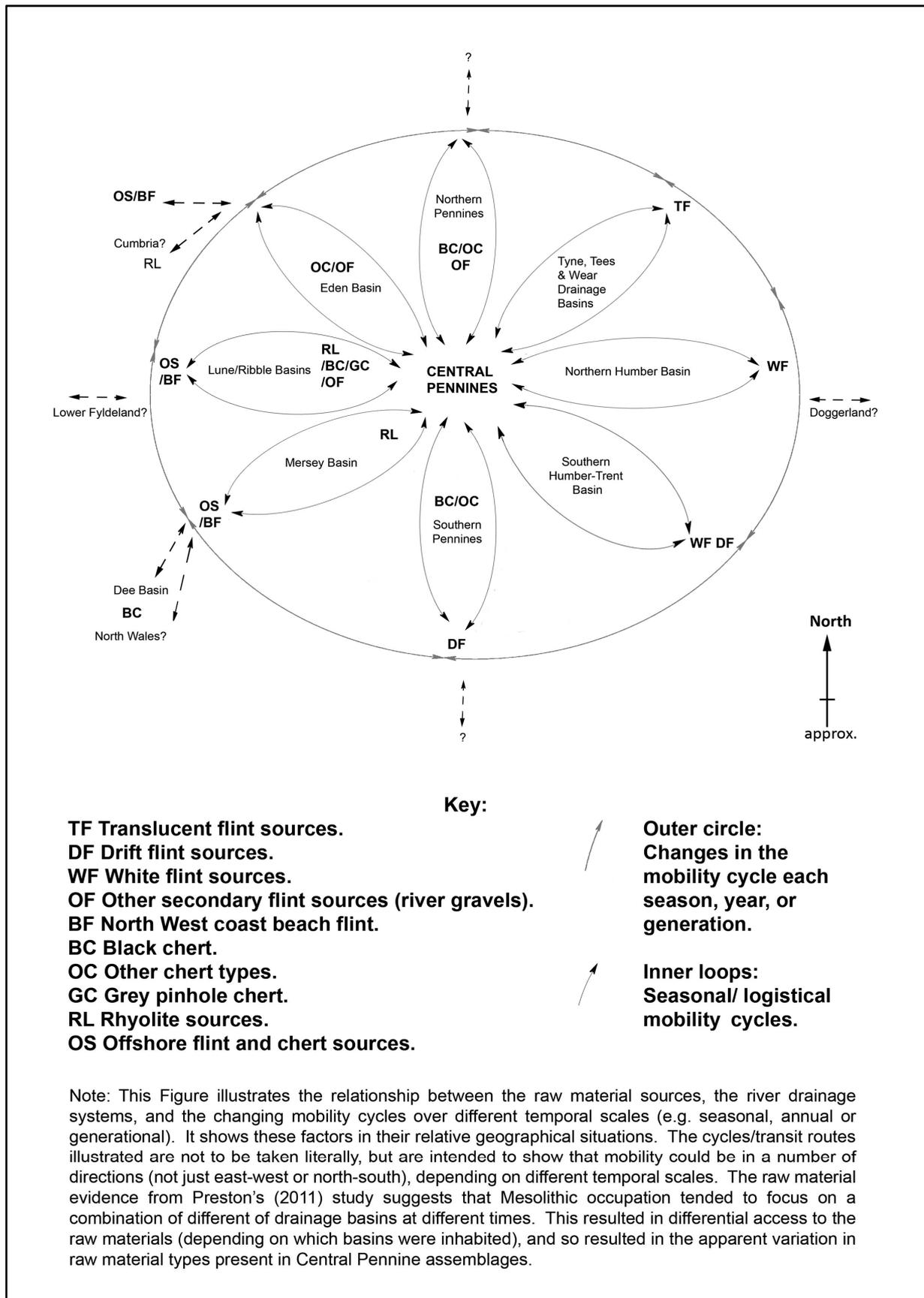


Figure 9. The Pennine Nexus Hypothesis
(after Preston 2012 Fig 7.19)

In this paper, it has been identified that future mobility models need to use only appropriate of ethnographic analogues judiciously. The addition of these will help to resolve questions regarding how endogamous or exogamous societies relate to Figures 8 and 9, and how the smaller family, clan or band social territories relate to the larger ethno-linguistic territory proposed. Importantly, we need also to ask the question of how all this can be seen in the archaeological record.

Importantly, this paper has also highlighted the value of raw materials in assessing mobility models, and the fact that our knowledge of sources is currently incomplete. There is, therefore, an urgent need for a comprehensive sourcing project to map, sample, and characterise primary and secondary sources. In particular, a reference collection for Northern England is needed that could then be used in comparison with archaeological assemblages for all Mesolithic phases.

To summarise, this paper has attempted to demonstrate that lithics can be used to model Mesolithic mobility and that the results are significantly different to those models based on other data sources. Indeed, the lithic evidence from the Central Pennines (Figures 5&7) coupled with the population density estimates (Figure 8) have been argued to suggest that raw materials and by proxy mobility was from many areas of Northern England, that it was on a larger scale than hitherto imagined. In fact, it suggests that mobility was on a scale more consistent with the size of mobility patterns seen in the Mesolithic cultures in Europe and was reminiscent of the mobility patterns of the preceding Late-glacial and Early Holocene hunter-gatherer cultures, which may therefore point towards some sort of continuity.

More importantly, notwithstanding any limitations, the raw material hinterland (Figure 7), the territories reconstructions (Figure 8), and the Pennine Nexus Hypothesis (Figure 9), preclude any notion of a solely East-West mobility patterns of the Clarkian models (Figure 6A), and rules out the possibility of separate inland and coastal populations suggested by the Social Territories models (Figure 6B). Rather, the evidence presented strongly suggests that mobility was throughout Northern England and this area may have been one ethnic/social territory in both the Early and Late Mesolithic. This possibility may explain the variation in the raw material types exploited over the Mesolithic, and also supports the fact that Mesolithic site locations and transit routes tended to focus on rivers and track ways between the adjacent river systems (Lovis et al. 2008; Preston 2011; Spikins 1996). Furthermore, combining all this information allowed the construction of the Pennine Nexus Hypothesis (Figure 9). Finally, notwithstanding any limitations, the results so far are promising. However, the Pennine Nexus Hypothesis needs further refinement and as a consequence the author proposes this to challenge the current orthodoxy and hence should be thought of as a heuristic 'straw man' that can be directly tested in the future.

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Chapter 5 For Caribou, Chert, and Company: Assessing Mobility as Evidence for Cultural Continuity among the Palaeo-Eskimos of Baffin Island, Arctic Canada

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ABSTRACT

The original inhabitants of the Eastern Arctic migrated there from Alaska approximately 4500 years ago and are known to archaeologists as Palaeo-Eskimos. The latest Palaeo-Eskimo sites date to AD 1000. A long-standing debate in Arctic prehistory is whether there was cultural continuity over the entire 3500 years of Palaeo-Eskimo occupations within the region, or whether one or more of the stylistic/technological transformations within the archaeological record represents a population replacement. The issue of mobility has figured in this debate. The consensus is that during the earliest period populations were highly mobile and travelled considerable distances to exploit seasonally abundant yet locationally restricted species, and then that Palaeo-Eskimo mobility throughout the Arctic began to change towards increasing sedentism. An emphasis on marine resources and the development of storage technology was seen as pivotal in the establishment of this more settled way of life, which is taken to characterise the late Palaeo-Eskimo period. However, recent archaeological investigations in the interior of southern Baffin Island have revealed apparent continuity between Early and Late Palaeo-Eskimo long-distance mobility strategies designed to exploit inland caribou herds and chert. Moreover, the central situation of these sites compared to the major coastal region would have further provided important opportunities for small isolated populations to meet and socialise. Taken together, caribou, chert, and visiting might have encouraged the persistence of seasonal inland travels, which, in turn, may provide supporting evidence for cultural continuity among the southern Baffin Island Palaeo-Eskimos.

Keywords: Palaeo-Eskimos, chert, caribou, mobility and cultural continuity

5.1. INTRODUCTION

Kelly (1988, 717) defines mobility as the way in which hunter-gatherers move across the landscape during their seasonal round. The availability and distribution of subsistence and material resources, and the strategies a culture uses to exploit them, will determine the frequency of these moves, the distances covered, and how they are socially organised (Jones et al. 2003; Kelly 1992; Goodyear 1989). Mobility in the Arctic region is a vital component of traditional northern lifestyles because of the pronounced seasonality and the limited number of available food resources, many of which are migratory. Accordingly, all archaeological interpretations of hunter-gatherer lifeways in circumpolar regions are structured by assumptions of seasonal mobility (Bielawski 1988). As research continues, however, there is increasing recognition that prehistoric mobility patterns could be highly variable (e.g. Darwent 2004; Gordon 1996, 1975; McGhee 1996; Schledermann 1996; Sutherland 1996; Renouf 1994; Tuck 1975; Maxwell 1973). In fact, regional environmental conditions and resource distributions are generally viewed as a key determinant of unique differences in mobility patterns among northern cultures over millennia. As a result, the archaeological identification of variability in mobility strategies has the potential to highlight the different choices that hunter-gatherers made under varying circumstances, and presents an opportunity to explore aspects of cultural continuity and change among these populations over time.

Whether there was cultural continuity among the Palaeo-Eskimos throughout their 3000 year cultural continuum has been debated by archaeologists for decades. In this paper, we present data from two recently investigated Palaeo-Eskimo sites located in the interior of southern Baffin Island that each contain occupations from both early and late Palaeo-Eskimo times. These sites exhibit exceptional organic preservation, thereby providing a unique opportunity to assess modifications in mobility, settlement, and resource exploitation strategies over time. Our preliminary results suggest that, despite regional climatic fluctuations and an increased reliance on sea mammal exploitation during the last 1500 years, Palaeo-Eskimo use of the interior of southern Baffin Island (Figure 10) did not undergo radical change. Rather, it appears that long-distance seasonal movements between inland and coastal areas followed the same pattern, and site function continued to focus on caribou hunting and the exploitation of local chert sources. In addition, we argue that opportunities for social interaction afforded by inter-regional travel to the interior also served as a catalyst for drawing Palaeo-Eskimos groups to the interior for extended periods during the summer and autumn. The confluence of these resources and the opportunity to socialise with other distant groups may have created such an attractive environment that the Palaeo-Eskimos were drawn to it at least intermittently throughout the cultural continuum. If so, the archaeological record of the region has the potential to contribute important new information on the question of Palaeo-Eskimo cultural continuity.

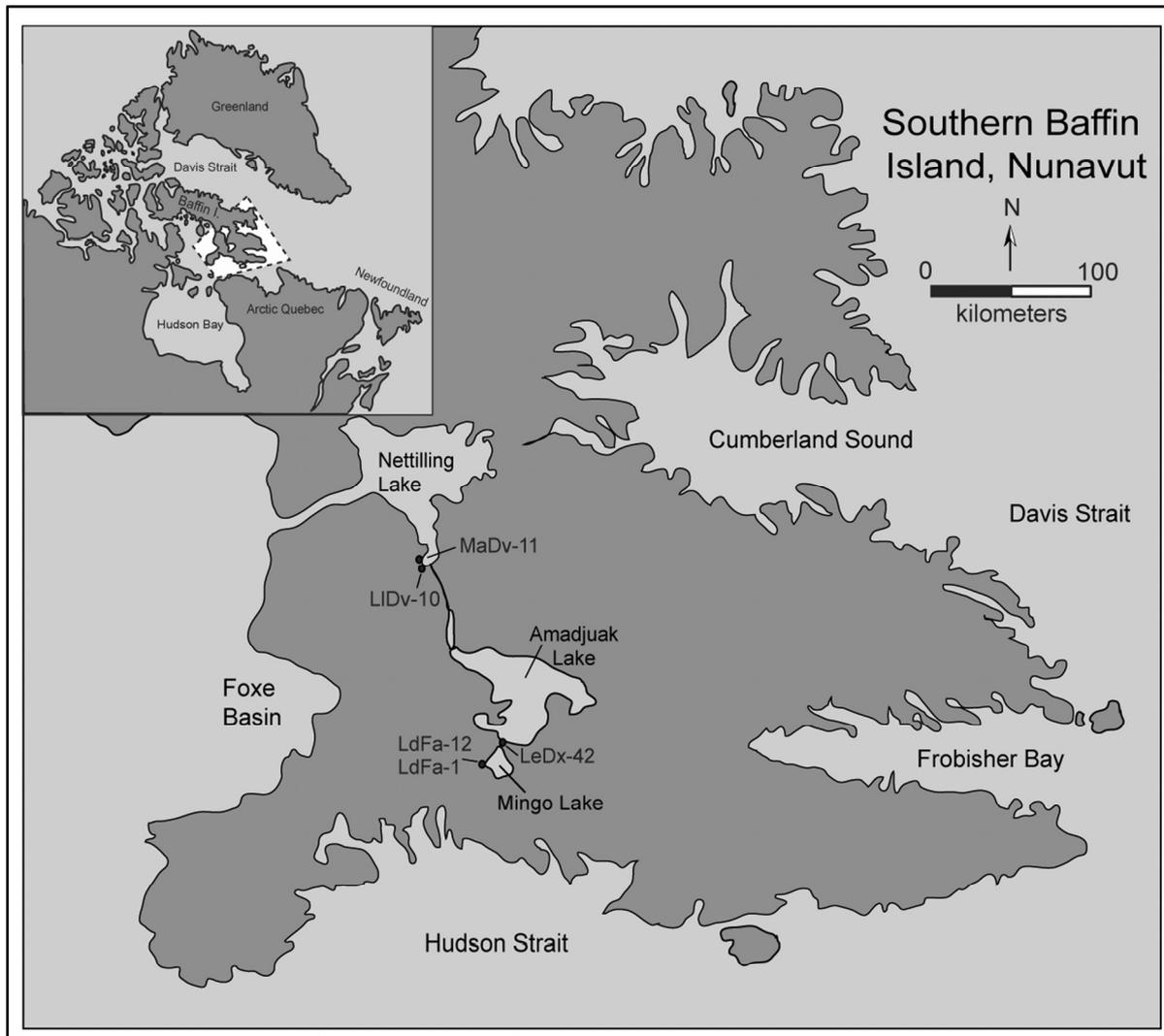


Figure 10. Southern Baffin Island and selected Palaeo-Eskimo features and sites
The locations of other nearby Palaeo-Eskimo sites are also indicated

5.2. PALAEO-ESKIMO CULTURE-HISTORY: A BRIEF OVERVIEW

The first humans to penetrate the Eastern Arctic were small bands of mobile hunter-gatherers that arrived from Alaska approximately 4500 years ago. These groups were part of a larger cultural entity branded as the ‘Arctic Small Tool tradition’ (ASTt). Irving (1957) first coined this name because of the distinctively small stone tools (Plate 2) that characterise Palaeo-Eskimo sites from Alaska to Greenland. The toolkit bears striking resemblances to the microlithic industries used in the Old World, thus leading to speculation that ASTt originated there, most likely in Siberia (Giddings 1957). In Arctic Canada and Greenland, three broad temporal subdivisions of Palaeo-Eskimo culture are recognised: Early (4500 – 2800 BP), Middle (2800 – 2500 BP), and Late (2500 – 1000 BP) (dates from Helmer 1994, 18).

Reconstructions of Palaeo-Eskimo lifeways and cultural developments over these millennia have been strongly

influenced by correlations with changing environmental variables (Fitzhugh 1997, 1976; McGhee 1996, 1976; Barry et al. 1977). The Early period spans a time of relative stability when the Eastern Arctic climate was warmer than today. These conditions are generally viewed as a catalyst for the rapid colonisation of a vast, pristine landscape by these pioneering populations in less than 500 years (Maxwell 1985). Given the warmer climate, the summer and autumn seasons would have been longer than today (McGhee 1996, 110), perhaps providing especially favourable conditions for the exploitation of the large land mammal species, such as caribou and muskox, which are most abundant inland at those times of the year. Finely made chert arrow blades are found in many sites, indicating the use of bow and arrow technology to exploit these species. Faunal remains, however, confirm that the Palaeo-Eskimos were equally well adapted to hunting marine resources, and the presence of specially designed harpoon heads and chert harpoon end blades in coastal settlements attests to the exploitation of several seal species. The existence of

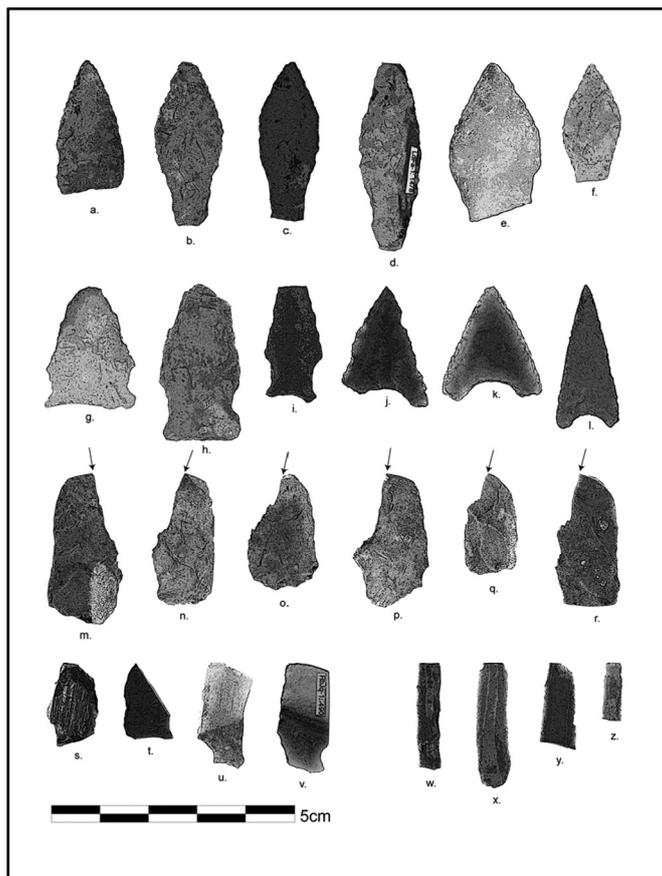


Plate 2. Examples of Palaeo-Eskimo lithic tools from sites throughout Nunavut, Canada
 a-f: Early Palaeo-Eskimo end-blades; g-l: Late Palaeo-Eskimo end blades; m-r: Early Palaeo-Eskimo burins; s-v: Late Palaeo-Eskimo burin-like tools; w-z: Early Palaeo-Eskimo microblades

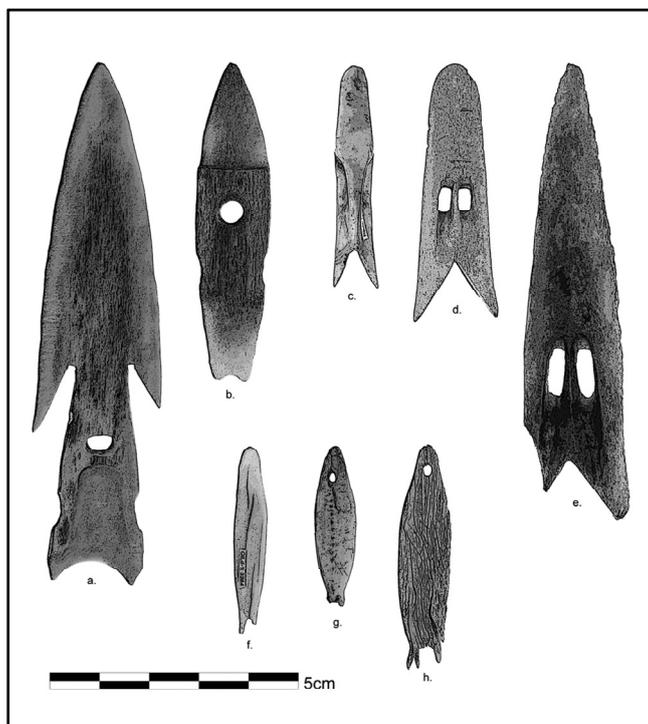


Plate 3. Examples of Palaeo-Eskimo harpoon heads and ornate carvings from sites throughout Nunavut, Canada
 a, b: Early Palaeo-Eskimo harpoon heads; c, d, e: Late Palaeo-Eskimo harpoon heads; f, g, h: Late Palaeo-Eskimo carvings of seals

Early Palaeo-Eskimo sites in both coastal and inland regions suggests that mobility was high, and that groups relocated seasonally to exploit the resource opportunities presented by these contrasting environments and ecosystems. Based on ethnographic analogy it is presumed that with the onset of summer, groups travelled inland for weeks or months to exploit caribou, Arctic char, and nesting waterfowl, and then returned in the autumn to the coast to spend the winter hunting seals on the sea ice (Milne 2003; McGhee 1990; Bielawski 1988; Maxwell 1985; Meyer 1977). The small, easily transportable toolkit carried by the Palaeo-Eskimos was well suited to this nomadic lifestyle as were their dwellings, which consisted of lightweight skin tents in spring, summer, and fall, and snow-banked tents or snowhouses in winter (Ramsden and Murray 1995). In comparison to the campsites of later cultures, Early Palaeo-Eskimo camps are often described as ephemeral, with thin cultural deposits further indicating that they did not stay in any one location for an extended period of time (Darwent 2004; Murray 1999; Nagy 2000, 1996; Maxwell 1985). Despite this, populations appear to have increased over the course of the Early period (Savelle and Dyke 2002; McGhee 1990; Maxwell 1985, 1973).

The relatively brief Middle period appears to coincide with the commencement of an environmental change characterised by a rapidly cooling climate resulting in longer, harsher winters and shorter cooler summers (Maxwell 1985). The distribution of known sites has led some archaeologists to infer a decrease in mobility, with the Middle period Palaeo-Eskimos spending more time in coastal regions and focusing more intensively on sea mammals, with a concomitant reduction in the importance of the inland terrestrial ecosystem in their adaptation (McGhee 1996, 111, 116-117; Nagy 1996, 182, 186). The absence of known Middle period sites in some regions may suggest short-term occupational abandonment or local population extinctions (Desrosiers and Gendron 2004; Gendron and Pinard 2000; McGhee 1996, 1976; Schlederermann 1996). Noteworthy changes in technology during this period include the abrupt decrease in the frequency of flaked stone arrow tips (suggesting a decline in the use of the bow and arrow), an increase in burin-like-tools (evolved version of a burin but more heavily ground), an increase in the use of more exotic tool-stones, triangular and side-notched harpoon end-blades, a proliferation of microblades, and the early development of food storage technology (Ramsden and Tuck 2001, 8; Nagy 1996, 193; Maxwell 1985, 111-125).

Finally, the Late period coincides with a persistently colder climate, which extended the annual duration and spatial extent of the sea ice. This created favourable conditions for intensive harvesting of sea mammals from the sea ice, accompanied by a shift towards a more coastal-oriented way of life (Darwent 2004; Murray 1999; Lemoine and Darwent 1998; McGhee 1996; Nagy 1996, 2000; Maxwell 1985). Dwellings became more substantial, caches for storing meat were commonplace, and large middens were produced, since people appear to

have been staying in one place for longer and/or reusing sites repeatedly. Faunal remains indicate a more heterogeneous economy where numerous species were exploited, including seals, walrus, and even small whales (Darwent 2004, 71; Murray 1999, 473; McGhee 1996, 117). Significant changes in the toolkit appearing in the Late period include the introduction of radically different harpoon head styles, the complete abandonment of bow and arrow technology, an increase in exotic tool-stone use, end blades with multiple-notching (indicating changes in tool hafting methods), the complete replacement of burins with burin-like tools, a shift from round to rectangular soapstone lamps, and a proliferation of ornate carvings (Plate 3) and organic artefacts associated with cold-weather hunting and living (Ramsden and Tuck 2001,; Murray 1999,; Maxwell 1985). The overall picture of Palaeo-Eskimo lifeways during the Late period that is presented in the literature is one of stability and success, when the Palaeo-Eskimos became closely adapted to the marine environment and rarely ventured inland for any length of time (McGhee 1996). Land mammals appear to have been hunted not far from coastal settlements, processed, and carried back to camp during the summer and fall as indicated by the remains of largely meat-bearing elements mixed in large coastal middens with abundant sea mammal remains (Murray 1999; Nagy 1996; Maxwell 1985).

5.3. CULTURAL CONTINUITY

Although this developmental progression of Palaeo-Eskimo culture appears plausible and internally consistent, archaeologists working in the Eastern Arctic have continued to debate the issue of cultural continuity amongst the Palaeo-Eskimos for more than 40 years (e.g. Desrosiers and Gendron 2004; Ramsden and Tuck 2001; Gendron and Pinard 2000; Nagy 1994; McGhee 1990; Maxwell 1973, 1985; Taylor 1968; Meldgaard 1962; Collins 1950). The significant stylistic and technological differences between the sites of these three subdivisions, as well as the relative scarcity and ambiguous nature of Middle period sites, make discontinuity a plausible possibility both regionally and overall. Such a discontinuity has precedent within the Eastern Arctic, since there is a complete cultural and biological break approximately one thousand years ago throughout the Eastern Arctic between the last of the Palaeo-Eskimos and the Neo-Eskimos, the ancestors of today's Inuit (Park 1993, 2000).

Presently, there are three hypotheses to explain the differences that accumulated during the Palaeo-Eskimo period (Maxwell 1997, 205). The first two both posit cultural continuity but differ over the rapidity and nature of the changes that occurred. The first hypothesis postulates the Middle period as representing a time of gradual internal cultural and technological innovation (Sutherland 1996; Maxwell 1973, 1962; Taylor 1968, 1967). The second hypothesis views the Middle period as a time of dramatic upheaval and adaptive change in response to the rapidly cooling climate, with the

abandonment of some regions (Desrosiers and Gendron 2004; Gendron and Pinard 2000; Murray 1999; McGhee 1996, 1990; Schledermann 1996; Maxwell 1985). The third hypothesis postulates discontinuity between the Middle and Late periods, and interprets the Middle period as marking the demise of the original pioneering populations, who were subsequently replaced by an unrelated or distantly-related culture, which then survived for over 1000 years.

Ramsden and Tuck (2001) make the most comprehensive case for discontinuity, focusing largely on stylistic and technological changes while also considering changes in settlement patterns. For example, the Middle period is characterised by:

“open socket and sliced harpoon heads, large numbers of microblades, few spalled burins which are eventually replaced by ground burin-like-tools, triangular and side-notched end blades, round or oval soapstone lamps, and ovate side blades” (Ramsden and Tuck 2001, 9).

Ramsden and Tuck further note that this assemblage differs little from what one would find in Early period sites (Ramsden and Tuck 2001). However, Middle period burins and burin spalls display heavy grinding and polish whereas Early ones do not (Maxwell 1985). In contrast, the Late period is characterised by a complete change in harpoon head styles, with the predominant types found in Early and Middle sites being entirely replaced by ‘a double line-hole, closed socket’ type (Ramsden and Tuck 2001). Changes in Late period lithics are described as equally pronounced (Ramsden and Tuck 2001, 9):

“spalled burins disappear entirely and are replaced by burin-like tools; end-blades are predominantly triangular or multiple side-notched and sharpened by the tip-fluting technique; rectangular soapstone vessels replace the small round or oval lamps; sleds and probably breathing hole sealing gear appear; houses become well defined rectangular semi-subterranean forms, often with paved floors or sleeping areas and side benches, and sometimes with tunnel entrances.... There is no evidence of the bow drill [used for boring holes in organic implements] or the bow and arrow. There is evidence in some areas for changes in settlement locations and, presumably, economic practices.” (Ramsden and Tuck 2001, 9)

Other distinguishing characteristics of the Late period noted by Maxwell (1985) include an increased use of slate, nephrite, quartz, and other exotic tool-stones, the appearance of whalebone sled shoes, sled models, ice creepers, snow knives, and magic-related art.

Ramsden and Tuck (2001, 9) note that occupational sequences throughout the Eastern Arctic are variable. In Labrador, they state that assemblages characteristic of the Middle and Late periods overlap in time for 300–400

years, suggesting that two distinct cultures coexisted in these areas. Moreover, they claim that evidence of continuous occupation from places like Igloolik and Baffin Island remains tenuous at best. Instead, they argue that Middle period sites from these regions represent mixed deposits of Early and Late occupations, thus giving a false sense of continuity. This may be a problem elsewhere, too, because few Early and Middle period sites in the Eastern Arctic have good preservation of materials suitable for radiocarbon dating (Ramsden and Tuck 2001, 9; Maxwell 1985, 76–78). As a result, it is not uncommon for sites to be subjectively classified to the Middle period solely on the basis of frequency distributions of specific lithic tool types. In some regions a combination of available radiocarbon dates and stylistic evidence suggests at least a local lack of continuity. For example, Desrosiers and Gendron (2004) and Gendron and Pinard (2000) assert that an absence of Middle period sites along Arctic Quebec’s Hudson Bay coastline provides evidence of a regional abandonment.

Thus, the classes of evidence that have been cited as relevant to the issue of whether or not there was continuity throughout the Palaeo-Eskimo period include chronology, changes in artefact styles, and changes in technology and adaptation, including mobility. In the remainder of this paper we focus on the issue of whether or not there was continuity in mobility—i.e., whether mobility in the Late period was significantly decreased from the Early period as several researchers have asserted.

5.4. EVIDENCE OF PALAEO-ESKIMO MOBILITY FROM SOUTHERN BAFFIN ISLAND

Our recent investigations of two large multi-component Palaeo-Eskimo sites (LdFa-1 and LeDx-42—see Figures 11 & 12) in the interior of southern Baffin Island provide new data that challenge the theory of a decrease in mobility. Based on the nature of the terrain and on ethnographic analogy (Stenton 1991a; Boas 1964), the occupants of these sites would have had to travel a minimum of 50km on foot from the nearest part of the coast to reach these sites.

5.4.1. Site Ldfa-1

LdFa-1 is located on the northwest shore of Mingo Lake and was first identified by Stenton in 1991. In 2004, Milne conducted preliminary testing at the site to confirm its cultural affiliation and in 2007, she returned to carry out more intensive excavations. Park completed the current series of excavations in 2008. While analysis of the recovered material is ongoing, some interesting patterns are emerging.

Good organic preservation at the site has facilitated radiocarbon dating and the 15 dates received so far all fall

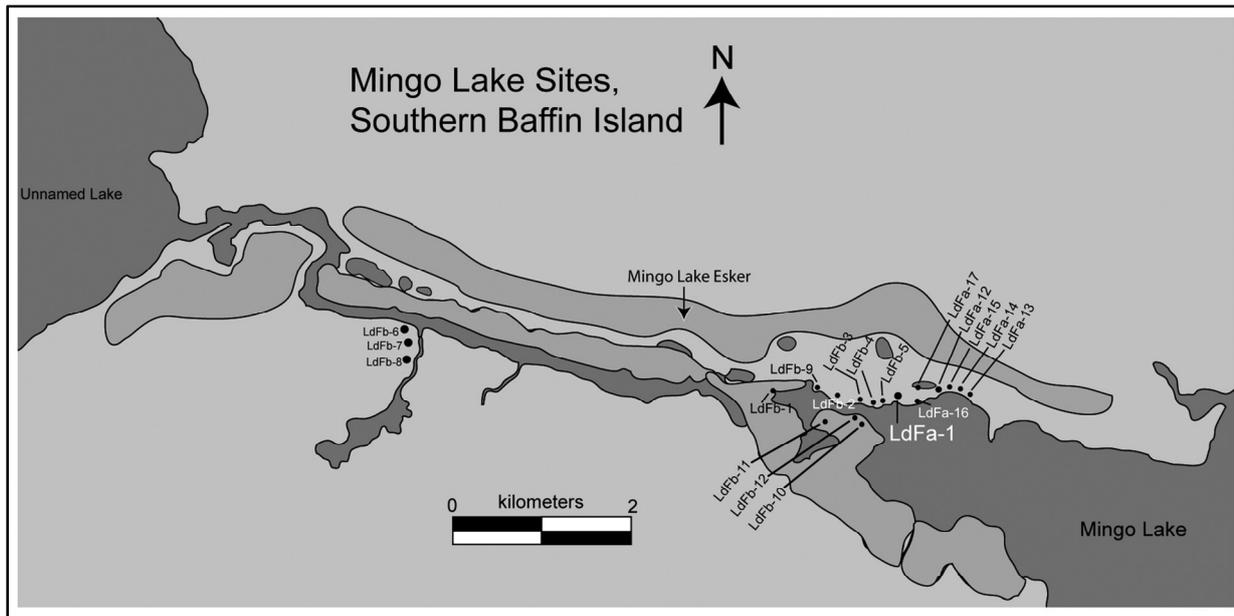


Figure 11. The location of the LdFa-1 site, Mingo Lake, southern Baffin Island
The locations of other nearby sites are also indicated

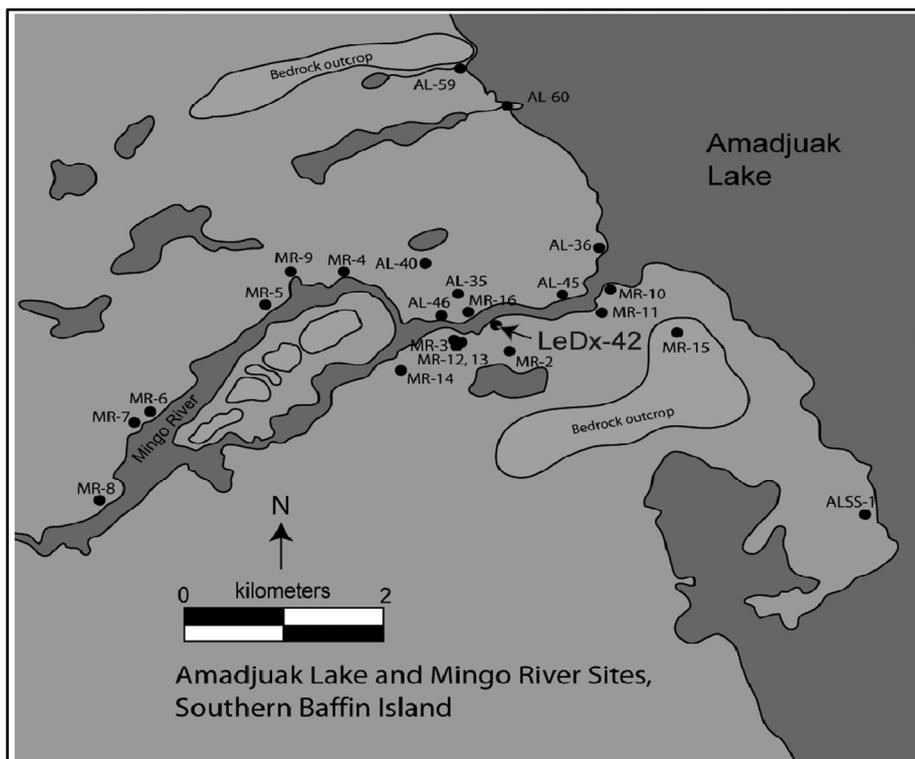


Figure 12. The location of the LeDx-42 site, Mingo River, southern Baffin Island
The locations of other nearby sites are also indicated

either in the Early or Late Palaeo-Eskimo periods (Table 8). The styles of the formal lithic and organic artefacts which include such diagnostic items as burins and burin-like tools, knives, end-blades, harpoon heads, sewing needles, and tool handles, similarly confirm the presence of extensive Early and Late Palaeo-Eskimo components

at the site. Preliminary analyses of the faunal and lithic remains from the site suggest that the site was used in a similar fashion in both periods. Over 3350 faunal specimens from the first two field seasons have been analyzed and of the 2203 that are identifiable by taxon, 97.8% are caribou, while the remaining 2.2% comprises

small frequencies of fish, goose, duck, ptarmigan, lemming, and ringed seal (Caldwell 2008; Hodgetts 2006) (Tables 8 & 9). The caribou remains display high frequencies of fracture, spiral fracture, and splitting, all of which point to intensive marrow extraction (Caldwell 2008). Other modifications include cut marks, impact scars, transverse breaks, and evidence of boiling and burning, perhaps to extract bone grease. The element representations among the positively identified caribou remains indicate that all parts of the skeleton are present (see Table 10). This means that the animals were being hunted and butchered very close to the site since the head, trunk, upper forelimbs, upper hind limbs, and lower limbs are all equally represented. A preliminary analysis of Late period faunal remains recovered in 2008 demonstrates that caribou bones and, to a lesser extent, antlers were being processed into implements at the site. The abundant burins and burin spalls from the Early period suggest that these activities were important then too.

The lithic assemblage from LdFa-1 is massive in comparison to most other Baffin Island Palaeo-Eskimo sites. Frequencies are dominated by lithic debitage, and preliminary analyses indicate that raw material procurement and early stage reduction were the primary technological activities pursued throughout this site's occupation. This is most simply illustrated by calculating the flake-to-tool ratio. Flake-to-tool ratios are simple measures used to examine the extent to which lost tool utility at a site was being replenished through the production of new tools (Ricklis and Cox 1993, 450-451). High ratios are expected in those sites where raw material procurement and tool production are the principal activities (Deller and Ellis 1992, 89). In contrast, low ratios are expected when technological activities are focused on tool maintenance and rejuvenation. In these situations, toolmakers are frequently dealing with raw material stress where they cannot access new supplies to replace those tools that fall out of use (Ricklis and Cox 1992, 450). The flake-to-tool ratio for LdFa-1 is high at 436:1 (18,691 flakes: 43 tools), indicating that raw material procurement and tool production activities were the main technological foci at the site.

5.4.2. Site LeDx-42

LeDx-42 is situated approximately 12km away from LdFa-1 on a large bedrock outcrop that juts out into the river that drains Mingo Lake into Amadjuak Lake. Milne identified and briefly investigated the site in 2004 during a walking survey of the region. An attempt to carry out more extensive excavations at the site in 2008 was unsuccessful as it proved impossible to land a plane anywhere near the site.

Like LdFa-1, LeDx-42 has good organic preservation. Six radiocarbon dates (Table 9) from the site clearly demonstrate its use during the Early and Late periods and artefact styles confirm the radiocarbon evidence. Lithic and organic artefacts diagnostic for the Early period include burins, burin spalls, microblades, finely made

arrows tips, and a harpoon fragment with two round drilled line holes. No formal lithic tools diagnostic of the Late period were recovered but a harpoon preform with a clearly gouged line hole derives from that period. The LeDx-42 lithic assemblage is extremely large with a high flake-to-tool ratio of 341:1 (29,648 flakes: 87 tools). Early stage reduction and raw material acquisition were thus the principal technological activities at the site. The burins and burin spalls suggest that the manufacture of implements from caribou bone and antler was also an important activity, at least during the Early period.

Over 1400 faunal remains were recovered from the site and 99% of those that were identified to taxon were caribou (Hodgetts 2006) (Tables 8 & 9). The remaining 1% includes duck and goose, which are migratory species found in the interior during the summer and early fall (Hodgetts 2006; Milne and Donnelly 2004). Modifications recorded for the LeDx-42 fauna include fractures, spiral fractures, and splitting, which again suggest intensive marrow extraction. Element representations among the positively identified caribou remains indicate that all parts of the skeleton (Table 10) are present (see Figure 12) and that the animals were being hunted and butchered close to the site.

5.5. DISCUSSION

The radiocarbon and stylistic/technological evidence from LdFa-1 and LeDx-42 demonstrate that both of these inland sites were used during the Early Palaeo-Eskimo period and during the Late Palaeo-Eskimo period, and the nature of the finds from each period at these sites further suggests that the nature of site use was comparable (Tables 7-9). The use of long-distance pedestrian mobility to access sites so far inland is consistent with prevailing interpretations of Early period settlement and mobility but is unexpected based on current interpretations of Late period adaptations. The use of these inland sites in both periods therefore illustrates that Palaeo-Eskimo mobility and lifeways did not drastically change between the Early and Late periods. While there may have been a gradual increase in the duration of occupation and reuse of cold-season coastal sites associated with a greater dependence on sea mammals, this change in mobility may have been strictly seasonal. At some point in the late spring or summer some Late period Palaeo-Eskimo groups consistently began their journeys inland, thus maintaining the long established inland/coastal seasonal mobility pattern first established during the Early period. This maintenance of inland travel also contradicts assertions that the importance of terrestrial resources declined in favour of sea mammals. In fact, the faunal evidence from both LdFa-1 and LeDx-42 indicate that caribou were consistently and intensively hunted with minimal contributions coming from other seasonally available resources found in the interior (i.e., avifauna, fish). Element representations indicate that hunting techniques were extremely uniform while breakage patterns highlight a consistency in butchering and consumption

Table 8. Radiocarbon dates from sites LdFa-1 and LeDx-42, Southern Baffin Island, NU
Calibrated using IntCal 04 (Reimer et al., 2004) and Talma and Vogel (1993) for mathematics

Site	Sample №	¹⁴ C Measurement BP	Conventional Age BP	Calibrated date 2Φ BP	Affiliation
LdFA-1	Beta-208146	3370±40	3490±40	3860-3650	Early Palaeo-Eskimo
	Beta-218084	3110±40	3210±40	3480-3360	Early Palaeo-Eskimo
	Beta-218085	3430±40	3530±40	3900-3700	Early Palaeo-Eskimo
	Beta-246443	3430±40	3560±40	3800-3720	Early Palaeo-Eskimo
	Beta-246444	3190±40	3300±40	3630-3440	Early Palaeo-Eskimo
	Beta-246445	3520±40	3640±40	4080-3850	Early Palaeo-Eskimo
	Beta-246446	3270±40	3370±40	3540-3480	Early Palaeo-Eskimo
	Beta-246452	3150±40	3280±40	3600-3410	Early Palaeo-Eskimo
	Beta-246453	1260±40	1370±40	3730-3570	Early Palaeo-Eskimo
	Beta-246447	3090±40	3200±40	3480-3360	Early Palaeo-Eskimo
	Beta-246448	1100±40	1220±40	1270-1060	Late Palaeo-Eskimo
	Beta-246449	1010±40	1130±40	1160-950	Late Palaeo-Eskimo
	Beta-246450	1080±40	1220±40	1270-1060	Late Palaeo-Eskimo
	Beta-246451	1010±40	1140±40	1170-960	Late Palaeo-Eskimo
LeDx-42	Beta-208145	1100±40	1230±40	1260-1060	Late Palaeo-Eskimo
	Beta-218087	3380±40	380±40	3850-3640	Early Palaeo-Eskimo
	Beta-208148	2340±40	2450±40	2730-2350	Middle Palaeo-Eskimo
	Beta-208149	2350±40	2460±40	2730-2360	Middle Palaeo-Eskimo
	Beta-218086	2210±40	2320±40	2360-2320	Middle Palaeo-Eskimo
	Beta-208157	1220±40	1330±40	1300-1180	Late Palaeo-Eskimo
	Beta-218088	1290±40	1380±40	1350-1240	Late Palaeo-Eskimo

Table 9. Faunal remains from LdFa-1 and LeDx-42 identified by taxon
Data derived from Caldwell 2008 and Hodgetts 2006, and all counts are NISP

Taxon	LdFa-1	LeDx-42
Caribou	930	475
Caribou-sized	1226	440
Fish	6	-
Bird	33	3
Other mammal	8	2
Indeterminate	1151	484
Total	3354	1404

practices. Effectively, the Palaeo-Eskimos continued to focus their attention on a single, locally abundant species found in the interior region. It is worth noting that Baffin Island supports several resident herds of caribou. Moreover, when the climate fluctuates and the herds become stressed they habitually contract to the interior (Stenton 1991 a/b, 1989). Therefore, if the Palaeo-Eskimos were travelling inland as a response to an increasingly unpredictable environment, conceivably they would have been able to count on finding caribou there to exploit.

The focus on caribou hunting at these sites in both periods is undoubtedly entirely predictable given the nature of the resources that would have been available in this part of the interior and the importance of that species as a source of skin clothing (e.g. Stenton 1991b). However, the similar nature of the lithic manufacturing activities in both periods may be almost equally predictable. The geology of southern Baffin Island is

variable but it is dominated largely by granite and gneiss formations. However, formations in the Amadjuak and Nettiing Lakes region are characterised by undivided carbonate and siliciclastic rocks (De Kemp et al. 2006) which are chert-bearing deposits (Milne et al. 2009). Large glacial till sheets also deposited secondary sources of chert in the area. The name ‘Amadjuak’ is an English corruption of the Inuktitut word ‘amaq’, which, loosely translated, means the ‘place chert comes from’. Accordingly, it appears that Palaeo-Eskimo toolmakers chose to travel inland to replenish their tool stone-supplies, and the logical time of year to accomplish the task would be during the summer and early fall when the ground is free of ice and snow (Milne 2005; Milne and Donnelly 2004).

Despite its apparent relative abundance, the chert found in the interior is of variable quality and much of it contains internal flaws (Milne 2005, 2003; Maxwell

Table 10. Representation of caribou skeletal elements from sites LdFa-1 and LeDx-42
Data derived from Caldwell 2008 and Hodgetts 2006, and all counts are NISP

<i>Element</i>	<i>LdFa-1</i>	<i>LeDx-42</i>
HEAD		
Antler	9	2
Cranium	20	6
Mandible	30	18
Tooth	128	96
AXIAL SKELETON		
Vertebra	3	5
Cervical	4	2
Thoracic	4	3
Lumbar	4	15
Rib	125	3
Costal cartilage	2	3
Sternebra	1	48
Innominate	10	1
UPPER LIMBS		
Scapula	9	4
Humerus	16	12
Radioulna	52	62
Femur	31	12
Tibia	29	38
Fibula	1	1
Patella	2	1
LOWER LIMBS		
Carpal	18	13
Astragalus	13	5
Calcaneus	4	4
Tarsal	8	3
Metacarpal	29	31
Metatarsal	52	46
Metapodial	28	23
Sesamoid	-	2
Phalanx 1	21	9
Phalanx 2	13	5
Phalanx 3	3	2
Phalanx ?	1	-
Carpal Tarsal	1	-
TOTAL	671	475

1985). This directly impacts the kinds of tools that can be made and the stylistic treatments applied to them. Among Late Palaeo-Eskimo toolkits from southern Baffin Island there is little evidence of the technique of tip fluting (Maxwell 1985, 110) notes, this may be due to the inferior quality of the tool stone that is available there to work. With this in mind, it may be equally difficult to create end blades with multiple notching since the southern Baffin Island chert is more friable and likely to fail. This may also account for why there are lower frequencies of these specific tool types in the southern Baffin Island assemblages compared to other regions like Labrador and Newfoundland, where high quality cherts are readily available. Therefore, Ramsden and Tuck's (2001, 9) belief that these are diagnostic types reliably distinguishing Middle and Late Palaeo-Eskimo culture may be incorrect unless one first considers tool stone quality, availability, and technological organisation, and how these impacted tool morphology.

Lastly, the interior region was also a central location where small and widely dispersed coastal populations could meet and socialise. This would likely require flexibility in social organisation to facilitate travel (Bielawski 1988), and groups may have split up into one or two families for the journey and then reassembled with distant relatives and friends upon reaching the interior (see Maxwell 1985, 98). These changes would help dissipate feuds from winter camps while also providing opportunities for individuals to exchange information and find mates (Stenton 1989). Among the historic Inuit, summer inland travels were eagerly anticipated after having spent a long winter on the sea ice (Bilby 1923, 237-241). People looked forward to a change in scenery, diet, and company, and it was a time of year when food was plentiful, the weather was warm and 'there was no immediate cause for anxiety' (Balicki 1970, 35).

Palaeo-Eskimo populations were undoubtedly smaller than those recorded for the southern Baffin Inuit; therefore, these kinds of annual meetings to maintain

social contact would have been vitally important for their survival. MacDonald's (1999, 1998) study of Folsom Palaeo-Indian mobility concluded that individuals travelled on average 330 km to meet up with distant groups in order to find mates and maintain social contact. Therefore, it is not inconceivable that the Palaeo-Eskimos travelled similar distances to the interior for social purpose as well (Milne 2012; Ellis 2008).

5.6. CONCLUSIONS

Taken together, caribou, chert, and socialisation most certainly would appear to have encouraged the southern Baffin Island Palaeo-Eskimos to maintain seasonal inland travels in both the Early and Late periods and throughout the entire Palaeo-Eskimo phase. From a practical perspective, caribou were abundant for subsistence as was chert for tool making. However, the social importance of inland travel could have been equally important in maintaining social contact and basic genetic viability (Milne 2008b).

The data from LdFa-1 and LeDx-42 appears to be relevant both to the issue of whether or not there was cultural continuity in the Eastern Arctic throughout the entire Palaeo-Eskimo phase, and to the issue of whether or not the Late Palaeo-Eskimo period was characterised by reduced mobility. The fact that long-distance mobility was still employed in this region in the Late period demonstrates that the decreasing mobility that some researchers have ascribed to that period was not characteristic of all regions. Likewise, the nearly identical patterns of long-distance inland mobility that were employed in both the Early and Late periods suggest that the stylistic/technological differences between the artefacts of those periods may be less significant than they appear, and that interpretation would be more consistent with the models of cultural continuity.

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Chapter 6 From the Saddle to the Grave: Nomadic Pastoralism, Mobility and Mortuary Remains in Iron-Age Mongolia

Erik G. Johannesson and Michelle L. Machicek

ABSTRACT

The transitional period from the Bronze to Iron Age in Mongolia is witness to the emergence of the type of nomadic pastoralism that would, centuries later, become typified by the hordes of Chinggis Khan. This study investigates the question of mobility and change through a diachronic examination of mortuary landscapes and funerary remains at Baga Gazaryn Chuluu located in the north Gobi Desert of Mongolia. We argue that, although the remains of nomadic pastoralists become fixed in archaeological contexts, in Mongolia, these material vestiges nevertheless reveal evidence of a society that is becoming considerably more mobile over time. Upon examination of mortuary assemblages, the inclusion of goats and cattle—and particularly horses and horse trappings, which increase through time—implies an increased predilection to include pastoral resources in funerary ritual. In addition, the inclusion of a greater number of imported objects such as larch wood from northern Mongolia, luxury objects from China, and turquoise from Egypt, attests to the existence of extensive trade networks. When viewed as part of a temporal process, these attributes suggest a gradual transition to a more mobile way of life associated with the adoption of nomadic pastoralism and one that is characterised by increasing cross-regional interaction with other peoples.

Keywords: mobility, monuments, pastoralism, mortuary analysis

6.1. INTRODUCTION

The Late Bronze Age and Early Iron Age (ca. 1500–200 BC) in Mongolia is characterised by a transition to nomadic pastoralism from a mixed economy of foraging and a small degree of reliance on pastoral resources. However, the exact details of this transition are unknown and it remains unclear precisely when during this period the shift to nomadic pastoralism occurred. Moreover, assessment of this period is hampered by a number of factors. Firstly, archaeology in Mongolia is still very much in the developmental phase and high resolution chronology in this part of the world is lacking due to few radiometric dates. Secondly, the regional distribution of specific material types is not well known, nor is variation in site-types between regions. Finally, nomadic pastoralists leave ephemeral traces archaeologically with the result that a predominance of materials are derived from funerary contexts (Cribb 1991). Mortuary contexts further present a particular set of problems in identifying a transition to nomadic pastoralism, as well as any accompanying changes in mobility, because they are inherently symbolic. Since funerary contexts represent deliberately deposited materials, mortuary remains and assemblages cannot be interpreted as reflecting economic activities or subsistence strategies in the same way as materials from spoil-heaps or habitation sites. Instead, they should be recognised as symbolic and material manifestations of the worldviews of the living and reflective of the role certain materials played in the lives of the people who incorporated them into their funerary customs. In spite of these obstacles we contend that it should be possible to address the emergence of nomadic pastoralism and mobility in Mongolia. We argue that although it may not be impossible to identify the precise moment nomadic pastoralism was adopted in Mongolia, resulting changes in the archaeological record should be

indicative of accompanying changes in worldview and mobility.

Mobility is a key feature in human subsistence strategies and adaptation to the environment, and acts as a coping mechanism for variability in resource abundance (Halstead and O’Shea 1989). This is particularly true with regards to nomadic pastoralists’ subsistence practices, which in contrast to foraging societies involve not only residential mobility, but also the movement of the animals on which pastoralists rely. Pastoralists’ use of the landscape is contingent upon finding adequate pasture and water for their herds because the animals themselves cannot adapt to environmental pressures by exploiting other resources (Chang 2006). However, other factors affect people’s decisions concerning residential mobility, such as access to social networks, trade, the search for mates, and political instability (Frachetti and Mar’yashev 2007). Therefore, an emphasis on subsistence strategies to infer mobility may obfuscate other types of movement and reasons for travel. Moreover, since mortuary contexts are not direct derivatives of economic practices they cannot readily address these types of mobility. In light of these observations we choose not to distinguish between discrete types of mobility, e.g. *residential mobility* as opposed to *logistical mobility* (Binford 1980; Kelly 1992). Instead we treat mobility as a pervasive feature of human behaviour that exploits spatial and temporal variations in available resources. We argue that nomadic pastoralism can be addressed by relying on multiple lines of evidence that examine mobility within broader material culture regimes and by adopting a diachronic perspective that traces material change over time. That is to say that we rely largely on qualitative assessments of types of evidence that by themselves are not directly indicative of mobility, but which, when viewed in conjunction with other types of materials, have a compounding effect that strongly suggests an increase in

mobility. Such evidence includes increased incorporation of pastoral resources in funerary practices, increased inclusion over time of materials acquired through access to inter-regional and long distance trade networks, and the placement of mortuary monuments that emphasise access to routes of movement.

The data presented herein is primarily derived from Baga Gazaryn Chuluu (BGC) just north of the Gobi Desert in central Mongolia, with comparative material presented from published reports from other parts of Mongolia and Siberia. BGC is a constellation of granite cliffs and ridges that rise out of the desert steppe just north of the Gobi Desert in the Dundgovi Aimag of Mongolia (Figure 13). The area consists of approximately 85km² of rocky terrain surrounded by vast expanse of desert steppe. Annual precipitation is low, averaging approximately 150–250 mm and in years of drought the landscape lies almost entirely barren. Nevertheless, BGC is a comparatively stable source of water in the region which has contributed to the area becoming a natural staging point for travel into the south Gobi Desert and Inner Mongolia. Between 2003 and 2008 the Baga Gazaryn Chuluu Archaeological Survey Project conducted systematic intensive pedestrian survey of approximately 240km² of BGC and its hinterland in addition to extensive excavation. The purpose of the project was to identify, catalogue, and document archaeological sites in the area and to create a comparative database of mortuary stone monuments in Mongolia (Wright et al. 2007). At the project's conclusion in 2008 roughly 1750 archaeological sites had been identified, of which 812 could be assigned to the Bronze-Iron Age transition in Mongolia. Of these 812 monuments 86 were excavated by the end of the project. Since excavated monuments represent a very small sample of existing monuments and because virtually all tombs in this area have been looted or suffered from adverse taphonomic processes it is problematic to rely on quantitative analyses. It is partly for this reason that we have chosen to rely on a qualitative and largely impressionistic assessment of the available evidence.

The Late Bronze and Early Iron Ages in Mongolia are characterised by three major types of stone monuments: khirigsuurs (c.1500–800 BC), slab burials (c.800–200 BC), and Xiongnu ring tombs (300 BC–AD200). These monuments are found throughout Mongolia and are also present in abundance at BGC. However, the lack of an adequate chronology cannot be overstated. Whereas rudimentary chronological frameworks were originally based on seriation of each monument type and accompanying assemblages, emerging radiocarbon dates reveal significant overlap between each successive monument type (Honeychurch et al. 2008). Furthermore, there is no consensus as to what material evidence actually constitutes the transition from the Bronze to Iron Age in Mongolia (Honeychurch 2003; Wright 2006). Our adoption of a diachronic perspective is an attempt to overcome these problems by focusing on change over time rather than specific events. This approach avoids

treating each monument type as a discreet phenomenon or assuming that related monuments are contemporaneous.

6.2. KHIRIGSUURS

Khirigsuurs are monuments that consist of a central mound of unworked rocks sometimes surrounded by a rectangular or circular alignment of rocks (see Plate 4). Small clusters of piled rocks, or 'satellites', are often found at varying distances outside the stone enclosure. The typical sizes of khirigsuurs, including perimeter enclosure and satellites, range from 20–40m in diameter, although some are substantially larger (Allard and Erdenebaatar 2005). Khirigsuurs are found throughout Mongolia, Inner Mongolia, and Siberia and represent some of the first monumental structures in Mongolia emerging after the Epi-Palaeolithic (Wright et al. 2007). They exhibit tremendous variability in construction, size, and distribution, occurring both individually and in clusters, which is also reflected in the khirigsuurs at BGC. In some cases the satellite features have been found to contain horse crania, ceramics, and bronze objects (Allard and Erdenebaatar 2005). This is significant since it implies that horses, an integral component of the nomadic pastoralism that later came to characterise this area, were being incorporated into the ceremonial activities enacted at these monuments. This in turn suggests the possible exploitation or experimentation with pastoral resources at this time. However, it should be noted that this is not a pervasive phenomenon and that throughout Mongolia khirigsuurs rarely contain faunal remains at all. In fact, most khirigsuurs do not overall have extensive funerary assemblages. The absence of funerary assemblages has led to some speculation about whether or not khirigsuurs are burials or commemorate communal ritual activities (Wright 2006). However, mounting evidence is confirming these monuments as inhumations with little to no funerary goods and where the absence of skeletal remains can be explained by taphonomic processes or pillaging activities (Tsybiktarov 2003; Frohlich 2009).

Three hundred and forty khirigsuurs have been identified throughout BGC. These are clustered in and around the central valleys, along ridge lines and bluffs and at the end of ridge noses. With few exceptions, khirigsuurs are not found at higher elevations in the area. The majority of khirigsuurs in the research area confer a significant visual impact on the landscape. This visual impression suggests intentional placement to commemorate either activities which may have been performed at them or to emphasise each monument's association with specific topographical features or locales within BGC. Additionally, the presence of quadrangular burials, one of which was excavated in the summer of 2007 and found to be contemporaneous with khirigsuur construction, indicates that alternative burial practices were taking place at BGC at this time. This adds a further dimension to the interpretation of these various monuments. Furthermore,

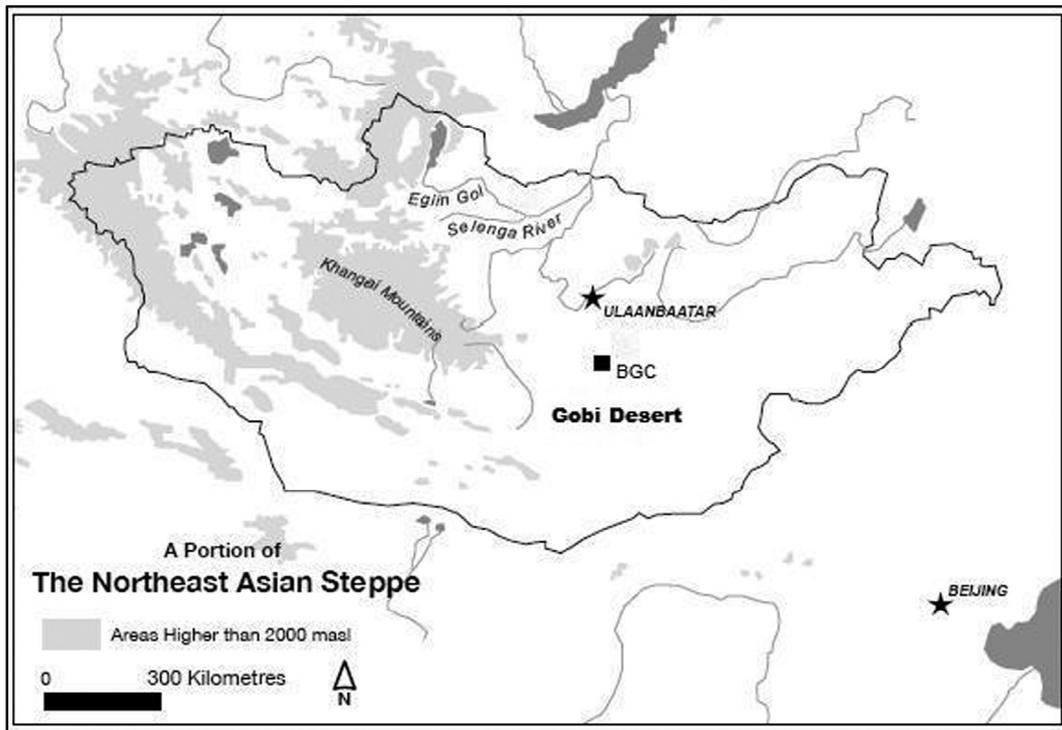


Figure 13. Mongolia and Baga Gazaryn Chuluu in Dundgovi Aimag



Plate 4. Khirigsuur feature with a stone circle surrounding the central stone mound

faunal remains of horses, cattle, and sheep recovered from these burials are an additional indication of some exploitation of pastoral resources during the period of khirigsuur construction.

6.3. SLAB BURIALS

At c.800 BC another monument type, the slab burial, is found in southern Siberia and central and eastern Mongolia. Slab burials are comprised of a rectangular formation of large upright stone slabs, typically oriented east to west, that cover and surround a shallow burial pit. Slab burials vary in length from about 1.5-4m, although some may be as large as 10m in length, with slabs reaching as high as 2m above the ground surface (Tsybiktarov 1998; 2003). A comprehensive survey of site distribution across Mongolia has yet to be carried out and although slab burials have not been recorded in the western reaches of Mongolia, future investigations may provide evidence to the contrary (Tsybiktarov 2003; Wright 2006). A spatial relationship between khirigsuur and slab burial distribution has been recognised by scholars working throughout Mongolia in areas where these monuments occur contemporaneously (Tsybiktarov 2003; Honeychurch et al. 2008; Wright 2006). Slab burials are typically found in association with khirigsuurs and are in some cases incorporated into khirigsuur complexes as additional satellites or as part of the aligned rock enclosure. The mortuary assemblage of slab burials includes the interment of the deceased, sometimes accompanied by a horse, saddles and horse trappings, ceramic objects, bone, lithics, bronze items, turquoise, and some imported Chinese goods (Volkov 1995; Tsybiktarov 1998; Wright 2006).

At BGC, 287 slab burials have been identified thus far and 32 have been excavated. Like khirigsuurs, slab burials are found in and around the central valleys, along ridge lines, bluffs, and nose ridges (see Plate 5). The spatial affinity between khirigsuurs and slab burials, noted elsewhere in Mongolia, is replicated in the research area where most slab burials are found in the vicinity of a khirigsuur. Slab burials are also found in small clusters of three to nine graves, with singular examples being rare. However, a number of disparate monuments excavated by the project were found to be contemporaneous with slab burials in the area, which makes it difficult to view slab burials as representing the primary mortuary practice in this region. Faunal materials recovered from these features at BGC and elsewhere in Mongolia include horses, cattle, sheep and goats, which further suggest some reliance on pastoral resources during their period of use. However, faunal remains are not extensive and do not amount to more than a few individual animals. Additionally, the presence in these burials of certain artefacts, such as turquoise beads and Chinese ceramics, indicates some access to inter-regional trade networks.

6.4. XIONGNU RING TOMBS

At approximately 300 BC, a new monument type, the Xiongnu ring tomb, appeared and spread throughout Mongolia, Inner Mongolia, and southern Siberia. These monuments have been identified as corresponding to a confederation of nomadic pastoralist groups who are termed the *Xiongnu* in Chinese historical documents (Di Cosmo 2002). Xiongnu ring tombs are burials which are marked on the surface by a distinct, broad circular ring of stones (Plate 6). This circle of stones can range in size from 5–14m and covers a burial shaft normally between 1 and 3m in depth, although the shafts can reach as many as 7m deep. These burials are typically oriented east to west and the construction of the burial chamber can range from a shallow earthen pit to pits lined with stone slabs, and sometimes include variously constructed wooden coffins. The mortuary assemblage found within these interments is remarkably diverse. In addition to the primary burial, Xiongnu tombs have been known to contain human sacrificial victims, a range of faunal remains both wild and domestic, semi-precious stones, ceramics, precious metals, and a number of long-distance imported goods from China, Central Asia, and the Middle East (Miniaev and Sakharovskaia 2002).

165 Xiongnu ring tombs have been identified at BGC, of which 29 have been excavated. Unlike khirigsuurs and slab burials, the distribution of Xiongnu ring tombs is concentrated at the edges of the rocks themselves rather than within the central terrain. Xiongnu ring tombs are also divergent from khirigsuurs and slab burials in that they are not as visually prominent in the landscape. Thus through analysis of the placement of the Xiongnu ring tombs in the research area it is possible to discern a shift in the monumental landscape during this time. Monuments were no longer placed throughout the valleys and bluffs with an emphasis on visual impact, but were positioned around BGC itself to the extent that, in effect, they encircle the entire area of the ridge system. Moreover, the placement of Xiongnu tombs conspicuously avoids areas in which preceding monuments were found.

Like slab burials, the mortuary assemblages of Xiongnu ring tombs are incomplete due to extensive pillaging and adverse taphonomic processes. However, those remains that have been recovered are compelling. Multiple Xiongnu ring tombs at BGC contained beads of various materials, none of which are found locally (see Plate 7 for a sample of the range of beads recovered from one burial context). Other imported objects found in numerous burials include bronzes, iron, and wheel-made Chinese ceramics and lacquer. A number of Xiongnu burials also contained coffins made of larch wood and a number of containers and items made of birch bark (see Plate 8 for example of one such object). This is significant due to the fact that neither larch nor birch grows naturally at BGC and would have had to be imported or procured from northern Mongolia or Siberia. One coffin in particular



Plate 5. Slab burial located at Baga Gazaryn Chuluu



Plate 6. Xiongnu burial located at Baga Gazaryn Chuluu

was decorated with a bronze fitting and lacquer imported from China. This combination of wood from the north and lacquer and bronze from the south suggests that this area was part of a broader socio-economic network reaching from Siberia to China. Other evidence of long-distance trade during the Xiongnu period includes three faience beads from Egypt. These were identified as an amphora amulet, a *Bes* figurine, and a *manusficus* which are well known in Hellenistic Egypt and which have also been found elsewhere in Central Asia (Khatanbaatar 2007). BGC's location in the north Gobi Desert makes it an ideal staging point for travel through this barren and arid region. Moreover, the Xiongnu's expansion westward into Xinjiang at this time would have given Mongolia access to the emergent Silk Road trade system (Di Cosmo 2002). Hence inhabitants of BGC had access to a socio-economic network which connected it not only with China and Siberia, but also with a broader set of contacts through Central Asia and reaching as far as the Middle East. The fact that so much of this material is recovered at BGC in spite of extensive pillaging holds further significance, since it implies the presence of other desirable or expensive materials which were removed by grave robbers.

Xiongnu ring tombs contain extensive faunal assemblages. One particular feature of Xiongnu tombs consists of a niche in the northern section of the tomb in which were placed the heads and hooves of goats and cattle. This is a near ubiquitous practice and in those tombs where it does not occur at BGC the absence of this niche can be explained by destruction associated with pillaging. It is also significant that this niche is also present in the large imperial Xiongnu tombs found in northern, central, and far western Mongolia (Miller et al. 2008). In addition, several tombs were accompanied by small secondary stone features located to the south of the grave, which consisted of a buried stone cist containing disarticulated remains of goats and sheep. These features were marked on the surface by an inconspicuous cluster of unaltered rocks. These occurrences have been identified elsewhere in Mongolia and in conjunction with the aforementioned northern niche suggest a more standardised treatment of faunal remains in funerary practice (Miniaev and Sakharovskaia 2002; Miller et al. 2008). Faunal remains were also found throughout the mortuary assemblages and although they occasionally included dogs and deer they were primarily comprised of pastoral resources (i.e. sheep, goats, cattle, and horses). Several elements, particularly teeth, found in the funerary assemblage exhibited evidence of burning. In addition, perforated astragali of wild and domestic goats were recovered from several graves. In comparison to faunal remains in slab burials and khirigsuurs, which include the occasional animal, the faunal assemblages in Xiongnu graves are extensive, often comprising more than two dozen animals. It should be noted, however, that faunal remains in mortuary contexts do not constitute evidence of specific economic activities such as nomadic pastoralism, nor do they necessarily imply feasting (Crabtree 1989; Marciniak 2006). The latter has often

been invoked to explain the presence of pastoral resources in mortuary contexts, especially when faunal remains constitute the less-meat-yielding parts of an animal such as the cranium, hooves, and cervical vertebrae (Kuzmina 2008; Miller et al. 2008). However, this may privilege the interpretation of faunal remains as being inherently of nutritional and economic value and disregards the symbolic nature of mortuary contexts. Such assumptions may conceal other activities or functions of these particular elements especially in the absence of other parts of the skeleton. The head and hooves are also the most portable portions of an animal's carcass. It is thus equally possible that animals were slaughtered and consumed elsewhere and the crania and hooves substituted as symbolic representations of each animal. The presence of livestock more accurately signals access to and a preference for pastoral resources in mortuary practice. Ultimately it is not the fact that there are necessarily more animals in Xiongnu tombs that is important. It is rather that their inclusion was both ubiquitous and standardised in comparison to preceding periods, which in turn signals a change in worldview regarding the treatment of pastoral resources in funerary ritual.

6.5. DISCUSSION

As mentioned in the introduction of this paper, nomadic pastoralist communities are intricately tied to both the landscape in which they graze their livestock and to the livestock itself. Animals are not only utilised as a means of subsistence, but also for secondary resources as well such as milk, fur, wool, and bone. Therefore, a transition to nomadic pastoralism should encompass a development over time to where the animals upon which pastoralists depend become increasingly incorporated into other aspects of daily and ritual life. Similarly, some aspects of material culture would be expected to reflect new economic and social constraints resulting from the adoption of more mobile ways of life. This is certainly the case in Mongolia during the Bronze-Iron Age transition. If approached from a diachronic perspective that emphasises change over time, rather than specific chronological horizons, the following observations can be made regarding the Bronze-Iron Age transition in Mongolia:

- 1) Khirigsuurs and slab burials are found throughout the research area and often placed prominently taking advantage of particular topographic features, while Xiongnu tombs are located around BGC itself, where the rocks give way to expansive desert steppe.
- 2) Whereas khirigsuurs and slab burials are visually prominent, Xiongnu ring tombs lack externally visible components and instead exhibit greater investment in the funerary assemblages, rather than in the monuments themselves.

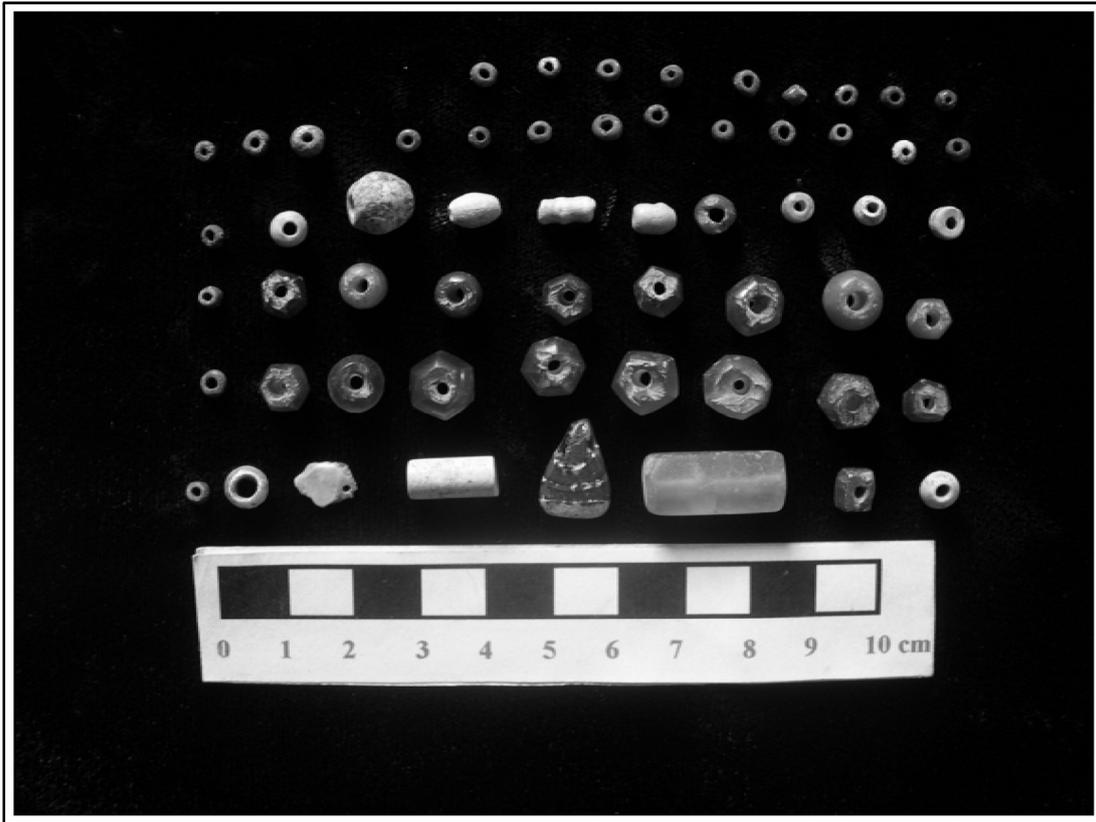


Plate 7. Selection of beads recovered from one Xiongnu burial at Baga Gazaryn Chuluu

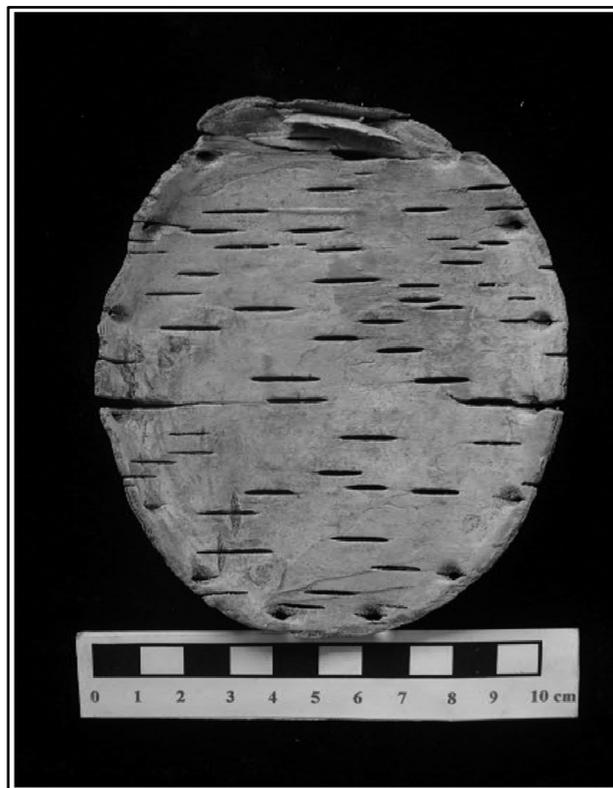


Plate 8. Part of a birch bark vessel recovered from a Xiongnu burial

- 3) In spite of comprehensive pillaging activities, Xiongnu tombs still yield a considerable amount of material evidence with numerous imports attesting to access to long-distance socio-economic networks.
- 4) The increased homogeneity of Xiongnu tombs compared to khirigsuurs and slab burials, including their placement in clusters or cemeteries, suggests a greater regional regularity in funerary customs and ideologies.
- 5) Xiongnu tombs exhibit a greater emphasis and standardization in the inclusion of faunal remains, particularly pastoral resources, in the funerary assemblage.

These observations are individually not indicative of either the adoption of nomadic pastoralism or greater mobility, but can instead be explained by the formation of a regional Xiongnu confederacy. Nevertheless, a compounding effect emerges when these observations are viewed in conjunction with one another.

The presence of some livestock in khirigsuurs and slab burials demonstrate access to some pastoral resources for inclusion in mortuary ritual. The continuity in lithic materials from the Epi-Palaeolithic that overlap with khirigsuur construction suggests that foraging may have been practised to some extent at this time (Wright et al. 2007). Moreover, the raw materials from which the lithic assemblages are derived were available locally and there is no additional evidence to suggest extensive inter-regional contact or movement at this time (Wright et al. 2007). Yet the monuments themselves, especially khirigsuurs, in which faunal remains are often entirely absent, reveal tremendous variability, both locally and regionally, in how and where faunal materials were incorporated in these rituals. The inherently local expression of monumentality by both khirigsuurs and slab burials suggests that if nomadic pastoralism was in fact practised by the builders of these monuments it was conducted on a smaller, more local scale. This local articulation of monumentality may also indicate an adjustment to new regimes of land use as a result of emergent grazing practices associated with nomadic pastoralism. The regional diversity of these monuments also suggests that they resulted from choices made on the local level rather than resulting from regional socio-political or economic constraints. The presence of horse trappings in slab burials is also indicative that, over time at least, a segment of the population rode horses and, more importantly, that the equipment associated with this activity had become incorporated into mortuary ritual. This is important because, while a horse bit in itself is purely a functional item, upon deliberate placement into a burial it assumes a symbolic role as well. This observation in conjunction with the presence of some objects obtained from inter-regional trade networks such as turquoise beads and Chinese ceramics is also important. There are no such objects in Epi-Palaeolithic contexts, or in khirigsuurs, but they appear concurrently with the evidence of a segment of the population having

access to efficient means of transport. Although it is only possible to speculate on the true nature and extent of nomadic pastoralism in Mongolia prior to the formation of the Xiongnu confederacy, pastoralism was evidently present in some form. For example, the quadrangular burial at BGC which was contemporaneous with khirigsuurs and which contained a goat, a sheep, a cow, and a horse indicates the presence of species which are the foundation of nomadic pastoralism in Mongolia at this time. However, the extent of the use of these animals remains unknown.

The widespread and substantial increase in livestock being included in Xiongnu mortuary assemblages gives the overall impression of an increased access to pastoral resources. Similarly, the addition of livestock in more prominent ceremonial features, such as buried stone cists and pits, is consistent with an expected increase in the inclusion of pastoral resources in ritual behaviour, particularly as nomadic pastoralism becomes more firmly entrenched within the respective local environs. The same can also be said for the recurrent practice of placing crania and hooves of livestock in a niche in the northern section of the burial. Indeed the evidence, including perforated astragali, all point to the adoption of a repertoire of symbols and ritual behaviour consistent with a more widespread practice of nomadic pastoralism.

Finally, the marked increase in Xiongnu tombs of objects obtained through long-distance trade networks is important. The presence of these materials does not imply mobility per se, but when viewed in conjunction with the placement of Xiongnu tombs around BGC they allow for several inferences. These observations suggest that this area was an important node in a broader socio-economic network, stretching from China in the south to Siberia in the north. This particular set of connections is further suggested by the recurrence of birch and larch objects from northern Mongolia and ceramics and lacquer from China. Given BGC's strategic location as a staging point for travel through the Gobi Desert it would have been an important location to control. Furthermore, whereas Xiongnu tombs in other parts of Mongolia are known to be placed apart from preceding monument types (Miller et al. 2008) the near circumscription observed at BGC is unusual. This shift in the placement of monuments at this time suggests that specific topographical variations within BGC were less important than the entirety of the area itself. This again emphasises that the region itself was becoming increasingly important, which further suggests a more regional awareness or perspective on behalf of the people who built the tombs. It is this conceptual awareness coupled with the marked increase in imports in the funerary assemblages that implies that inhabitants of BGC were cognizant of and likely participated in a more extensive socio-economic network, which in turn implies a greater intensity of regional social interaction.

From this brief appraisal it has been possible to elucidate how nomadic pastoralism and mobility may be inferred

by qualitatively assessing multiple lines of evidence. By themselves, an increase in the deposition in graves of objects originating from great geographical distances or an increase in the inclusion of pastoral resources in funerary ritual are not strong indicators of either pastoralism or mobility. The same can be said for the structure and placement of the monument types discussed herein. However, when viewed in conjunction against the backdrop of emerging nomadic pastoralism and increased mobility in Mongolia, these observations have more resounding implications. This may appear to simply confirm what is already known, i.e. that nomadic pastoralism was practiced in Mongolia at this time. However, as mentioned at the beginning of this paper it is unclear when the shift to nomadic pastoralism actually occurred in Mongolia. Based on our observations one can state that although nomadic pastoralism may have been practised in some form in Mongolia at the onset of the Bronze-Iron Age transition, it was clearly not extensive. However, by the time of the Xiongnu confederacy, pastoralism was sufficiently entrenched so that there was easy access to pastoral resources for inclusion in mortuary assemblages, and more importantly, that these became symbolically incorporated into the funerary ritual itself. Increased mobility, at least conceptually, is also observed through the local expression of monumentality and absence of trade networks at the onset of the Bronze-Iron Age transition and in the gradual increase in imports in slab burials when there is further evidence of horse-riding. This also culminates in the Xiongnu confederacy with the establishment of very far reaching socio-economic networks and a seemingly greater awareness of inter-regional interaction across Mongolia, evident by the circumscription of BGC by Xiongnu tombs coupled with the increased frequency of imported goods. Therefore we conclude that, although both mobility and nomadic pastoralism can be difficult to address archaeologically, they can be discerned through the adoption of a diachronic perspective that traces qualitative change in mortuary practice over time. This type of assessment may also serve as a useful preliminary investigation of mobility and change in areas where subsistence strategies are less understood than in Mongolia.

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Chapter 7 The Role of Long-Distance Exchanges in the Materialisation of Power: the Circulation of Exotic Artefacts in Megalithic Monuments of Central Iberia

Elisa Guerra-Doce and Germán Delibes-de Castro

ABSTRACT

In Neolithic contexts, mobility in the archaeological record can be inferred from the occurrence of exotic items, since they are considered an indication of the existence of social interaction between communities at a distance from one another. This paper explores the role of long-distance exchange of exotic items in the emergence of social inequality. Grave goods from the megalithic monuments of Central Iberia offer a case study. In the earliest tombs, most of the artefacts should be interpreted as collective offerings to the ancestors rather than personal possessions, since they are not connected to any individual in particular. However, later in the Neolithic, around the beginning of the fourth millennium BC, there are clear associations between such items and particular individuals. In this later period, objects included prestige objects apparently used in ritual activities and exotic items whose nearest source was hundreds of kilometres away. The existence of exchange networks of valuable resources and objects on a large scale can thus be traced. This can be interpreted as evidence for the increase in social differentiation which led to the development of social inequalities, showing a similar pattern to that observed elsewhere in Western Europe in the Late Neolithic period.

Keywords: exchange, exotic items, Neolithic, megalithic monuments, Central Iberia, social inequality

7.1. INTRODUCTION

This paper evaluates the changing nature of grave goods and burial practices in the collective tombs of the Iberian Northern Plateau throughout the Neolithic period. More specifically, it focuses on the role of long-distance exchange of exotic items. Considering that elites are thought to have frequently made use of a conspicuous display of material wealth as a means to consolidate their status in relation to their own people and to other competing elites (Reynolds 1973; Veblen 1994), the increasing occurrence of exotic items among the grave goods can be understood as one of the strategies to achieve power.

Until recently, the international impact of research into later Iberian prehistory was focused on the Copper and Bronze Ages (*Los Millares* and *El Argar* cultures) of south-eastern Spain. Now, however, data on the archaeological record of other Iberian regions are more widely available. The northern plateau (or Northern *Submeseta*) of Central Iberia is one of these less-familiar regions (Figure 14). Until the 1960s it held a marginal position in research on prehistoric Iberia due to the supposedly higher level of socio-cultural development of other Iberian territories, such as the Mediterranean coast. It was even argued that the Northern Submeseta was barely occupied during the Neolithic, and lacked megalithic monuments (Maluquer 1960). Not only have recent research projects proved this idea wrong, but they have also set the beginning of the Neolithic at the outset of the sixth millennium BC, at least in the eastern part of this area (Rojo et al. 2006). From that moment onwards, the Neolithic spread gradually to reach the north-western part of the Northern Plateau at the beginning of the fourth millennium BC (Delibes and Fernández Manzano 2000).

The domestic sites and settlements of the earliest farmers are still poorly represented in the archaeological record of this particular area. However, the excavation of several of them, such as La Cueva de la Vaquera in Torreiglesias, Segovia (Estremera 2003), or some Ambrona valley sites (e.g., La Lámpara and La Revilla del Campo) in Soria (Rojo et al. 2008) has provided valuable information about the economic activities of these Neolithic groups. Unfortunately, our knowledge about their social organisation is not very precise at present due to the scarcity of evidence concerning social arrangements such as the distribution of labour, the interaction among household members, as well as the interaction at the community and regional scales, or their ritual practices, among other aspects. Therefore, the mortuary record represents the main source from which social issues may be inferred.

Evidence for burial practices of the first farming societies is not very abundant either. In fact, the only site with relevant data which can be irrefutably dated back to the Early Neolithic is the burial pit discovered at La Lámpara. Of the fifteen pits uncovered, pit number 1 contained the skeleton of an elderly woman, whose inhumation took place at the end of the sixth millennium BC, according to the radiocarbon dates¹ obtained from three samples: a piece of charcoal dated to 5479-5228 cal BC (KIA 4780, 6390±60 BP), and two bone samples from the skeleton itself dated to 5047-4848 (KIA 6789, 6055±34 BP) and 5216-4961 cal BC (KIA 6790, 6144±46 BP) (Rojo and Kunst 1999; Rojo et al. 2008).²

By the Middle Neolithic (around the mid/late fifth millennium BC), funerary monuments adopted the

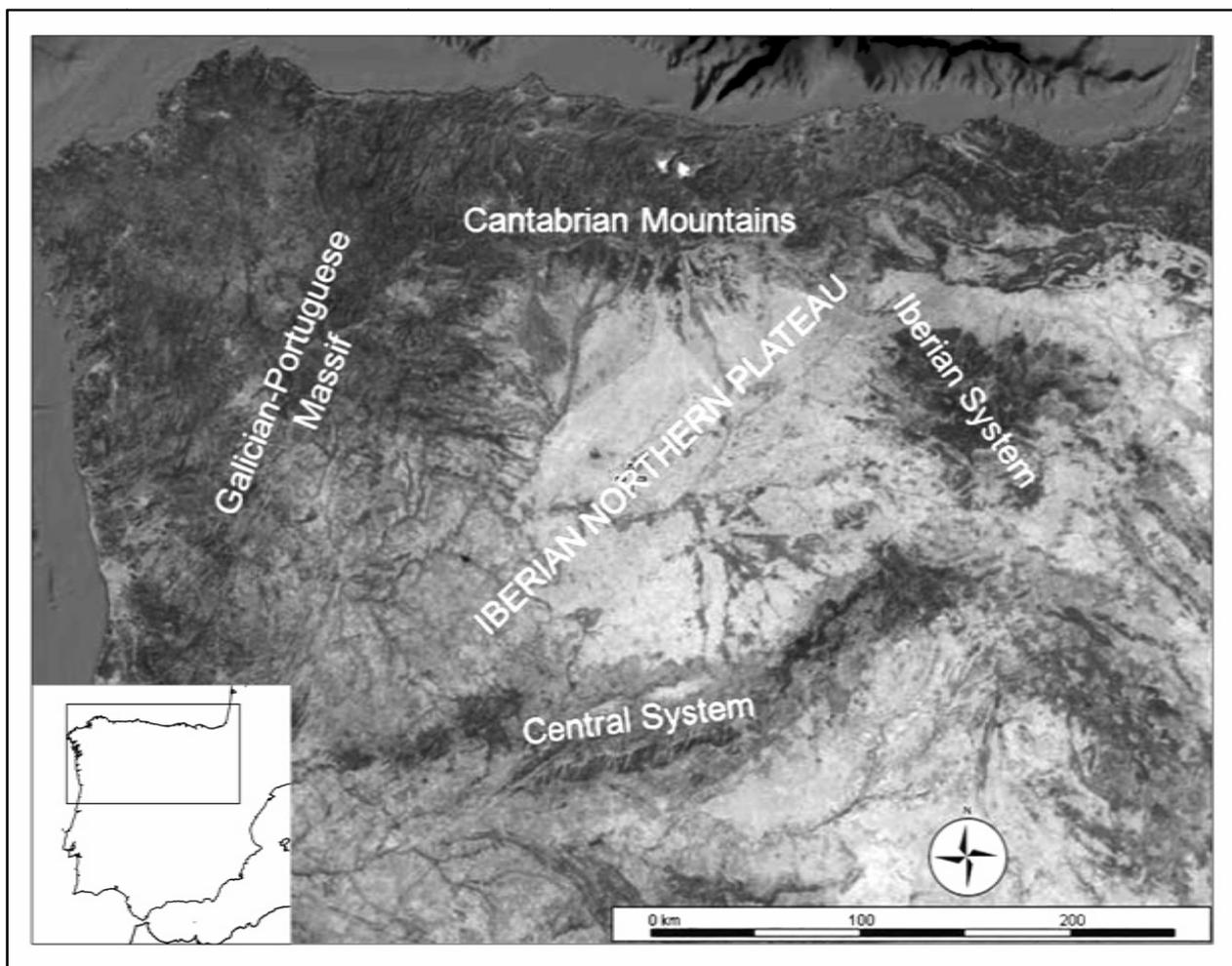


Figure 14. The Iberian Northern Plateau

form of collective tombs, that is, burial places for several people, in a similar pattern to that observed elsewhere in Western Europe. These were constructed for two millennia, but their architectural typology diversified during that time. For example, they assumed diverse types such as mounds (a large pile of earth or stones built over a place where people were buried), and megalithic tombs (impressive structures built of huge stones to form a chamber, buried under a mound and entered from one side). Among the latter, the more complex types are passage graves in which access to the chamber is through a long entrance corridor.

Both mounds and megalithic tombs housed a number of human remains and different artefacts. These items, including stone tools, ornaments, and pottery, are interpreted as grave goods. In the earliest tombs, most of them are best interpreted as collective offerings to the ancestors, since they are not connected to any individual in particular. However, later, around the beginning of the fourth millennium BC, there are clear associations between such items and particular individuals, suggesting that they were personal possessions. Articles now include exotic goods and prestige objects apparently used in ritual

activities. At the same time, the occurrence of stone slabs forming cists can be seen as an indication of more serious attempts to mark truly individual inhumations.

7.2. THE DEVELOPMENT OF NEOLITHIC COLLECTIVE TOMBS IN NORTHERN SUBMESETA

Most of the Neolithic collective tombs of the Northern Submeseta occur in two areas: the southwest (the provinces of Salamanca and Zamora) and the northeast (the province of Burgos) contain the majority of them (Figure 15). The architectural development of the burial monuments has been well established in the northeast thanks to a number of radiocarbon dates obtained for the collective tombs of the La Lora district (north-western Burgos). The earliest examples date back to the late fifth millennium BC. At first, non-megalithic (e.g. El Rebolledo) and megalithic mounds (Fuentepicina I and II) were constructed, but by the beginning to the middle of the fourth millennium BC more complex passage

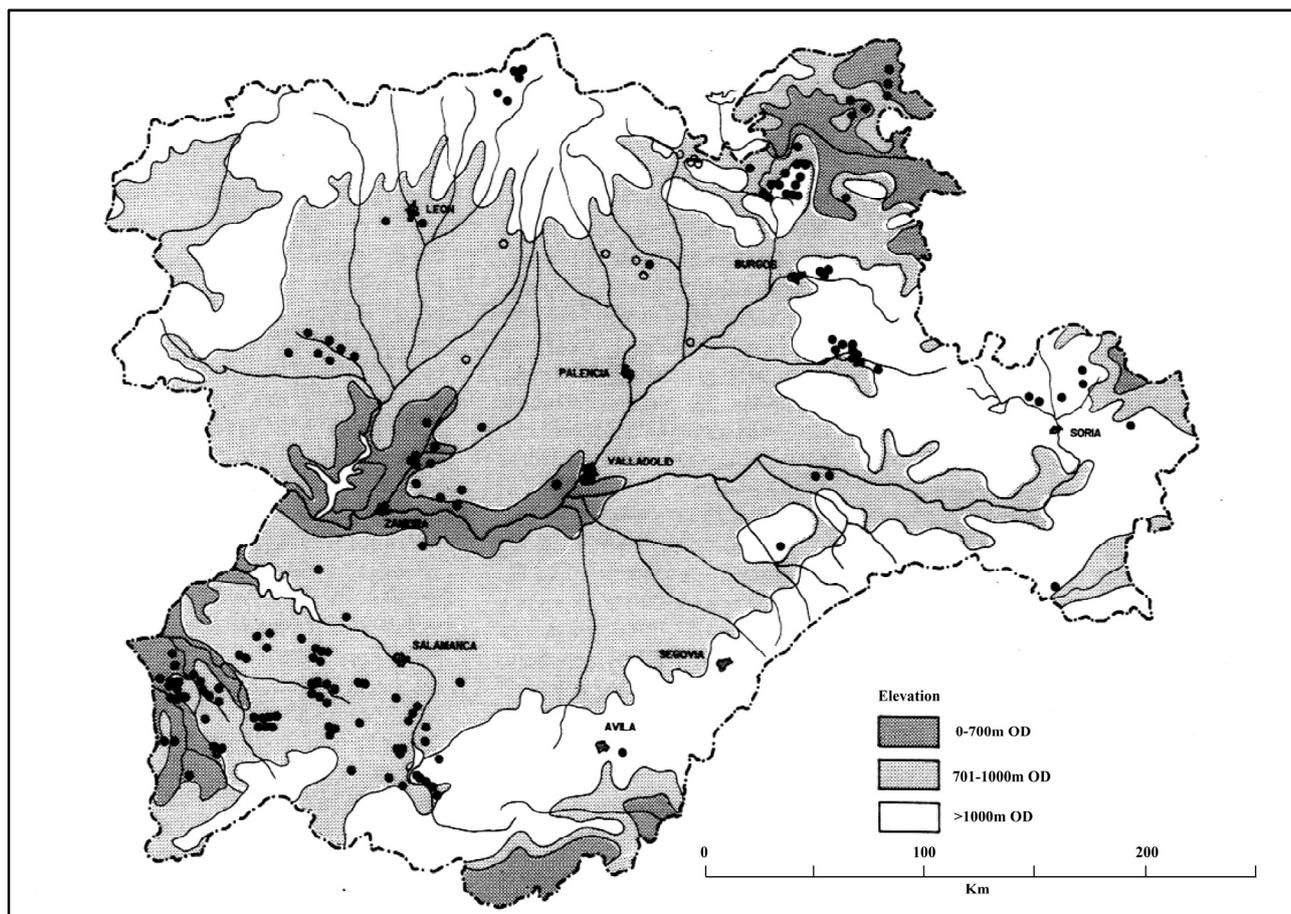


Figure 15. The distribution of the Neolithic collective tombs in the Iberian Northern Plateau
The black dots represent the collective tombs (after Delibes et al. 1992)

graves were built, such as El Moreco, Las Arnillas or La Cabaña (Delibes and Rojo 1997, 2002) (Figure 16). These constructions are smaller than those existing elsewhere in Atlantic Europe. However, the analysis of the skeletal remains shows a similar pattern suggesting the existence of a selective recruitment of the people buried within. It is evident that 1) children are not usually buried there, 2) women are outnumbered by men, and 3) the bulk of the population is not buried in these tombs, which may reflect some kind of social privilege (Delibes 1995; Lohrke, Wiedmann and Alt 2002).

In the first stages of the megalithic tomb developmental sequence grave goods consisted of polished stone axes, flint blades and geometric microliths, large quantities of beads on schist/slate, ornaments made of *Dentalium* shells, and some rock crystal prisms. While pottery remains in the megaliths are very scarce in the north-eastern area of the Northern Submeseta, they are very abundant in the southwest (Delibes and Santonja 1986). Unlike the later passage graves, polished stone axes appear profusely in these deposits. The small size of some of these axes, measuring less than 10 cm, infers their votive character since they would not be practical to use (Delibes and Santonja 1986). In fact, the exceptional preservation of their cutting edges in which there are no

worn edges, also suggests the non-utilitarian character of these tools (Delibes et al. 1993), and seems to support the hypothesis concerning the symbolic role of the deposition of stone axes in burial contexts (Sohn 2002; 2006). After analysing a number of deposits from collective tombs in the Paris Basin, Sohn (2002, 2006) was able to distinguish three consecutive phases evolving from collective assemblages (including those with stone axes) to 'individual' deposits corresponding to personal equipments. According to her, the collective assemblages had a symbolic significance that was associated with the founding of the tomb.

Considered as a whole, most of the artefacts lying within the burial chambers should be better interpreted as collective offerings to the ancestors, rather than personal grave goods, because there are not clear associations between such items and individual skeletons, in that bones and offerings are all mixed up. We cannot exclude the possibility that disturbance caused by younger burials obscured original associations with individuals, but we must not overlook the fact that some early tombs (e.g. Fuentepecina II) were closed down and abandoned, with their deposits undisturbed. In any case, grave goods could originally have been associated with their owners, but when the chambers received additional human

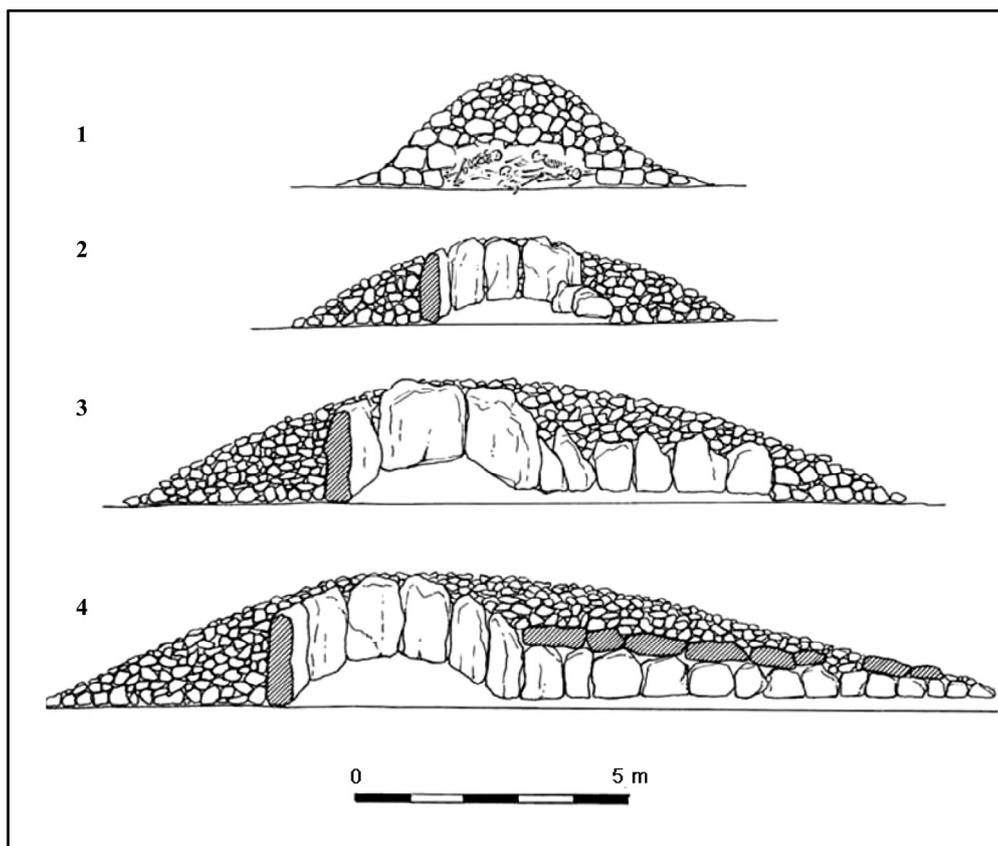


Figure 16. The architectural development of the Neolithic collective tombs in La Lora district, north-western Burgos, Spain
1. Non-megalithic mounds, 2. Megalithic mounds, 3. Passage graves, 4. More complex passage graves (after Delibes and Rojo 2002)

remains, it was not important to preserve that sense of private property. Later in the Neolithic, however, social inequalities are more conspicuous in the archaeological record. For instance, distinct differences in the composition of the assemblages can be observed in comparison with the previous stage: polished axes, flint blades, and geometric microliths are less abundant, and ornaments made of a wide variety of materials (schist or slate, marine shells, lignite or jet, variscite, quartz) are now more important. Moreover, arrowheads appear for the first time in collective tombs (Delibes and Rojo 2002). Likewise, we can track the existence of exchange networks of valuable resources and exotic items mainly on a regional scale but also on a larger scale, including materials such as variscite, vermillion, marine shells, amber, and artefacts like anthropomorphic figurines (whose prototypes are found in south-western Iberia). By the early fourth millennium BC, greater attention was paid to the individual expression of identity within collective tombs, although evidence for this is not abundant. As we shall see, the connection of grave goods with particular individuals, that is assemblages next to articulated skeletons, at El Miradero prompts us to consider them as accumulations of personal possessions. At least, it seems evident the intention of preserving that connection between items and individuals, suggesting that either those articles were personal possessions or burial offerings. Once again, we cannot exclude the possibility that there was less post-burial disturbance as

collective tombs reached the end of their use-life. However, there are truly individual inhumations in other contemporary tombs, which can be interpreted as more concerted attempts to be conspicuous.

7.3. THE ROLE OF EXOTIC ITEMS AMONGST THE GRAVE GOODS

Most of the grave goods are made from raw materials of local origin. Some artefacts, however, are made of exotic materials of more remote origins, the nearest source of which is hundreds of kilometres away. With the exception of the flint tool assemblages of Zamora and Salamanca, employing high-quality flint collected in the Tagus valley on the other side of the Sistema Central (Central System) mountain range (Maluquer 1956), exotic items consisted mainly of beads and ornaments.

The existence of non-indigenous objects is already documented in the earliest collective tombs, although it is rare. In the more complex passage graves, however, grave goods crafted from allochthonous materials are more frequent. We can establish two groups: the south-western, under the influence of Southern Iberia, and the eastern, comprising primarily the provinces of Burgos and Soria, where some items appear to have penetrated into the Submeseta from the Ebro valley. In the latter group, the origin of certain objects is to be found in the

Mediterranean, or from even farther afield, if the amber pieces recovered at certain megalithic tombs turn out to be Baltic.

We have already mentioned the occurrence of large quantities of schist and slate disc beads from the very beginning of the tomb sequence. In the southern area of the Northern Submeseta these materials are found everywhere, and many hundreds of small beads are usually present in the tombs of Ávila (Fabián 1997; Estremera and Fabián 2002), Zamora, and Salamanca (Delibes and Santonja 1986). Conversely, these materials are scarce in other areas of the Northern Submeseta. This does not alter the fact that similar beads have been recovered there: for example at El Miradero (Villanueva de los Caballeros) (Delibes et al. 1986) and Los Zumacales (Simancas) (Delibes et al. 1987), both in Valladolid; and a number of tombs in Burgos (Delibes et al. 1993). Variscite offers a similar situation. It is a green mineral widely used in the Iberian Neolithic and Copper Age as an ornamental stone to produce beads. To the west, in the province of Zamora, there are important variscite veins at Palazuelo de las Cuevas, San Vicente de la Cabeza, and El Bostal (Arribas et al. 1971), which are the nearest sources to the tombs in the Northern Submeseta, at least for the beads from the westernmost graves. We may assume the existence of a well-established network of distribution covering a distance of hundreds of kilometres in order to reach the easternmost locations. Whilst direct procurement cannot be ruled out, it would imply some social arrangements that cannot be supported on the basis of our present knowledge, such a degree of labour organisation and craft specialisation, as well as the production of food surplus. In fact, variscite beads obtained from the veins at Zamora even reached the Carnac region in France, where they have been uncovered in passage graves from the late sixth millennium BC onwards (Herbaut and Querré 2004). This semi-precious stone is also present in a number of megalithic tombs from Burgos, where mineralogical determinations have revealed that the provenance of some beads is located close to Barcelona (Rojo et al. 1996). A similar origin has been suggested for those recovered at El Túmulo de la Sima and La Tarayuela, both in Soria (Rojo et al. 2005), and analyses of which are currently in progress.

A number of tombs have yielded beads of lignite (jet). They are usually large and quite diverse in morphology: barrel-shaped, tubular, or cylindrical. The provenance of the material is in the mountainous areas of the Northern Submeseta, such as the Cantabric Massif (la Cordillera Cantábrica) to the north, or the Iberian System (el Sistema Ibérico) to the east. The presence of this material in tombs located on sedimentary soils, such as La Velilla, (Osorno, Palencia) (Zapatero 1990) should, therefore, be connected to exchange networks over a distance. Closer to the veins are the lignite beads found in Burgos (such as Las Arnillas, La Cabaña, Fuentepecina I, and La Nava Alta) (Delibes et al. 1993) and the ornaments (some beads and one pendant) from El Túmulo de la Sima, in Soria (Rojo et al. 2005).

Access to other objects, such as marine shells, was even more restricted in view of the few finds recovered so far. They were also used ornamentally as beads, as indicated by the perforations on their surfaces. In fact, the penetration of marine shells into the Upper Ebro valley dates back to the Mesolithic (Álvarez 2006). Sometimes it is difficult to determine their provenance when they are both Atlantic and Mediterranean species. This is the case of the *Dentalium* shells recovered at El Miradero, Valladolid (Delibes et al. 1987), Fuentepecina III, Burgos (Delibes et al. 1993), La Peña de la Abuela, and La Tarayuela, both in Soria (Rojo et al. 2005). In contrast, the origin of the *Trivia europea* shells from tombs such as Las Arnillas, Burgos (Delibes et al. 1993), or La Velilla, Palencia (Zapatero 1990) must have been on the Atlantic coast. One of the most astonishing finds is the complete bracelet handcrafted from a large *Glycimerys* shell (a Mediterranean species) at the passage grave of Cubillejo de Lara, Burgos (Delibes and Rojo 1988). Other examples of marine materials exploited as ornaments were fossil chorals, perforated for the manufacturing of beads, such as those from La Nava Alta, Burgos (Delibes et al. 1993).

Amber has been found in only two cases: the megalithic mound of La Velilla, Palencia, which yielded five beads (Zapatero 1990), and the passage grave of Las Arnillas, Burgos, where some pieces of a supposed small tablet were recovered (Delibes et al. 1986b). The nearby sources of amber are located on the Cantabric coast and have been exploited by local communities for the manufacture of beads since the Aurignacian (Álvarez et al. 2005; Peñalver et al. 2007). We must bear in mind, however, that Fourier transform infrared (FTIR) spectroscopy analyses conducted on amber beads from Bronze Age sites in Catalonia have revealed that they are from the Baltic, despite the existence of local sources (Rovira 1994). Since the artefacts from the Northern Submeseta have not been analysed geochemically in order to determine their provenance, we can only be sure about their non-local origin. In any case, it seems unlikely that the occurrence of amber in Iberian Neolithic contexts implies direct procurement from the Baltic; rather we contend that they would have obtained it by means of down-the-line trade (Renfrew 1975).

Indeed, beads were a very popular commodity in the intertribal exchanges of prehistoric peoples from the Palaeolithic onwards (Bar-Yosef Mayer 2005; Reese 1991; Wright and Garrard 2003). The case of both marine shells and amber is quite impressive since it involves interaction (either direct or indirectly) between littoral and inland communities. In their seminal study of the use of material culture as symbols of power, Clarke, Cowie, and Foxon (1985, 4-5) proposed that the act of acquisition of restricted objects, such as the exotic items in Neolithic tombs, was itself the means by which status was obtained due to their degree of exclusiveness. Accordingly, we suggest that the farther an object is moved from its source, the greater its symbolic and social value due to the fall-off in abundance of commodity with distance from source, resulting in a 'prestige chain'

exchange (Renfrew 1975). Moreover, we may assume the existence of long-distance contacts in order to obtain either the raw materials to produce beads, or the already-manufactured beads themselves. As Balme and Morse (2006) have noted, the absence of intact fragments of raw material suggests that beads, or perhaps the ornaments they were used for, were made elsewhere and brought to the site as complete items. Whether they were a sort of inter-personal gift between prominent individuals or they were commercially traded is not our point here. Be as it may, their acquisition was restricted to specific persons.

Apart from ornaments, other exotic items were also exchanged. For example, large quantities of vermilion, made from cinnabar originating from Montes de León, has been documented at La Velilla, Palencia, around 160 km southeast, illustrating interesting aspects of the burial practices. We can conclude that cinnabar was deliberately deposited in the burial tomb for its preservative properties and not only for its bright shade of red, since ruddle (red ochrous iron ore) can be easily obtained in the surroundings of La Velilla by dehydration of local limonite (Delibes 2000). Likewise, only after the defleshing process of the corpses was completed were bones and grave goods covered in vermilion (Martín Gil et al. 1994).

Similar figurines to those from Southern Iberian collective graves have been uncovered in tombs of the province of Salamanca (Plate 9). The passage grave of La Ermita, Galisancho, contained engraved stone plaques and one stone cylinder (*betilo*) (Santonja 1987). In one of the megalithic tombs of Casillas de Flores, known as Casa del Moro, a fragment of an anthropomorphic stone plaque has been found (López, Luis, and Salvador 2000). A similar anthropomorphic stone plaque with remains of ochre on its surface, the northernmost found so far, comes from the passage grave of El Torrejón (Villarmayor, Salamanca) (Arias 1989). The prototypes for these figures come from Alentejo and Extremadura, one of the most distinctive centres of Iberian megalithic culture.

7.4. TOWARDS INDIVIDUAL EXPRESSION OF IDENTITY IN BURIAL

Considering that deposits in Neolithic collective tombs have been badly disturbed by consecutive inhumations and, later on, by the activities of treasure hunters, the recognition of personal equipment is complex. The excavation of a non-megalithic collective tomb at El Miradero, Valladolid, however, revealed accumulations of individual possessions including exotic elements (beads made of variscite and *Dentalium*) and prestige objects supposedly used in ritual activities, such as the so-called San Martín-El Miradero bone spatulae (Delibes et al. 1986). Radiocarbon dates from four charcoal samples have set the original use of this tomb at the beginning of the fourth millennium BC:

- GrN 12100, 5115±35 BP: 3980-3800 cal BC,
- GrN 12101, 5155±35 BP: 4043-3811 cal BC,
- GrN 12102, 5135±45 BP: 4040-3799 cal BC,
- GrN 12103, 5120±25 BP: 3978-3804 cal BC, (Delibes and Etxeberria 2002).

While some of these spatulae have been recovered in megaliths from the Southern Submeseta, on the other side of the mountain range of the Central System (Bueno et al. 1999; Delibes 2004), they tend to be found more often in tombs between the Northern Submeseta and the southern part of the Basque Country (Mujika 1998). Furthermore, their appearance is restricted to Neolithic collective tombs, which seems to suggest a ritual character. The anthropomorphic designs of some of them also point to their religious nature (Figure 17). Evidence in support of this hypothesis is the manufacture from a human radius of one of the pieces recovered at Los Zumacales (Delibes and de Paz 2000). Consequently, the spatulae appear to have been specifically produced for deposition within the tombs, perhaps in order to perform an active role in the ritual ceremonies carried out there (Delibes 1995). It is, therefore, very significant that at El Miradero, which has produced about twenty of these spatulae, they are usually found in pairs around certain skulls (Delibes et al. 1992).

It is also difficult to identify individual inhumations inside collective tombs; however, we have some cases illustrating this practice. At Los Morcales (Barbadillo del Mercado, Burgos), each of the three articulated skeletons inside the burial chamber had separate locations (Rojo et al. 2002). Some inhumations inside the burial chamber at La Peña de la Abuela (Ambrona, Soria) were protected either by stone cists or plain slabs. Recent excavations carried out at this tomb have revealed that those structures clustering within 'the noble zone' were not single graves, but instead housed collective inhumations. A total of seven radiocarbon determinations (all of them on charcoal samples) have been obtained from this monument dating to the early fourth millennium BC, but only one of them refers to the burial deposit itself: KIA 4781, 5050±50 BP: 3961-3712 cal BC (Rojo et al. 2005). La Sima mound, at Miño de Medinaceli (Soria) comprises three successive phases of occupation, all of them sharing a similar use of the space as burial ground. During the first two phases, La Sima was used as a Neolithic collective tomb. However, by the late third millennium BC, it hosted a number of Beaker graves. The burial deposit of La Sima II, when the monument adopted the form of a *tholos*, included some stone cists, which interestingly only had a few bones. The excavators propose that the great majority of corpses were deposited inside these stone cists, and once the defleshing process was completed, bone remains were removed (Rojo et al. 2005, 167). Four bone samples from the burial deposit at La Sima II date its use to the mid-fourth millennium BC. The statistical combination is 4870±13 BP, 3695-3637 cal BC.

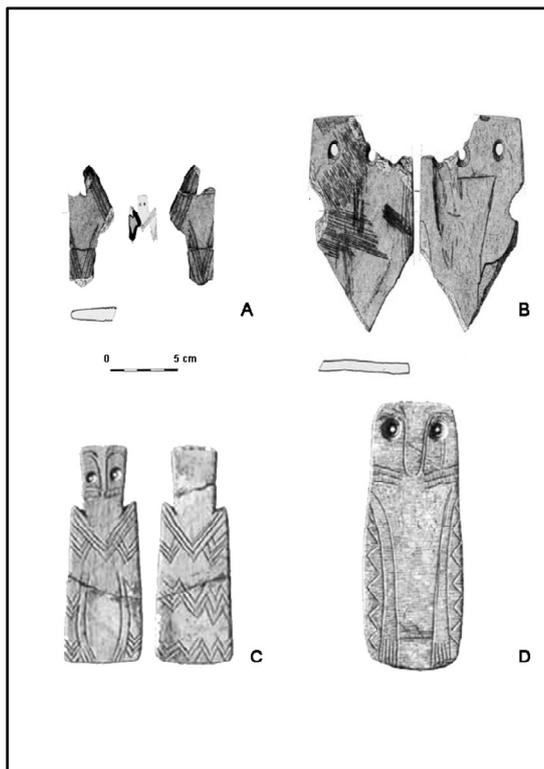
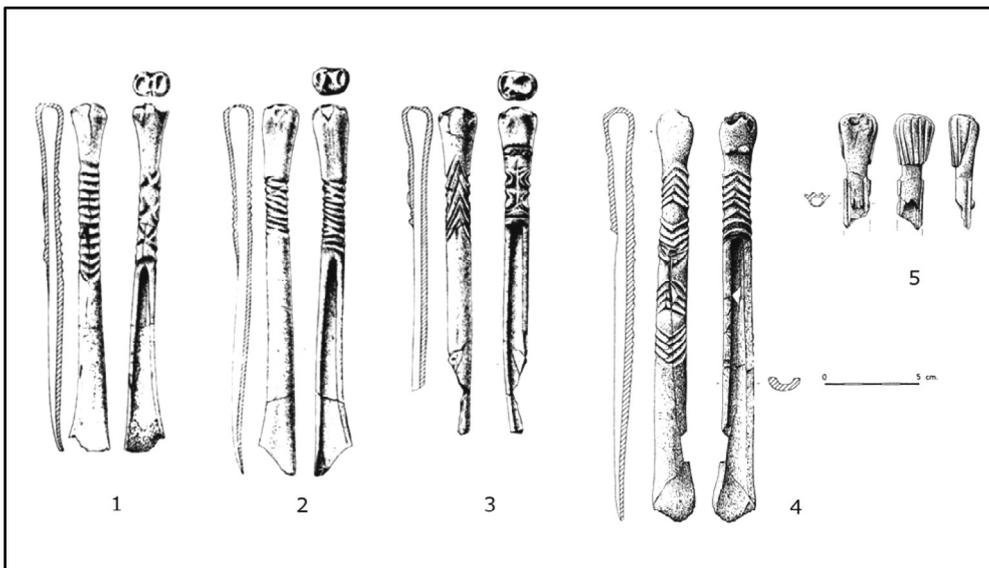


Plate 9. Engraved stone plaques

A-B: Engraved stone plaques from La Ermita, Galisancho, Salamanca (after Santonja, 1987); C: Engraved stone plaque from Idanha Nova (Castelo Branco, Portugal) (after Leisner, 1998); D: Engraved stone plaque from Barbacena (Portalegre, Portugal) (after Leisner and Leisner, 1959)

Figure 17. San Martín-El Miradero type bone spatulae

1-3 El Miradero, Villanueva de los Caballeros, Valladolid (after Delibes et al. 1986), 4-5 La Velilla (Osorno, Palencia) (after Delibes and Zapatero 1996)



7.5. LONG DISTANCE EXCHANGE AS A MEANS TO ACHIEVE POWER

Exchange networks contributed to the interaction between distant societies. It is, however, significant that these exchanges did not aim to acquire staple goods, but

rather ornaments and ritual items instead. Besides, all of the evidence given above suggests that there was a restricted access to those exotic elements reserved to the social group buried in the tombs.

Strategies to achieve power are diverse. Among the four sources of power (economic, political, military, and

ideological) proposed by Mann (1986), evidence suggests that Neolithic peoples only resorted to the latter. As a result, there was a development of the ideological apparatus. Material culture plays an active role in this process, since ideology is materialised, that is, it is given a concrete form by a ruling social group that will manipulate and use it as an effective source of power (DeMarrais et al. 1996). Items of exotic origin, therefore, become an important source of social power for three reasons: 1) they come from distant places, which gives them prestige, since not everybody is able to obtain them; 2) they have a crucial visual impact on the rest of the group, since they are not ordinary objects that can be found in the surroundings; and 3) access to them is restricted to dominant groups, that is, those buried within the collective tombs.

It is interesting at this juncture to examine the mechanisms by which a reduced number of individuals controlled access to exotic items and ultimately reached such a privileged status as a consequence. The burial record leads us to suggest that the rise of some inequalities is indicated by both the occurrence of truly individual inhumations inside some megalithic chambers and the accumulations of individual possessions. However, it should be noted that there are no differences in the composition of the burial assemblages, and when these contrasts are more conspicuous by virtue of the increasing deposition of exotic items, we interpret that some grave goods (such as the engraved stone plaques, the *betilos*, or the San Martín-El Miradero bone spatulae) as playing an important role because we contend that these were associated with the ritual sphere. Moreover, many grave goods were produced specifically for deposition in the burial tombs and their typology is different from those of domestic contexts, at least during the fourth millennium BC (Delibes 1995). All of this suggests that these power relations during the Neolithic were possibly mediated through the exercise of a ritual authority. Exchanges of ornaments and ritual items could be a means of sealing a friendship or of establishing an alliance between prominent individuals. In any case, wealth is one of the strategies in building political power (Brumfiel and Earle 1987).

7.6. CONCLUSIONS

According to Marx and Engels (1848), dominant groups in pre-capitalist societies reached their privileged status through ideological coercion, unlike capitalist ones, where power is based on the appropriation of surplus and the control of both the means of production and the labour force.

Throughout the Neolithic, we contend that there was an increase in social differentiation, based upon the control of valuable materials by a small number of individuals - incipient elites who needed a frequent and conspicuous display of wealth in order to achieve and maintain their privileged position in society and to consolidate their power. These valuable materials included prestige objects

apparently used in ritual activities, and exotic items of remote origin which can be interpreted as evidence for the development of a network of intra- and extra-regional contacts on a large scale. Rather than developed trade networks, these exotic items should be connected to inter-personal gift exchanges between limited social groups who controlled them for their own benefit. In any event, the importance of the ritual sphere inferred by the assemblages in the tombs seems to indicate that the power relations were possibly mediated through the exercise of a ritual authority.

Comparable patterns to those described above, that is, the increase in social differentiation and greater emphasis on the individual expression of identity in burial in Iberian Neolithic, are actually replicated in a similar way across the whole of Western Europe (Clarke et al. 1985). However, despite attempts to mark individual status, differences among group members cannot yet be socially reproduced, although they provide the foundation for the emergence of elites in the Copper Age.

Endnotes

- 1 The radiocarbon dates cited in this paper have been calibrated using the IntCal04 curve (Reimer et al. 2004) and the OxCal v.4.2 programme at two standard deviations (Bronk Ramsey 1995; 2001).
- 2 While this paper was in press, two additional Early Neolithic burials have been discovered, both being single inhumations: one at Fuente Celada, in Burgos (Alameda et al. 2011), and the other at El Molino de Arriba, also in Burgos (Palomino et al. 2011).

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The Role of Long-Distance Exchanges in the Materialisation of Power: the Circulation of Exotic Artefacts in Megalithic Monuments of Central Iberia
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Chapter 8 Mobility Models and Archaeological Evidence: Fitting Data into Theory

Alejandro Garcia-Moreno

ABSTRACT

The aim of this paper is to analyse seasonality data from a set of Palaeolithic sites in northern Spain in order to compare them with theoretical settlement models proposed for this area of either a seasonal coastal-inland transhumance of the hunter-gatherers or coastal semi-permanent settlements with inland logistical sites. The study focuses on the Asón River Valley, where several Upper Magdalenian-Azilian and Early Mesolithic (14,300–8,200 cal BC) sites are distributed throughout several different ecological niches: from coastal plain and inland upland valleys to mountain environs. However, seasonality data derived from an analysis of the mammalian fauna from these sites, coupled with inferences about resource availability, contrasts with the proposed models. To resolve this apparent contradiction between the archaeological evidence and the theoretical mobility models, a new preliminary model is proposed based on variations in group size and composition in accordance with resource availability. In this new model, hunter-gatherer communities would choose a semi-sedentary settlement strategy to make the most of the available resources.

Keywords: final Palaeolithic, mobility, hunter-gatherer societies, group size, resource availability

8.1. INTRODUCTION

The study of Palaeolithic hunter-gatherer mobility and settlement patterns is one of the most important topics of prehistoric research because of the influence these patterns have on social and cultural behaviour, trade and interrelations between groups, territoriality, demography, cultural change, and the effects of mobility on social organisation (Kelly 1992). In order to analyse all these aspects, settlement patterns must be defined as clearly as possible. General theoretical mobility models have been constructed in ethnography and archaeology because of the diversity and complexity of foraging processes. These models must be seen as a starting point for building hypotheses, according to the specific circumstances of each case study (Smith 1983). However, these models have some limitations that restrict their application to the archaeological record.

8.1.1. *The Theory of Mobility: Models and Limitations*

As this paper focuses on a specific case study, its aim is not to discuss at length the use of mobility models in archaeology, although some of the limitations of these models must be considered. Generally, theoretical mobility models are simplistic as they are constructed under a series of broad assumptions, and consequently cannot accommodate the flexibility and complexities of hunter-gatherer settlement patterns (Smith 1983, 637). Nevertheless, this limitation can be worked around if general models are only used as a starting point for building more specific models considering the particularities of each case study. In other words, a general model can provide a framework about settlement and mobility patterns, but we should contrast this model with the archaeological evidence in order to find specific adaptations using a more deductive approach, instead of

fitting the archaeological evidence to an *a priori* assumed model, without considering contradictions between both.

One major handicap when building mobility models is the relative paucity of the archaeological data set because of poor preservation of archaeological remains and the disappearance of a large number of sites. This is often the case with Quaternary coastal settlements, now submerged due to the post-glacial sea level rise. To date, no submerged sites have been documented in the Cantabrian Sea as have been in some other parts of Europe (e.g. see Bailey and Parkington 1988; Fischer 1995). Yet, the sea level rise curve proposed by Gutiérrez Zugasti (2008) suggests sea levels would be at -80m at 13,500 cal BC, rising to -40m at 8,200 cal BC; consequently, most of the Cantabrian Palaeolithic coastal sites would have disappeared under the sea. Thus, our knowledge of coastal sites is poor.

Our knowledge of open air settlements is similarly limited. In the Cantabrian region, almost all of the prehistoric sites are located in caves, with only a few exceptions. Although caves are considered an excellent place to settle, open-air settlement is underestimated due to their disappearance by geomorphic processes. This is particularly the case in coastal plains and river mouths where post-Pleistocene sediments reach several meters deep due to alluvial deposition (Cearreta and Murray 1996). On the other hand, along inland valleys hillside erosion would be responsible for the loss of open-air sites, and, as a result, only dispersed lithic artefact remains can actually be found.

The fact that models are based on simplistic assumptions of human behaviour often based on ethnographic studies can be problematic. This is because these ethnographic observations are usually restricted to short periods of time, and rarely more than one year. Consequently, ethnographic-based models do not take into consideration short-term variability, such as year-to-year behavioural

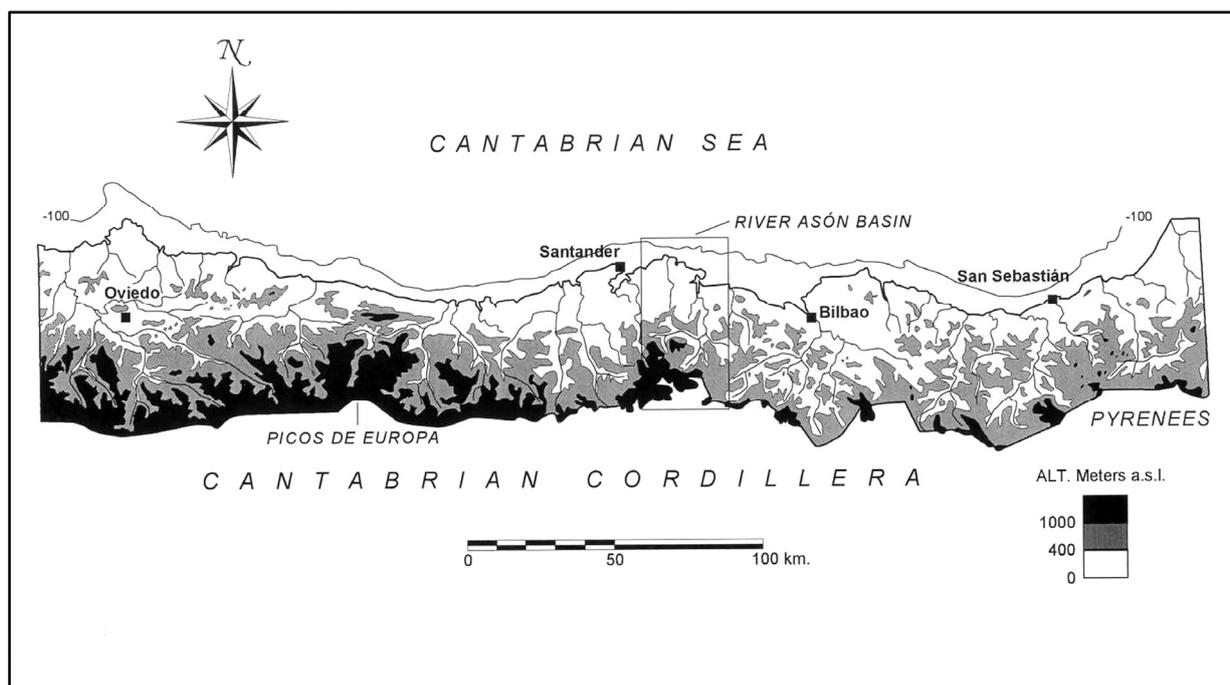


Figure 18. Location of the Asón basin in northern Spain

changes, due to the difference of scale between ethnography and archaeology; in this case, archaeology becomes a kind of *'long-term ethnography'* (Jochim 1991). In other cases, ethnographic analogies have been applied directly to the archaeological record without considering alternative hypotheses or without accounting for the contradictions between the archaeological evidence and the proposed model (Spikins 2000).

Another source for the construction of mobility models are the paradigmatic theories concerning human behaviour, like those based on the *optimum foraging theory* (Krebs 1978; MacArthur and Pianka 1966). It is worth noting here that such paradigms are models themselves as Clarke (1968) described and so are subject to the same criticisms. In the case of the optimal foraging models, it is assumed that hunter-gatherer groups would settle in order to maximise the return of energy (i.e. nutrients) per unit foraging time (Smith 1983), changing their camps or modifying the composition of groups when the cost/benefit rate became too low, or adjusting their settlement pattern to the availability of resources (Jochim 2008). However, many authors have drawn attention to the inherent ecological determinism of this kind of approach, instead emphasising the importance of social and cultural factors such as territoriality, the existence of sacred places, etc., in settlement patterns (Sealy 2006).

Yet, in spite of these limitations, theoretical mobility models can provide an adequate heuristic basis for the development of more complex models, through which the archaeologist can interpret and interrogate the archaeological evidence, providing the underlying assumptions are acknowledged and tested. Such heuristic

models, then, facilitate the ordering of the available data set and enable the archaeologist to make sense of the archaeological record.

8.1.2. Mobility Models Applied to the Cantabrian Region

In the Cantabrian Region (the northern coast of the Iberian peninsula), the most commonly used mobility model for the Final Palaeolithic and Early Mesolithic has been the coast-inland model. This is founded on the assumption that the Palaeolithic human groups aggregated on the coast during winter, focused on fishing and mollusc exploitation, while during summer they dispersed throughout the interior and focused their activity on hunting (Davidson 1976). This model was based initially on the presence of mammalian faunal remains in coastal shell middens, thereby suggesting contacts between the coast and the inland valleys (Bailey 1973). In that sense, more recent zooarchaeological studies, focused on the 'age of death' of ungulates (Costamagno and Fano Martinez 2005; Marín Arroyo and González Morales 2007) seem to support the coast-inland model in general.

Likewise, Straus (1992) suggested a similar model for this region, based on the combination of short residential movements and logistical forays. The model proposed by Straus is:

"... not of mechanistic, strictly seasonal, altitudinal transhumance but rather one of residential moves among base camps in the coastal zone and lower valleys combined with logistical trips to specialised sites (notably in the mountains) at any season on the year" (Straus 1992, 152).

This model is supported by the evidence of occupation in several coastal sites during almost the entire year, which is incongruous with the coast-inland model and the existence of specialised hunting sites in the hilly inlands and mountains.

8.2. The Asón River Valley

8.2.1. Location and archaeological context

The Cantabrian region (Figure 18) is a hilly, coastal region, running east-west as a narrow strip of land 25-50 km wide between the Cantabrian cordillera and Cantabrian Sea (Bay of Biscay). It ranges in relief from sea level to 2600 metres, often with an abruptly steep shoreline (Straus et al. 2002). The proximity of the cordillera to the coast determines the comb-like morphology of the region, defined by a longitudinal mountain range with lower perpendicular ranges, reaching to the shoreline in some cases, and separated by river valleys. As a consequence, Cantabrian valleys are steep, narrow, and oriented north-south, providing enclosed landscapes (García Codron 2004).

The study area, the Asón River Valley, is located in the centre-west of northern Spain, in the autonomous region of Cantabria, bordering the Basque country, halfway between the cities of Santander and Bilbao (Figure 18). Longitudinally, it includes the area from the Bay of Santoña in the north to the Cantabrian cordillera due south; the Asón River and its tributaries drain an area of about 800 km² (Straus et al. 2002).

Throughout the Asón Basin several Final Palaeolithic sites can be found (Figure 19). The cultural correspondence allow them to be considered as chronologically contemporaneous, as suggested by radiocarbon dates (Table 11), and because of the geographical homogeneity of the Asón Basin, they can be considered as inter-related and as participating in the same settlement pattern (Kelly 1983).

8.2.2. Geography of the Asón Basin

The Asón Basin, as with almost all of the Cantabrian valleys, is separated from adjacent basins by mountain ranges running perpendicular to the coast and resulting in a self-enclosed space, that allow it to be considered as a discrete geographical unit of study (García Codron 2004). Three different biotopes can be broadly defined along its valleys because of the steep landscape of the Cantabrian region: the mountainous range to the south; the intermediate river section with a more hilly topography; and the coast itself, dominated in some places by estuaries and salt marshes, as those formed at the Asón River mouth (Straus et al. 2002). In any case, due to the short distance between the mountain range and the

shoreline (less than 40 km), it would have been possible to reach and to exploit these different environments with short *residential* movements, even with one-day *logistical* trips (*sensu* Binford 1983; Straus 1992).

The actual geographical configuration of these three different areas was similar during the late glacial period, although the paucity of geomorphic studies makes it impossible to accurately reconstruct the Pleistocene topography of the Asón Valley. This is especially true for the shoreline, since the post-glacial sea level rise submerged the Pleistocene coastal plains. According to the sea level rise curve proposed by Gutiérrez Zugasti (2008), and to marine bathymetry, reconstructions of the Pleistocene coast in the Asón area show that the shoreline at 13,500 cal BC was about 8 km further north than at present, and by 7,000 cal BC was 2-3 km north when the modern estuary was formed (Cearreta and Murray 2000). Nevertheless, the extant coastal sites are evidently related to the Pleistocene coast, as shown by the presence of Palaeolithic shell middens.

The coastal plain biotope was the most productive, since a wide variety of resources were available. Ungulates, fish, and molluscs were hunted and collected by coastal communities, while pollen analysis shows the development of deciduous forests during the late glacial period (López García et al. 1996), which potentially provided vegetal resources such as hazelnuts, acorns, etc. The inland valleys were relatively productive too, with abundant game and river fishing (especially salmon), although deciduous forests were less developed in this part of the valley where coniferous forest was dominant. Finally, the mountain range seems to have been almost unproductive due to extreme conditions; nonetheless, these highlands were settled by human groups at the end of the Pleistocene (Bernaldo De Quirós and Neira Campos 1993), either to exploit summer resources, or during hunter-gatherer movement to the Castilian plateau through the Los Tornos pass (920 m OD). The archaeology of sites on both sides of the cordillera indicates contact and suggests that natural barriers may not be taken as fixed cultural borders. Thus, as a consequence, even if we consider a geographical unit as an area for study, nearby areas should also be considered in order to get a wider overview of hunter-gatherer mobility.

In short, the combination of different environments, in close proximity to each other, provided prehistoric hunter-gatherers with a wide variety of resources, spatially and seasonally distributed along the valley and that could be exploited in different ways according to the settlement strategy adopted. In order to ascertain the subsistence strategy adopted by the prehistoric hunter-gatherers, seasonality data must be analysed to check the appropriateness of the mobility models proposed for this area.

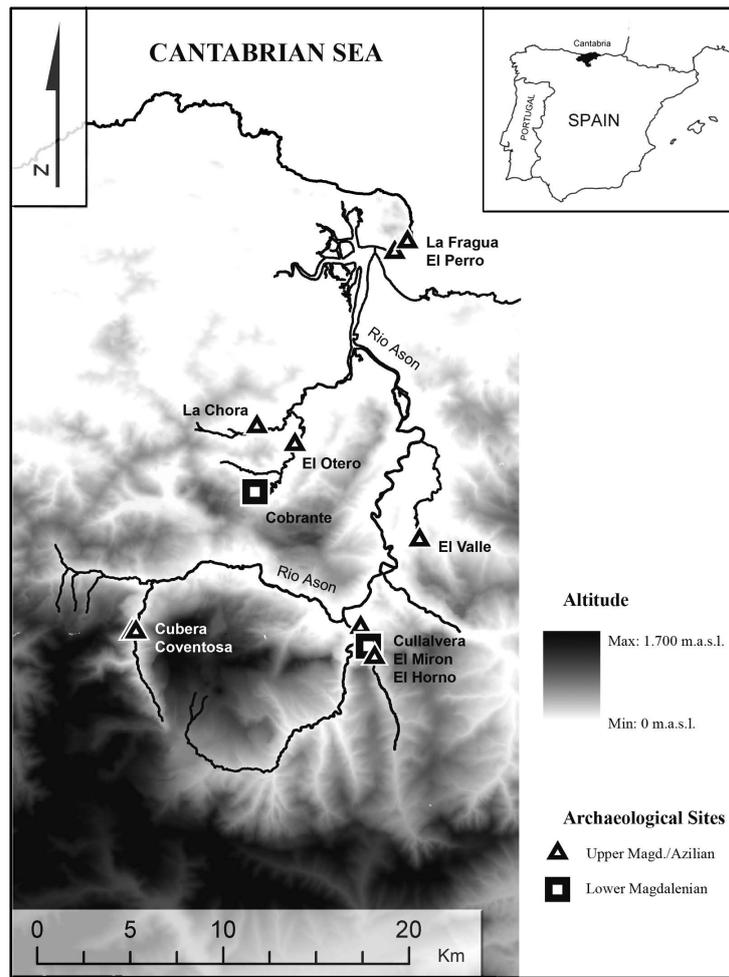


Figure 19. The distribution of Final Palaeolithic sites along the Asón river valley

Table 11. Radiocarbon dates for the Asón basin sites

All radiocarbon measurements are calibrated using IntCal04 (Reimer et al. 2004), and CalPal software (Weninger and Danzeglocke 2007)

Site	Level	Period	Lab Ref	Date BP	Date Cal BP 2σ	Sam	Method
El Perro	1	Mesolithic	GrN-18116	9260±110	10452±138	C	C14
El Mirón	Cabin/14/10.1/29	Azilian	Gx-24464	9550±50	10911±134	C	C14 AMS
La Fragua	3	Azilian	GrN-20966	9600±140	10932±196	C	C14
El Valle	G/II	Azilian	Gx-24639	10120±280	11822±479		
El Perro	2a/b	Azilian	GrN-18115	10160±110	11789±263	C	C14
El Mirón	Trench/P6/305/9	Azilian	Gx-24467	10270±50	12070±198	B	C14 AMS
El Mirón	Inner Cave	Azilian	Gx-27521c	10390±50	10390±50	C	
El Mirón	Inner Cave	Azilian	Gx-27521a	10740±40	10740±40	TB	C14 AMS
El Valle	GDSS/1-Nivel II.3	Azilian	Gx-23798	11040±150	11040±150		
El Valle	GDSS/1-Nivel II.4	Azilian	Gx-23799	11050±50	11050±150		
El Valle	GIC2/2-Nivel II.2	Azilian	Gx-24638	11130±170	11130±170		
El Horno	0	Dist.	Gx-26410	11630±170	13527±201	B	C14
El Mirón	Trench/P6/306/11	Final Magd/Azilian	Gx-24468	11650±50	13538±134	B	C14 AMS
El Mirón	Cabin/13/11.1/25	Final Magd Azilian	Gx-23391	11720±140	1360±186	C	C14
El Mirón	Corral/T8/102.1/3	Final Magd/Azilian	Gx-23417	11950±70	13892±193	B	C14 AMS
El Perro	2c	Final Magd	GrN-20962	12140±180	14232±355	C	C14
El Horno	2	Upper Magd	Gx-27456	12250±190	14431±424	B	C14
El Mirón	Trench/308/16	Upper Magd	Gx-28210	12350±180	14553±435	C	Cxent
El Horno	1	Upper Magd	Gx-27457	12530±190	14812±430	B	C14
La Fragua	4	Upper Magd	GrN-29440	12960±50	15780±397	B	C14 AMS
El Mirón	Cabin/J2/12/12	Upper Magd	Gx-22132	12970±70	15803±403	B	C14 AMS

Sam = Sample, C = Charcoal, B= Bone, TB = Tooth bioapatite

8.3. THE ARCHAEOLOGICAL DATASET

8.3.1. Seasonality

Zooarchaeological analyses from several sites of the Asón River Valley have provided proxy information about the season of occupation of those sites, using dental eruption and tooth wear patterns as well as the degree of epiphyseal fusion to estimate the age of death of various mammals (Table 12). Among coastal sites, two have provided seasonal information: La Fragua cave and El Perro rock shelter.

La Fragua cave is located at Buciero Mountain, dominating the modern Asón River mouth. Its stratigraphic sequence includes four levels, corresponding to the Late Pleistocene-Holocene transition (González Morales 1998): Level 4, Upper Magdalenian; Level 3, Azilian; and Level 1, Mesolithic (Level 2 is archaeologically sterile). The mammalian faunal analyses (Marín Arroyo and González Morales 2007) from Level 4 established that the main prey was ibex, hunted during autumn, while red deer, the second most hunted prey, was hunted in both summer and autumn. Level 3 contained very few remains (608 bones and bone fragments, 441 unidentifiable); at this level, the most important prey, red deer, was hunted during winter. Level 3 was an important *Cepaea nemoralis* shell midden, which indicates intensive land snail exploitation (Gutiérrez Zugasti 2006).

El Perro rock shelter, located near La Fragua cave, has a similar sequence: Level 2c, Upper Magdalenian; Level 2a/b, Azilian; and Level 1.3, a Mesolithic shell midden (González Morales 1992). At this site, ungulate remains appeared highly fragmented, so a precise seasonality analysis could not be undertaken. Only in Level 2a/b could a neonate ibex be identified, which would have been hunted during the spring. As in La Fragua cave, the Azilian level of El Perro contained a large shell midden, mainly composed by *Patella sp.* and *Littorina littorea* (Gutiérrez Zugasti 2009).

In the inland valley, seasonality analyses have been conducted at El Horno (Costamagno and Fano Martínez 2005) and El Mirón caves (Marín Arroyo 2008). At El Horno, two Upper Magdalenian levels and a disturbed surface level with Azilian materials form the stratigraphic sequence (Fano Martínez 2005). The most hunted prey during the Upper Magdalenian was ibex, followed by red deer; both species were hunted during late winter-early spring (Costamagno and Fano Martínez 2005).

At El Mirón cave, near El Horno, excavations (González Morales and Straus 2005) revealed long stratigraphic sequence, running from Middle Palaeolithic to post-Palaeolithic levels. However, the most intensive period of prehistoric occupation of the site was during the Lower Magdalenian, after which the cave was sparsely inhabited. The seasonality analyses (Marín Arroyo 2008) for the Final Palaeolithic levels show summer hunting

activity, which is focused on ibex and red deer. Together with hunting, fishing (largely of Atlantic salmon) was an important activity at El Mirón, probably during the summer (Consuegra et al. 2002).

8.3.2. Cave habitability

In addition to these mammalian faunal seasonality analyses, other indirect evidence can be used to as a proxy for the season when the caves may or may not have been occupied. Two of the inland sites are located in caves with rivers running out of them, El Valle cave (García-Gelabert 2000) and Cullalvera cave (González Sainz et al. 1997). In both cases, taphonomic effects from river action have skewed the archaeological deposits. However, the season of occupation can indirectly be inferred through river flow regimes. Thus, in the present these rivers have their heaviest flow volume during the spring snowmelt, but during the glacial period the snowmelt would have occurred in summer, probably making these caves uninhabitable during that season. Moreover, because of air circulation, Cullalvera cave has an important cold air stream running across its mouth during warm months, making its occupation more unlikely in summer due to extreme cold and damp habitation conditions. On the other hand, some caverns would not have allowed large human groups to inhabit them because of their size. This is the case at La Fragua cave, where its small dimensions and the discontinuous character of the deposit seem to suggest short and sporadic forays (González Morales 1998).

Another important factor in cave habitability is the amount of sunlight cave surroundings receive during the year. The analysis of potential insolation shows that sites located throughout the inland valley have higher insolation during summer than winter, thereby probably making the caves favourable during the summer but less habitable during the coldest months. In contrast, the coastal sites maintain high insolation over the whole year (García Moreno 2008).

Finally, the Asón Basin is enclosed to the south by the Cantabrian cordillera, reaching up to 1500m OD, and is particularly characterised by glacial landforms. Although glaciers would have probably already disappeared from this area at the end of the late glacial (Castañón Álvarez and Frochoso Sánchez 1992), winter conditions in the high mountains would still have been extreme, thereby restricting human presence to the warm season.

8.3.3. Alternative resources availability

In addition to seasonal hunting, which mainly focused on ibex and red deer, Palaeolithic human groups from the Asón Basin had at their disposal a wide range of alternative subsistence strategies, such as the exploitation of molluscs, fishing, as well as gathering. Although these resources have rarely been considered in the archaeological literature, they would have played an important role in the prehistoric diet (Arias Cabal 2005).

Table 12. Seasonality data from the analysis of mammalian faunal remains

Site, Level	Period	Date	Sam	NISP (% Total)	MNI	Season	Reference
Fragua 4	Upper Magd	12960±50	G	114 (7,42%)	5	A	Marín, Gonzáles Morales 2007
Fragua 4	Upper Magd	12960±51	RD	79 (5,14%)	8	A, Su	Marín, Gonzáles Morales 2008
Fragua 3	Azilian	9600±140	RD	22 (3,62%)	2	W	Marin, Gonzáles Morales 2009
Perro 2c	Upper Magd	12140±180	RD	17 (0,7%)	2	1 Adult	Morales, Moreno unpublished
Perro 2a/b	Azilian	10160±110	RD	100 (0,86%)	6	2 Infants, 3 Adults	Morales, Moreno unpublished
Perro 2a/b	Azilian	10160±111	G	34 (0,29%)	5	Sp	Morales, Moreno unpublished
Horno 2	Upper Magd	12250±190	G	661 (14,34%)	12	LWS	Costamagno, Fano 2005
Horno 2	Upper Magd	12250±191	RD	162 (3,45%)	4	LWS	Costamagno, Fano 2006
Horno 1	Upper Magd	12530±191	G	246 (5, 81%)	4	-	Costamagno, Fano 2007
Horno 1	Upper Magd	12530±192	RD	37 (0,87%)	2	-	Costamagno, Fano 2008

Sam = Sample, G= Goat, RD = Red Deer. Seasons: A = Autumn, Sp = Spring, Su = Summer, W = Winter, LWS = Late Winter-Spring

8.3.4. Mollusc exploitation

Several coastal sites show clear evidence of mollusc exploitation, both marine and terrestrial niches. During the Upper Magdalenian, sea molluscs were gathered from near the Pleistocene shoreline, as the molluscan finds at El Perro, La Fragua, El Otero, and La Chora, and even inland sites such as El Valle, suggest. At all of these sites, the molluscan assemblage is dominated by *Patella* and *Littorina littorea* (Gutiérrez Zugasti 2009).

During the Azilian, mollusc exploitation seems to have become more intensive. For example, at La Fragua cave, mollusc collecting focused on land snails. The large number of *Cepaea nemoralis* (58,431 remains, 10,144 MNI) show that this gastropod was an important dietary component of the La Fragua inhabitants (Gutiérrez Zugasti 2006).

8.3.5. Fishing

Throughout the Asón basin there is evidence of Palaeolithic fishing, either in the form of fish remains (at El Horno and El Mirón cave, and probably at El Otero cave) or in the appearance of bone and antler harpoons during the Upper Magdalenian period (González Morales 1999).

Fishing is an important alternative to hunting, given that it is a more predictable resource, both spatially and temporally. DNA analysis carried out on salmon remains from El Mirón cave (Consuegra et al. 2002) has shown that the fish were *Salmo salar* (Atlantic salmon), a species that spends much more time in rivers than Pacific salmon do today, for example. Spawning times vary among different populations that inhabit different rivers, but generally it occurs anytime from spring to autumn with a peak during August. Moreover, young salmon usually spend one year in the rivers before going out to the sea.

Because of the lack of isotope analyses from human remains from the Asón Basin, it is impossible to quantify

the importance of fishing in the prehistoric diet of Palaeolithic communities from this area. $\delta^{13}\text{C}$ analyses from Upper Magdalenian and Azilian human remains from other Cantabrian sites (Arias 2005) reveal an almost exclusively terrestrial diet with an increasing importance of marine proteins during the Mesolithic. However, there are still very few available data to infer a generic diet for the Final Palaeolithic.

8.3.6. Gathering

Palynological and anthracological studies from sites near the Asón Basin including El Perro rock shelter (López García et al. 1996) and El Otero cave (Leroi-Gourhan 1966) show the development of deciduous forest at the end of the late glacial; from the dominance of *Pinus sylvestris* at El Perro Upper Magdalenian level (Level 2c, GrN-20962, 12,900-11,600 cal BC) until the disappearance of pine and the proliferation of warmer-climate species, including oak (*Quercus robur*), hazel tree (*Corylus*), and alder (*Alnus*) at the Early Holocene (GrN-18116, 8770-8270 cal BC at El Perro level 1) (García Moreno and Gutiérrez Zugasti 2012).

Fruit, like fish and molluscs, are a highly predictable resource, given that they appear in a given season; moreover, fruit can be stored for a long time (Zapata Peña 2000). Although there is almost no direct evidence of fruit gathering in the Cantabrian Palaeolithic, wear patterns from a human molar from El Rascaño cave Azilian level 1.3 (BM-1449, 10,800-10,150 cal BC) near to the Asón Basin show that fruit was the main component of this individual's diet.

To summarise thus far, in addition to ungulate hunting, Final Palaeolithic people from the Asón River Valley had access to a wide spectrum of resources that were easily accessible and highly predictable. It is likely that these additional resources were more intensively exploited than the archaeological record seems to indicate.

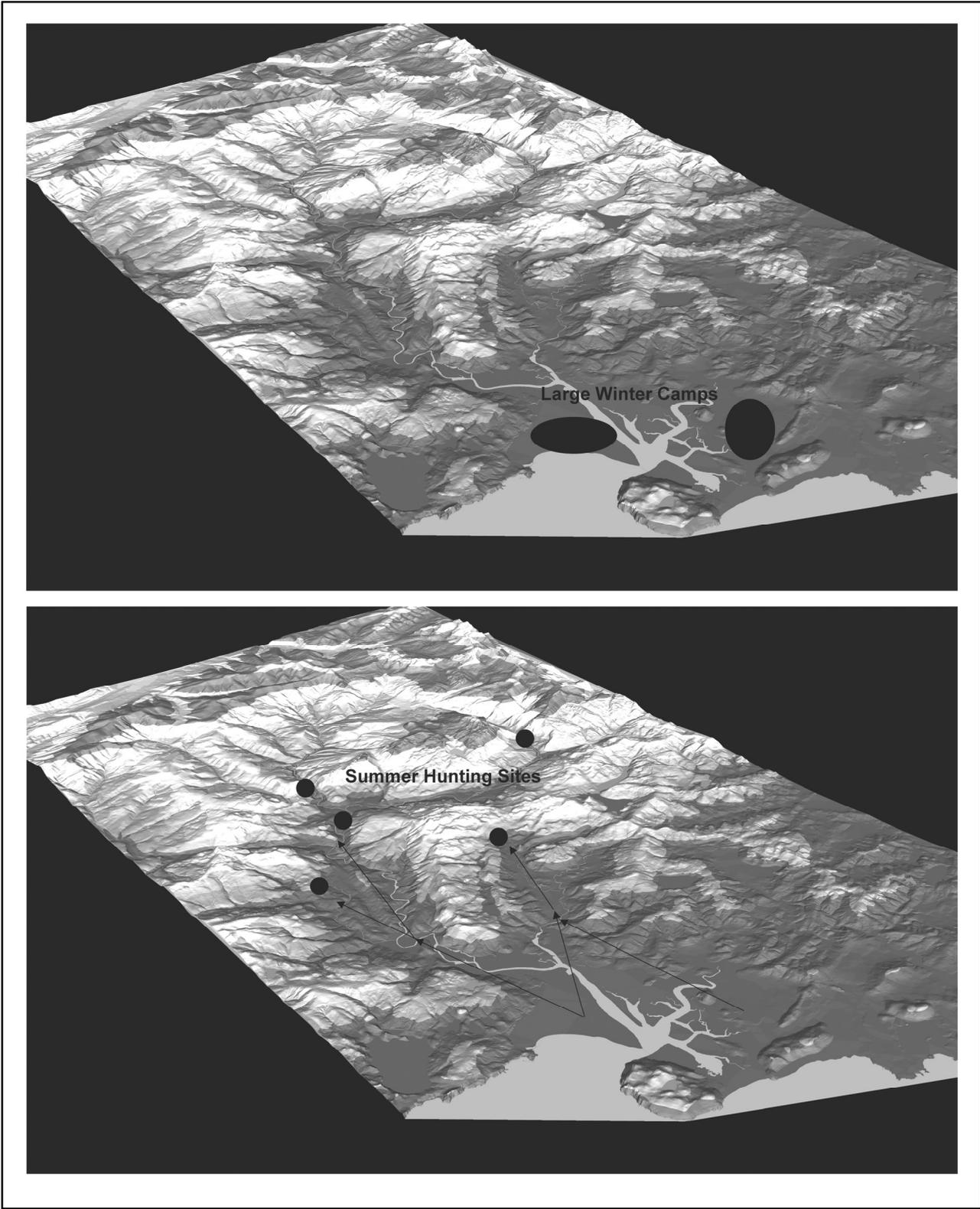


Figure 20. The seasonal coast-inland mobility model, applied to the Asón river valley

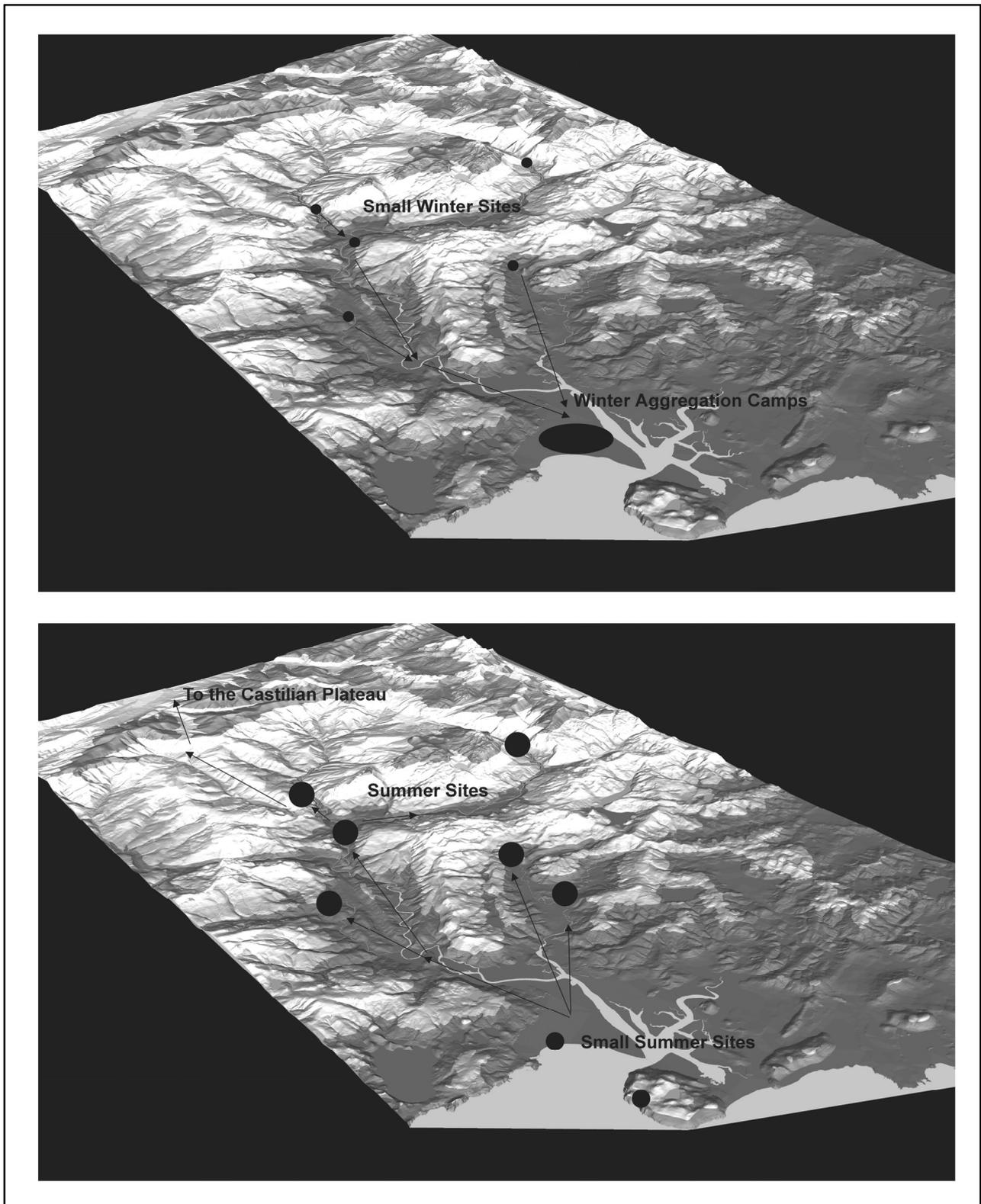


Figure 21. Settlement Patterns based on an Alternative mobility model, which considers semi-sedentary settlements and group size variations

8.4. DISCUSSION

8.4.1. *Testing the theoretical coast-inland mobility model*

As shown previously, in caves there are several types of evidence, both direct and indirect, for the season (or seasons) of the habitation. The main direct evidence for seasonality comes from the age of death of mammalian fauna recovered from La Fragua, El Perro, El Horno, and El Mirón. Contrary to the pattern predicted by the coast-inland theoretical model, both La Fragua (Marín Arroyo and González Morales 2007) and El Perro (Morales and Moreno 1997) were also occupied in seasons other than winter (as well as being inhabited in winter). In contrast, seasonality analyses of mammalian fauna from El Horno cave (located 20km inland from the modern shoreline), suggests that it was occupied between late winter and early spring (Costamagno and Fano Martínez 2005). Thus, these sites were inhabited out of the supposed 'ideal season' by the coast-winter vs. inland-summer model (Figure 20).

Likewise, some of the sites would not have been habitable during the season in which the coast-inland model predicts they would have been, due to the presence of rivers or cold air streams crossing the cave mouths, as at El Valle or Cullalvera caves. Moreover, because of their dimensions, some caves such as at La Fragua could only give shelter to small groups for short forays, and thus could not have been a winter camp where a large group aggregated (Conkey 1980; Utrilla Miranda 1994). In any case, if such large encampment sites were located at the coast (as the coast-inland model predicts) they would be on the late glacial coastal plain, which is now submerged.

On the other hand, the above evidence suggests that plant gathering, mollusc collecting, and fishing would have been important alternatives to hunting by offering a wide variety of highly predictable resources. Plant gathering and salmon fishing would have had their optimal peak in late summer or early autumn. Yet other plant or fish species, including certain marine molluscs or land snails (Gutiérrez Zugasti 2006), may have been available in other seasons, or even throughout the whole year.

Moreover, as those resources were accessible at many different points of the valley through logistical forays, Palaeolithic human groups would not have needed to move their settlements as regularly to exploit the different environments. Crucially, this means that the Final Palaeolithic hunter-gatherer groups would not have needed to aggregate during the winter months on the coast and migrate to inland niches during the warmer seasons as the coast-inland model predicts. The occupation of some sites in a different season than predicted by the coast-inland model shows that the coast-inland model is clearly redundant and that these societies adopted a radically different settlement strategy than predicted.

8.4.2. *Towards an alternative mobility model*

Evidence suggests that some of the sites presented in this paper were inhabited in more than one season, as at La Fragua. This fact was already noted by Straus (1992) as being evidence for his logistical mobility model. However, Straus supposed that only coastal sites were inhabited during almost the entire year, while inland sites acted as specialised hunting sites. Yet, according to new evidence, inland sites like El Mirón and El Horno seem to have played a more complex role in the hunter-gatherer's mobility strategies that Straus envisaged.

As a consequence, an alternative mobility model that considers this new evidence must be considered. It is now evident from the data I have described that the Final Palaeolithic hunter-gatherer societies could have developed a more flexible, permeable group composition strategy as suggested by Olive and Pigeot (2006, 681) in order to get optimum returns from available resources in each habitat. In other words, during periods of resource abundance populations would congregate in high productivity areas, whilst after optimal conditions had passed, some members of the group could have stayed in that area exploiting the remaining (or some new) resources, while the rest of the group would have moved to a different area with higher resource availability, perhaps even joining other human groups. In that case, the Palaeolithic communities would have chosen a semi-sedentary settlement pattern, based on a broad-spectrum foraging economy and made possible as a result of the wide distribution (both spatial and temporal) of resources (Kelly 1992). The interpretation of the settlement patterns based on this model is presented in Figure 21.

8.5. CONCLUSION

My discussion has shown that in spite of the inherent limitations of theoretical mobility models, they can be considered a useful instrument for the archaeologist since they facilitate the questioning, interpretation, and organisation of the archaeological data. However, such general models must be taken as a starting point to build more complex and specific models, based on archaeological evidence. In the case of the Asón River Valley sites, two mobility models have been traditionally proposed: a strictly seasonal, transhumance coast-inland model, and a logistical trips-based one. However, the seasonality evidence from mammalian faunal remains, cave habitability conditions, and the availability of a wide variety of resources contradict both models.

Taking into consideration this evidence, I have proposed an alternative hypothesis. This new model is based on the demographic flexibility of hunter-gatherer groups, resource availability, and optimal foraging behaviour. In this model I contend that the human communities would have aggregated or disaggregated in accordance with resource availability, yet adopting a more semi-sedentary mobility pattern than has hitherto been anticipated. It must

be stated here that this model is only a preliminary hypothesis. It needs further testing and fine-tuning to fully accommodate the patterning reflected in the archaeological record, since almost no information about open air settlements, Pleistocene coastal sites, or the role played by the sites in mountainous areas is currently available. Nonetheless, I contend that this new model is a more appropriate starting point to define a more accurate understanding than the seasonal, transhumance coast-inland model or the logistical trips-based model as traditionally presented.

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Chapter 9 Stability and Mobility in Pleistocene Arabia

Jeffrey I. Rose

ABSTRACT

Throughout the Pleistocene, the Arabian Peninsula was governed by wild fluctuations in rainfall and sea level. These climatic oscillations track with changes in the Indian Ocean Monsoon system. The peninsula and surrounding areas became virtually uninhabitable as the monsoon weakened; conversely, spikes in monsoon activity resulted in widespread amelioration. There have been three significant pluvials in South Arabia since the Penultimate Glaciation: 10 – 5 kya, 50 – 20 kya, and 130 – 100 kya, punctuated by hyper-arid events that triggered severe environmental desiccation. During these hyper-arid episodes, eustatic sea levels were reduced by a maximum of 120m below current levels, culminating in a uniquely serendipitous process that exposed the entire surface of the Arabo-Persian Gulf basin and led to large quantities of freshwater upwelling from subterranean aquifers. Consequently, during Upper Pleistocene glacial maxima, this region provided a stable source of water and associated biomass for contracting hunter-gatherer populations – an environmental refugium of unsurpassed biotic and climatic favourability during the most unfavourable of times. These ‘Eden-like’ conditions came at a severe price, for each time sea levels rose above -20m, the Strait of Hormuz was breached by the Indian Ocean. Marine transgression into the Gulf, combined with increased glacio-fluvial output and intensified monsoon activity, resulted in a forceful ejection of human populations that triggered waves of cascading demographic radiation into surrounding areas. This model is parsimonious with palaeoenvironmental, archaeological, and genetic data. Furthermore, the most recent cycle of confluence and radiation is well-represented in the disparate mythologies of refugees displaced from the Gulf refugium during the early Holocene transgression.

Keywords: mobility, refugia, palaeoenvironment, genetics, modern humans, Arabia

PROLOGUE FROM THE AUTHOR (2013)

This paper was written in 2008 and does not account for significant genetic and archaeological contributions that have occurred in the interim, such as the reporting of relict mtDNA R0a and N lineages pre-dating the Last Glacial Maximum in Arabia, as well as the discovery of Nubian Complex sites in Yemen, Oman, and Saudi Arabia. As such, this paper does not necessarily reflect the author's current thinking on the subject matter.

9.1. INTRODUCTION

New data collected by recent archaeological fieldwork throughout the Arabian subcontinent (e.g. Rose 2006; Delagnes et al. 2008; Fedele 2009; Rose et al. 2009; Uerpmann et al. 2009; Marks 2009) indicate that the peninsula was home to early human hunter-gatherer communities throughout the Upper Pleistocene (128,000 – 12,000 BP). It is likely that these occupants were among the first anatomically modern humans to branch from an ancestral population that evolved in East Africa some 190,000 years ago (White et al. 2003; McDougall et al. 2005), as fossil remains indicate that modern humans had reached the Near East by 100,000 BP (Schwarz et al. 1988; Mercier et al. 1993). The emerging picture from Arabia suggests that these early human populations may have survived the extreme aridity that set between roughly 74 – 60 kya BP, and later from 24 – 12 kya, by contracting into localised climatic refugia that provided abundant resources essential for survival such as freshwater, food, and high-quality raw material for manufacturing stone tools.

This paper explores the mechanisms driving demographic movement into and out of one such Arabian refugium over the course of prehistory; hence, mobility in Pleistocene Arabia. Cycles of landscape amelioration and desiccation, in concert with the rise and fall of eustatic sea levels, are thought to have been key processes patterning transhumance into and out of Arabia over the course of the Upper Pleistocene. As for stability, the question of whether or not the initial wave of modern human expansion out of Africa survived episodic climatic downturns is addressed. Palaeoenvironmental, genetic, archaeological and historic evidence is presented from the vicinity of the ‘Persian Gulf Oasis’—referring to the surface of the Persian Gulf basin exposed by low sea levels for the majority of the Upper Pleistocene. These data are used to argue that, as one of the largest and most stable sources of freshwater in the Near East during glacial maxima, this refugium may have played a vital role in modern human emergence, from the first human expansion out of East Africa to the recent incursion that completely flooded the basin by 6,000 BP.

9.2. ARABIAN PALAEOENVIRONMENTS

The Arabian subcontinent is bounded by a wide and shallow continental shelf (Figure 1). Along its eastern margin is the Persian Gulf, among the shallowest seas in the world. When sea levels were at their lowest, nearly half a million square kilometres of land were exposed along the entire periphery of the peninsula. The ‘Coastal Oasis Hypothesis’ (sensu Faure et al. 2002) predicts that these littoral landscapes were pockmarked with freshwater springs; lower sea levels triggered an increase on hydrostatic pressure within aquifers draining toward

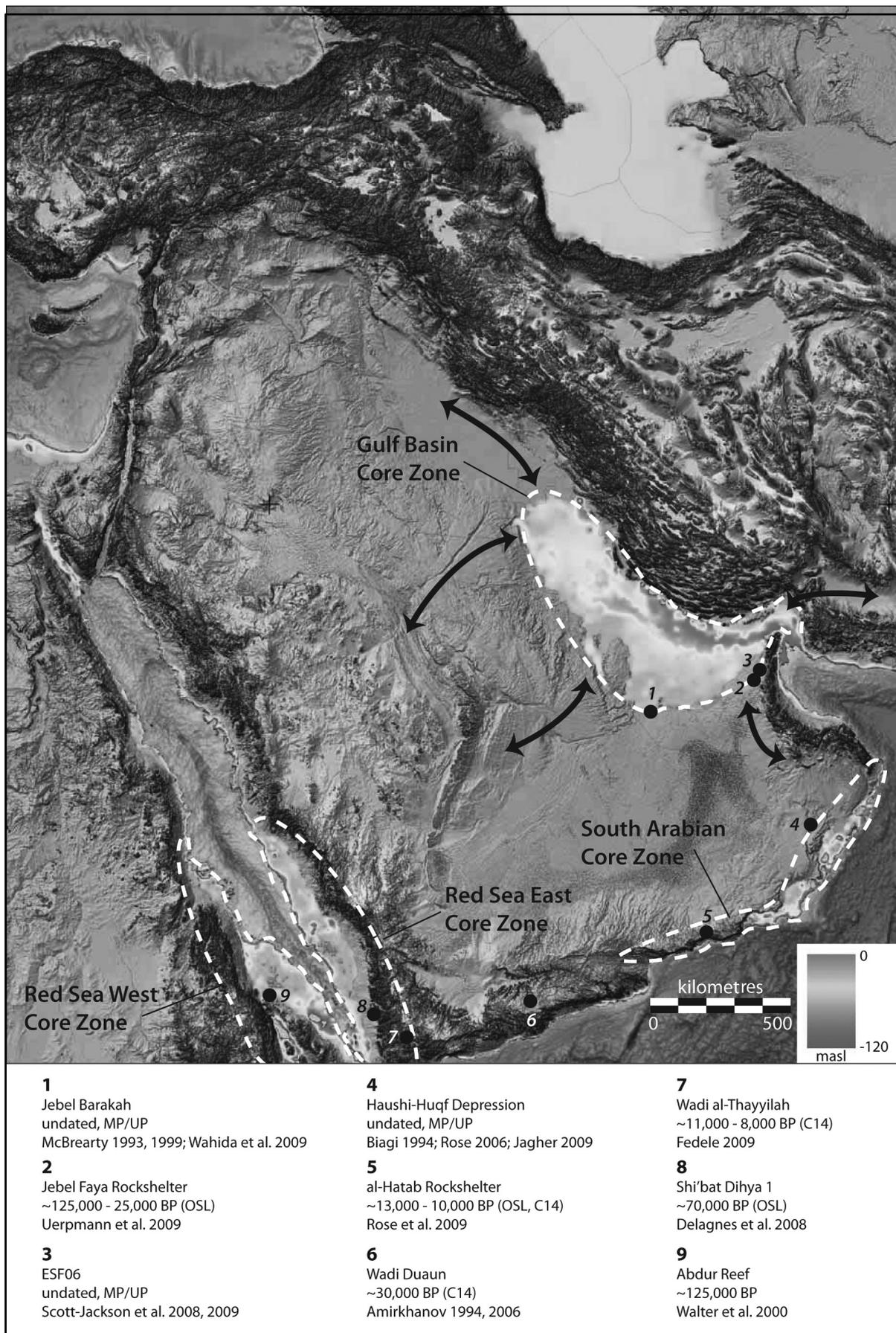


Figure 22. The Arabian Peninsula and its littoral zones exposed by reduced sea levels, the proposed environmental refugia, and selected Pleistocene archaeological sites
(DEM base map courtesy of M. Otte)

the sea, causing them to upwell along the continental shelf. Such a phenomenon can be found in the seeps at the bottom of the Persian Gulf (*kawkab* in Arabic), where freshwater plumes are to this day used by local fishermen for restocking their canteens (Church 1996; al-Mansouri, pers. comm.).

Over the course of the Quaternary, the Arabian subcontinent has been affected by two climatic regimes: Westerlies and the Indian Ocean Monsoon System. Westerlies are storms that form over the Mediterranean and move down the Persian Gulf, depositing a light to moderate amount of rainfall around the Gulf territories during the winter months. The Indian Ocean Monsoon, cycling through the Indian Ocean, is responsible for the summer *khareef* storms, which bring cool temperatures, high humidity, and frequent rains to the Dhofar Mountains and coastal plain between late June and early September.

The path and magnitude of the Indian Ocean Monsoon is linked to fluctuations in global insulation. The system moves to the south during glacial periods, causing a drop in precipitation across Arabia, while a return to warmer and more humid interglacial conditions causes the monsoon to shift northward and deposit enough rainfall over the Rub' al-Khali desert to create a series of inland lakes. These dynamics have episodically transformed barren sand seas into fertile grasslands and back again over the course of the Pleistocene and Early Holocene (e.g. McClure 1976; Parker et al. 2006; Fleitmann et al. 2007; Parker and Rose 2008). The model of demographic movement presented in this paper is based on the assumption that the variable distribution of water and food over time created a cyclical ebb and flow of population expansion and contraction from core refugia into marginal zones along the periphery. As Wilfred Thesiger (1959, 1) so eloquently and succinctly describes: 'a cloud gathers, the rain falls, men live; the cloud disperses without rain, and men and animals die.'

There is an inverse relationship between increased rainfall across the interior and the extent of exposed coastal refugia (Figure 23). It is predicted that hunter-gatherers expanded their range into the hinterland during pluvial events between 128,000 – 74,000 BP, 60,000 – 24,000 BP, and 12,000 – 6,000 BP. Conversely, populations were ushered toward the coast during arid periods culminating around 70,000 and 18,000 years ago, when the interior became desiccated, yet coastal habitats were at their maximum exposure.

A large amount of freshwater in Arabia, Mesopotamia, and the Zagros Mountains ultimately drains into the Persian Gulf basin via surface runoff and subterranean river systems (e.g. Shiraz and Münster 1992; Church 1996; Mubarak and Kubryakov 2000; Sultan et al. 2008). Consequently, the 'Persian Gulf Oasis' would have housed one of the largest concentrations of accessible freshwater during these intense hyper-arid phases corresponding with low sea level. At such times, this zone was transformed into a rich mosaic of lakes, alluvial

floodplains, *sibakh*, mangrove swamps, estuaries, and seasonal drainage systems (e.g. Sugden 1963; Evans 1966; Butler 1969; Sarnheim 1972; Diester-Haass 1973; Seibold and Vollbrecht 1979; Stoffers and Ross 1979; Georgiev and Stoffers 1980; al-Hinai et al. 1987; Lambeck 1996; Uchupi et al. 1996, 1999; Saleh et al. 1999; Williams 1999; Alsharhan and Kendall 2003; Wilkinson and Drummond 2004; Gischler et al. 2005). Further adding to its appeal, there are abundant flint deposits associated with the high-quality, fine-grained Eocene *Rus* formation exposed in patches across the landscape (Cavelier 1970; Edgell 1992).

So, when most of the world's surface was at its driest and most inhospitable, the Persian Gulf Oasis provided a large and stable supply of freshwater, flint, and food. To the detriment of its occupants, the stability and comfort of this niche did not last. A rise in glacio-eustatic sea levels—coinciding with periods of intensified monsoon activity—led to marine incursion into the basin. Shoreline reconstructions of postglacial flooding between 16,000 and 6,000 BP indicate that the Indian Ocean transgressed more than 1000km during this span of time (e.g. Ivanovich et al. 1983; Cooke 1987; Bernier et al. 1995; Lambeck 1996; Teller et al. 2000; Evans et al. 2002; Williams and Walkden 2002; Farraj 2005; Bruthans et al. 2006). Kassler (1973) presents evidence arguing for three punctuated phases of rapid transgression around 11,000 – 9000 and 7000 BP, at which time the rate of lateral incursion may have exceeded one kilometre per year. If, indeed, there were sizable populations occupying the Persian Gulf Oasis in the Late Pleistocene and Early Holocene, inundation of the floodplain would have had dire consequences, displacing large numbers of people into a peripheral zone that could not support the same demographic load. Furthermore, Late Neolithic archaeological data around the Gulf indicate these groups had already developed into sedentary/semi-sedentary communities, thereby magnifying the impact of Early Holocene marine transgression into the Persian Gulf Oasis.

9.3. HUMAN GENETICS IN ARABIA

In the last two decades, advances in the field of genetics have enabled scholars to address questions of early human demography. Using the genetic code of mitochondrial DNA (mtDNA), researchers are able to determine the position of any individual within the human family tree (phylogeny). Since this mtDNA code is only inherited through the maternal line and mutates rapidly, it represents a single evolutionary thread that can be used to measure genetic distance between individuals with relative (pun intended) precision.

Examining the mtDNA of modern populations distributed throughout Arabia, it seems that a distant memory of the Persian Gulf's early inhabitants is embedded in the genetic structure of some individuals scattered across the peninsula. Analyses of mtDNA haplogroups (monophyletic clades) found amongst current inhabitants

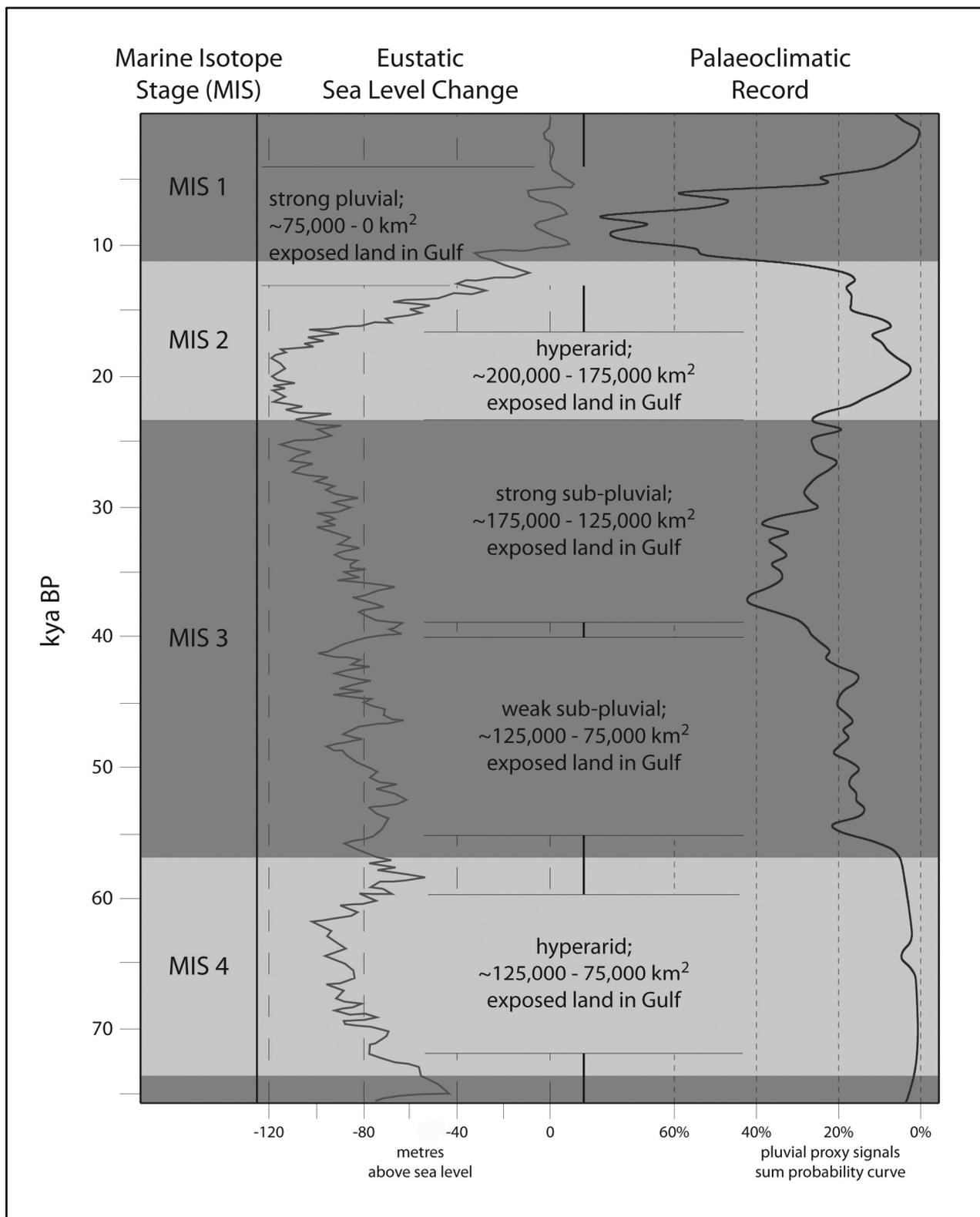


Figure 23. Environmental fluctuations in Arabia from MIS 4 to MIS 1

Sea level curve after Siddall et al. (2003, fig. 4, 857); exposed landmass in the Gulf calculated from Lambeck (1996) palaeo-shoreline reconstructions; palaeoclimatic sum probability curve after Parker and Rose (2008, Fig. 4, 31)

of Arabia have revealed potential lineages reaching as far back in time as MIS 3, if not earlier. The frequency, diversity, and distribution of these lineages suggest some indigenous communities survived the Late Pleistocene

hyper-arid phase, when Arabia was presumed to be all but uninhabitable. Mitochondrial DNA samples taken from individuals in Qatar, UAE, Oman, and Yemen (Kivisild et al. 2004; Abu-Amero et al. 2007; Rowold et

al. 2007; Abu-Amero et al. 2008; Černý et al. 2008) have uncovered several highly diversified mtDNA lineages that may have persisted in the region from the Late Pleistocene through the Last Glacial Maximum (LGM) (Rose et al. 2009).

Two particular mtDNA haplogroups suggest deep genetic roots in southern Arabia: preHV1 (or R0a) and J1. The highest frequency of R0a and its derivatives are found in parts of Yemen (25%) (Černý et al. 2008), Saudi Arabia (22%) (Abu-Amero et al. 2008) and Oman (16%) (Abu-Amero et al. 2007). With an overall Middle Eastern coalescent age around 19 kya years ago, haplogroup R0a shows marked local diversity in South Arabia, a testament to its great age in the region. The oldest coalescent age for R0a has been identified in the UAE, potentially pushing the presence of this marker in eastern Arabia as far back as 38,000 BP (Rowold et al. 2007).

Haplogroup J is an ancient derivative of macro-haplogroup N with a coalescent age of $57,900 \pm 17,600$ BP (Rowold et al. 2007). It is well represented in Arabia with high frequencies in Saudi Arabia (37.5%), Qatar (17.8%), and Yemen (30%). Like R0a, this haplogroup is also characterised by considerable diversity in all its main sub-branches found throughout the subcontinent (J1, J1b, and J1c/J2) (Abu-Amero et al. 2008). Of these sub-branches, J1bis the most common and diverse in Arabia, with a global age of $29,040 \pm 8,061$ BP. Phylogeographic inference suggests the root of J1b is in southern Arabia, with derivative haplogroups found in the Near East, the Caucasus, and Europe (Abu-Amero et al. 2008).

The diversity and distribution of mtDNA haplogroups R0a and J1 among the current inhabitants of Arabia suggest indigenous populations have persisted in refugia along the littoral margins of the subcontinent since the onset of MIS 3, if not earlier. While these genetic data provide tantalising clues about a relic Pleistocene population in Arabia, genetics alone paint a limited picture of prehistory. As Oppenheimer (2008, 1) cautions, 'chronometric predictions based solely on the genetic data have systematic problems and should be tested using data from archaeology, Palaeo-anthropology and the Earth Sciences.' Hence, the ensuing section reviews archaeological data from recent Palaeolithic finds in the region to add further resolution to our understanding of prehistory in this region.

9.4. UPPER PLEISTOCENE AND EARLY HOLOCENE ARCHAEOLOGY IN THE SOUTHERN GULF

The oldest recorded archaeological sites around the Persian Gulf have been discovered at Jebel Barakah in western Abu Dhabi Emirate (McBrearty 1993, 1999; Wahida et al. 2009), near Fili in the western foothills of the Hajar mountains (Scott-Jackson et al. 2008, 2009), and at Jebel Faya 1 Rockshelter in Sharjah Emirate (Uerpmann et al. 2009). In all three cases, the sites are

comprised of chipped stone assemblages manufactured from local flint outcrops. While the lithic technologies observed at these sites are unique to eastern Arabia and difficult to classify, certain technological features, such as Levallois cores and the *façonnage* production of bifacial tools, suggest a timeframe within the Late Lower and Middle Palaeolithic periods.

At Jebel Barakah, the predominant core reduction strategy is a centripetal Levallois technique, with biconical radial and high-backed radial cores as well. There is evidence of a bidirectional Levallois technique and Nubian Type I cores (*sensu* Guichard and Guichard 1965), although these latter reduction strategies appear to have been far less frequent in contrast to the large numbers of radial cores and debitage. In addition to an array of non-diagnostic tool types such as denticulates and notches, the Jebel Barakah toolkit includes a cordiform bifacial handaxe and a bifacially retouched sidescraper (Wahida et al. 2009).

Scott-Jackson et al. (2008, 2009) collected a generally similar array of Palaeolithic material from the interior foothills of the Hajar mountain chain near Fili in Sharjah and Ras al-Khaimah Emirates. Artefacts were recovered from large workshops situated on limestone ridges approximately 300m in elevation, with views of the Al Madam plain to the west and wadi channels directly below. The assemblages all exhibit some Levallois variant, ranging between centripetal and unipolar-convergent, as well as an assortment of biconical and high-backed radial cores. As for tools, there was a high frequency of side scrapers and bifacial implements including bifacially-worked side scrapers with flat invasive retouch, backed bifacial knives, foliates, limandes, and a large elongated bifacial handaxe. The combination of Levallois cores associated with Micoquian-like¹ bifacial forms hints at a Middle Palaeolithic component within both Jebel Barakah and Fili surface assemblages.

Stratified Palaeolithic artefacts were discovered at the site of Jebel Faya 1 Rockshelter in Sharjah Emirate by a joint Tübingen-Sharjah team in 2005 (Uerpmann et al. 2009; Marks 2009). In four seasons of fieldwork, the team has since uncovered over three metres of *in situ* archaeological material associated with at least three distinct archaeological layers spanning most of the Upper Pleistocene.

The lowest level—Assemblage C—displays some techno-typological overlap with the nearby Fili and Jebel Barakah assemblages described above. It is characterised by small handaxes, bifacial foliates, hard hammer blades, and crude Levallois and discoidal cores. OSL ages from overlying sands indicate Assemblage C dates to Marine Isotope Stage 5 (128 – 74 kya) or older.

The overlying Assemblages A and B are bracketed within Marine Isotope Stage 3 (~55–24 kya). Assemblage B yielded multiple platform cores with flat converging and flat 90-degree flaking surfaces, as well as some blade

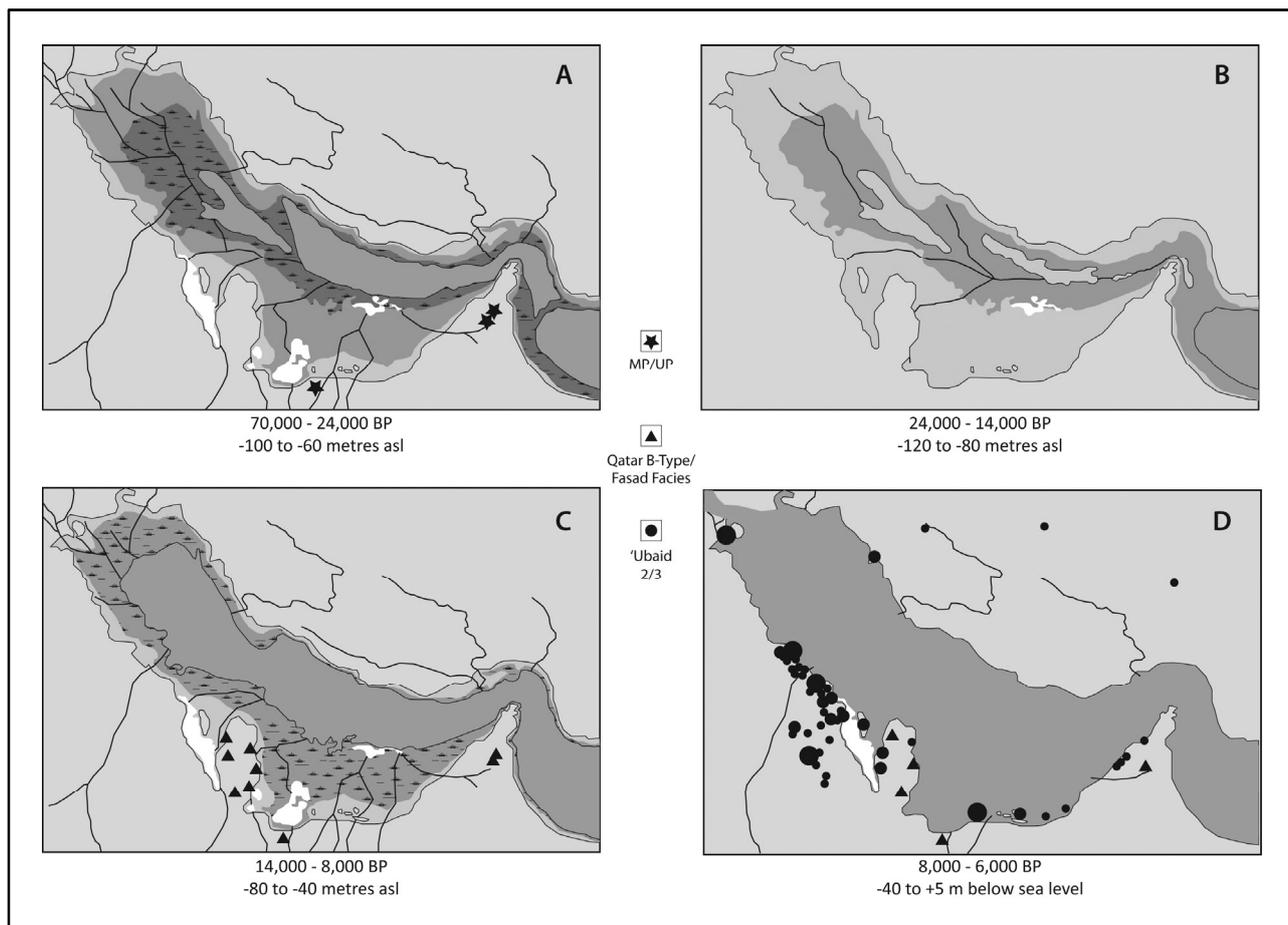


Figure 24. Palaeo-shoreline configuration and known archaeological sites around the Persian Gulf basin during the Upper Pleistocene and Early/Middle Holocene shorelines
 Modelled from Lambeck (1996), archaeological sites after Kapel (1967), Carter (2006, 2009), and Uerpmann et al. (2009)

production from unidirectional-parallel cores. Tools include burins, end scrapers, and side scrapers. In contrast to the underlying Assemblage C, there is no evidence for the use of the Levallois technique, nor any sign of platform faceting.

Because of its generally non-diagnostic characteristics, it is difficult to classify the techno-typological features from Assemblage A. There are multiple platform cores, mostly flake (rather than blade) production, no Levallois cores or debitage, and no evidence of platform faceting. Similar to Assemblage B, some Upper Palaeolithic tool types are present (i.e., burins and end scrapers).

Marks (2009) observes potentially African-derived features in Jebel Faya Assemblage C, concluding that *'the apparent associated technological patterns in Jebel Faya I, Assemblage C, show greater similarities with East and Northeast Africa, particularly the late Sangoan, than does any other site known in Arabia'*. Regarding Assemblages A and B, he observes that the features do not resemble archaeological materials recovered from adjacent regions, suggesting the local development of a uniquely eastern Arabian lithic tradition by 30,000 years ago.

Archaeological traces of human habitation vanish from the Gulf region—across the entire peninsula for that matter—by the LGM. Three explanations for this disappearance are considered: 1) populations declined as a result of widespread landscape desiccation, 2) populations moved to more hospitable habitats outside of Arabia, and/or 3) populations contracted into climatic refugia along the exposed coastal margins, onto presently submerged landscapes that obscure archaeological detection. It is likely that all three factors played some role in the disappearance of archaeological sites during this phase of prehistory.

Figure 24, which depicts the Holocene peopling of the Gulf basin, shows a slow trickle of ephemeral occupations that appear along the coast around 9,000 BP (Kapel 1967; Uerpmann 1992; Uerpmann and Uerpmann 2003; Uerpmann et al. 2009), followed by a larger wave of settlement between 9,000 and 7,000 BP (Inizan 1978, 1980; Uerpmann and Uerpmann 1996; Masry 1997; Beech and Shepherd 2001; Beech et al. 2005; Biagi 2006; Carter 2006; Haerinck 2007; Charpentier 2008). These Middle Holocene sites exhibit features never seen before in Arabia, such as large settlements with permanent

architecture, pottery, aquatic subsistence, seafaring, long-distance trade, and animal husbandry. Intra-regional analysis of ceramic typology reveals that nearly every site belongs to the 'Ubaid 2/3 period (Carter 2006), suggesting either an abrupt and widespread colonisation of the Gulf region by a foreign population or a rapid demographic expansion of autochthonous communities.

The punctuated appearance of 'Ubaid settlements around the margins of the Persian Gulf during the 'Ubaid 2/3 period (late 6th millennium BC) coincides with the final phase of marine incursion into the basin. Considering the close correlation between these two events, in conjunction with the palaeoenvironmental argument for continuous human occupation in eastern Arabia during glacial maxima, it is proposed that these new Middle Holocene settlements around the margins of the Gulf basin derive from indigenous communities displaced by the advancing shoreline.

9.5. FOLKLORE AND ETHNICITY IN SOUTHERN MESOPOTAMIA DURING THE MIDDLE HOLOCENE

As such, it comes as no surprise that tales of cataclysmic climatic events are common among the oral and written traditions of the region's inhabitants. Stories of a great flood are prominent among the folklores of the 2nd and 3rd millennia BC societies living along the northern shoreline of the Persian Gulf.

The cultural designation for this group—'Sumerian'—is an exonym applied by adjacent Akkadian-speaking populations that occupied the central Mesopotamian floodplain to the north. In their own words, the inhabitants of southern Mesopotamia described themselves as *sag.gi.ga*, meaning 'the dark-headed people.' They refer to their territory as *ki.en.gir* 'land of the lords of Gir' and spoke a language they called *eme.gi* 'the Gir language' (Postgate 1992). In all three cases, their cultural identity is considered to be quite separate from the surrounding, non-Sumerian speaking populations. Moreover, the Sumerian language is an isolate with only a distant relationship to other tongues spoken around the region, including Semitic, Kassite, Hurrian, and Elamite (Thomsen 2001). This cultural differentiation is apparent in the archaeological record as far back as the initial 'Ubaid appearance in southern Mesopotamia, at which time 'Ubaid settlements exhibit a complex, tiered hierarchical structure described as 'vertical egalitarian,' while contemporary Halafian groups living in central and northern Mesopotamia demonstrate a simpler, 'horizontal egalitarian' social system (Frangipane 2007).

The Sumerian 'Eridu Genesis' (Jacobsen 1981) represents the oldest format of the ubiquitous Near Eastern flood myth. Subsequent versions written in Akkadian, Old Babylonian, Aramaic, Hebrew, and Arabic texts are but slight deviations from the original Sumerian template. It is tempting to link this long

tradition of flood mythologies with Early Holocene marine transgression into the Persian Gulf basin. This correlation has already been thoroughly and exhaustively explored by a number of authors (e.g. Cooke 1987; Hamblin 1987; Lambeck 1996; Teller et al. 2000; Kennett and Kennett 2006; Sanford 2006). While the historical link between flood mythology and Gulf incursion is scientifically uninteresting, it is useful for observing human response to rapid climate change, and is a powerful example of memetic dissemination (sensu Dawkins 1976). In this case, the cultural identity of a displaced diaspora community, uprooted from their sedentary settlements in the Persian Gulf Oasis by the rising water table and advancing shoreline, appears to have developed and evolved into a globally shared meme spread by Neolithic and Chalcolithic populations expanding out of the Fertile Crescent.

9.6. CONCLUSIONS

This paper has reviewed a variety of evidence directly and indirectly suggesting the presence of prehistoric human occupation in the Persian Gulf Oasis throughout the Late Pleistocene and Early Holocene. As such, any consideration of human demography in prehistoric Arabia must take into account this zone. Palaeoenvironmental records suggest it was among the largest refugium throughout the region. Genetic data obtained from modern Arabian populations reveal lineages rooted deep in prehistory, indicating that some groups were able to survive the most recent climatic downturn during the last glacial maximum; presumably they were able to persist in the region due to the freshwater available within the Persian Gulf Oasis and other refugia. Archaeological evidence from around the Gulf demonstrates that hunter-gatherers occupied the region at least as far back as 85,000 years ago. The folklore and ethnicity derived from the Middle Holocene peoples that colonised the southern shoreline of the Persian Gulf corroborates this scenario, painting the picture of a diaspora community displaced by rising sea levels.

The dynamics between fluctuating environmental conditions and demographic response within the Gulf refugium may have profoundly impacted the process of cultural evolution among its inhabitants. Groups living under perpetually oscillating environmental conditions were persistently and consistently thrust into a series of negative feedback loops (sensu Flannery 1968) in order to survive. In one such example, Kennett and Kennett (2006) argue that the formation of coastal and aquatic habitats in southern Mesopotamia in the Early and Middle Holocene played a critical role in the process of initial state formation.

Further back in prehistory, the hyper-arid conditions of MIS 4 and amelioration during MIS 3 may have created a cyclical ebb and flow of habitation across the landscape. At times, the interior savannas of Arabia became desiccated while tens of thousands of square kilometres of fertile land along the coast was made available. It is

possible these shifting environmental dynamics forced hunter-gatherers to increasingly rely on coastal resources rather than big game hunting in the interior. The transition to aquatic subsistence and ‘beachcombing’ is often invoked to explain the rapid modern human expansion across the Indian Ocean rim territories (Stringer 2000; Field and Lahr 2006; Mellars 2006; Field et al. 2007), which ultimately led to the colonisation of Sahul between 60,000 and 40,000 years ago (O’Connell and Allen 2004).

In the scenario put forth in this paper, the Near Eastern MIS 5 AMH populations represented at Skhul and Qafzeh caves (Israel) were not a failed wave of expansion; rather, they were bivouacked (so to speak) in Southwest and/or Central Asian refugia until the ameliorated conditions that set in during MIS 3 permitted subsequent range expansions. This is in agreement with the model proposed by Otte et al. (2007), who argue that the locus of early modern human expansion into Europe originated somewhere between Afghanistan and the Caucasus. In his review of archaeological data from the Middle-Upper Palaeolithic transition seen in Europe, Asia, and Africa, Marks (2005, 81) arrives at a similar conclusion: ‘the immediate origins of the explosion of “modern behaviour” seen in Europe, but not in Africa, might be found at the contact between Eastern Europe and Western Asia.’ This scenario helps to explain some puzzling aspects of early modern human cranial diversity, which indicate that ‘early modern humans from the Levant either contributed directly to the ancestry of an early lineage of Australasians, or they share a recent common ancestor with them’ (Schillaci 2008, 814). Finally, the proposition of early modern human survival in littoral refugia outside of Africa during MIS 4 is parsimonious with recent assertions of mtDNA and yDNA evidence for Pleistocene back migration into Africa—the ‘in through the outdoor’ scenario (Altheide and Hammer 1997; Hammer et al. 1998; Cruciani et al. 2002; Coia et al. 2005; Olivieri et al. 2006; González et al. 2007).

Endnotes

¹ The term Micoquian-like bifacial forms is used here to refer to an array of large, flat, asymmetrical bifacial tool types that are biconvex in cross-section, with forms including (but not limited to): bifacial scrapers, backed bifacial scrapers, bifacial knives, flat handaxes, and diminutive leaf-shaped points. The large deep scars and associated debitage suggest these implements were predominantly manufactured using hard hammer percussion.

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Chapter 10 A Life in Ruins: Change and Evolving Town Life in Leicester and Lincoln c. AD 350-700

Gavin Speed

ABSTRACT

Towns are never static, but constantly in flux. In England, change was never more pronounced than in the late Roman and early Anglo-Saxon period (fourth to seventh centuries AD). However, observing and understanding this change is difficult since documentary records are all but non-existent, and the archaeological visibility literally becomes dark (earth). This paper will take two towns as case studies (Leicester and Lincoln) and review the evidence to illustrate their different fortunes across this period. Particular attention will be paid to the impact of relict Roman structures (both public and private) and their mutations in the post-Roman period. Key issues reviewed will be: what was life like in towns during this period? Where were the areas of occupation in towns – close to the public buildings of the past or in new areas? What role did town defences play? Were walls, ditches, gates, and roads maintained? Were towns still framed by these walls? What was the role of the Church in the late Roman period and can we easily locate ecclesiastical structures? My reassessment of the archaeological evidence will highlight some issues seen in urban archaeology across all periods, and allow these general themes to be discussed in the wider context of understanding the urban past.

Keywords: Leicester, Lincoln, England, Roman, Anglo-Saxon, towns

10.1. INTRODUCTION

Towns are constantly evolving, developing, declining, and regenerating. As complex socio-economic spaces, their development sequences are intricate and diverse. While much effort has gone into exploring the birth and monumentalisation of towns in Roman Britain, a key archaeological point relates to the fate of those urban centres in the late Roman and early Anglo-Saxon periods. Yet charting and interpreting this fate is difficult in the near absence of documentary records, and the archaeological remains become dark (earth).

Debates about the end of Roman Britain persist on establishing whether ‘Roman towns’ survived into the fifth and sixth centuries AD (e.g. Dark 2000, Faulkner 2004). Rather than seeking evidence for this, this paper reassesses the archaeological evidence in two case studies to discuss the *nature* of life within towns during this period. Work in Leicester and Lincoln demonstrate that even in modern built-up urban centres with generally small-scale developer-funded excavations, much can still be gleaned about the evolving transition of life in towns from the late fourth to seventh centuries AD.

First, an overview of the main issues concerning studies of this period will be offered, briefly reviewing the key debates and assessing the limitations of the available data. Because the physical remains of the past shaped and influenced urban life for later generations, a discussion of the changing usage of the public and private structures in the Lincoln and Leicester in the later fourth and fifth centuries is then required. Town defences played an important role in the development of life within the intramural space, and their impact during this period will be reviewed, with specific reference to their role beyond a purely military function. Finally, the key questions will be posed through these case studies: were the settlements proper ‘urban’ centres in the mid-fifth century after the

Roman economy had collapsed, and how were they perceived? It will become clear through the evidence that despite the economic changes in Britain which made towns lose much of their importance in the mid-fifth century (Mattingly 2006, 325), life within these towns continued. Nevertheless, Leicester and Lincoln also show how the functions and meanings of urban space were transformed from the mid-fifth to seventh centuries AD.

10.2. MIND THE (ARCHAEOLOGICAL) GAP: DATA AND DEBATE

Urbanism (or lack of it) in the fourth, fifth, and sixth centuries AD within Britain is a hotly debated subject, especially given the paucity of coherent archaeological evidence due to its fragmentary, delicate, and ephemeral nature. This lack of clear evidence can create an apparent archaeological ‘gap’ between the Roman and early medieval periods. Prior to the use of modern recording methods, urban excavations often failed to identify and record the (presumably) surviving evidence, and so information on late Roman and early medieval urbanism was largely derived from documentary sources, which are virtually non-existent for Britain from the late fourth to the sixth centuries. Those that do exist add little detail beyond general narratives. As a result, scholars of the early-to-mid-twentieth century saw a complete collapse of urban life early in the fourth century (e.g. Collingwood and Myres 1937). Archaeological excavations and academic research over the past 40 years have radically changed this traditional view, creating new methodologies and more diverse interpretations. Some scholars, however, have pushed the debate too far in the opposite direction, basing pictures of continued town life mainly on anecdotal evidence (Frere 1966, 97; Wachter 1995, 408-21). Certainly, fourth-century town life was vastly different both from that which had gone before in the early Roman period and from what was to come in the

fifth and sixth centuries. Additional data from new urban excavations continue to fuel the debate, as has been the case with sites such as London (Burton 2007), Canterbury (Hicks and Houlston 2003), and Leicester (N. Cooper 2007). Views remain polarised, with some authors interpreting the material as evidence for success and growth in the fourth century, a ‘golden age’ (De la Bédoyère 1999), leading to a continuous and developing Romano-Christian society into the sub- and post-Roman period, especially in the southwest of Britain (Snyder 1998; Dark 2000; Harris 2003; White 2007). Others – partly repeating Collingwood’s 1937 image – see a swift decline and rejection of a Roman style of town life, with towns becoming little more than ‘administrative villages’ (Reece 1980; Faulkner 2000; 2004).

Thus, despite the increase in archaeological material and scientific support, the evidence does not immediately point to a clearly-definable ‘answer’. Such confusion is largely due to the poor survival of archaeological deposits of this period and an interpretative ‘gap’ that can occur in site chronologies between the latest Roman deposits and the earliest Saxon deposits. Such a gap is created in part because two differing dating systems are used. First, the final ‘Roman’ occupation layers are dated by coins, for which the last official issues dry up after AD 402, and by pottery, which cannot be securely dated from the latter half of the fourth century onwards (Reece 2002, 62). These artefacts can only provide a *terminus post quem*, and it is only through scientific methods that a more accurate dating for buildings and activity can be gleaned. On the other hand, there are two principal issues concerning the chronological identification of occupation evidence from the early Anglo-Saxon period: first, the artefactual and structural evidence is both fragile and fragmentary, and second, the ceramics and metalwork have dated chronologies based on burial data, rather than well-recorded stratigraphic sequences within settlement sites – meaning that some artefacts may often be assigned a broad date of ‘early to mid Saxon period’. The pottery is low-technology and hand-made, frequently poorly fired and dark grey or black in appearance, generally plain and undecorated or with simple decoration, with little change in manufacturing until the seventh century (Kennett 1978, 12). The pottery is often locally produced, so comparisons of fabrics across wider areas may hold little value for tightening chronologies. The metalwork objects (e.g. brooches) and bone objects (e.g. combs and loom weights) regularly have a better survival rate, but again typologies are primarily based on burial data (Lucy 2000, 25).

10.3. DATA ISSUES

In addition to these chronological issues, other problems with the evidence itself make combining data from these two different material cultures difficult, and can be summarised under three headings: the availability of primary data, the survival of data, and the dating of terminal deposits.

10.3.1. Availability of the Primary Data

Urban excavations usually take place as part of developer-funded projects, where the locations of excavations are dictated by modern redevelopment and not research agendas. There is also the pressure of time constraints. Large-scale urban excavations are rare: often, excavations are only small trenches, essentially ‘key-hole’ archaeology, where the ‘bigger picture’ and a more complete understanding of the archaeology are difficult. Notable exceptions are Wroxeter and Silchester, long-term, research-driven projects that can focus on targeted areas. The *Insula IX* project at Silchester is also notable for being particularly quick to publish results in extensive form (Fulford et al. 2006), something that is only possible in a well-organised (and well-funded) project.

10.3.2. Survival of the Data

Due to urban development, many deposits may have been wholly removed or become truncated by later occupation, e.g. by walls, cellars, pitting, or site clearance. The green-field sites do not have the burden of modern towns overlying the remains, and so (apart from plough damage) preservation of the archaeological data is more likely.

10.3.3. Dating Terminal and Primary Deposits

Artefacts such as Roman or Saxon pottery can often only provide a *terminus post quem*, since the objects may have been used for some time after manufacture. It is often a matter of interpretation as to when these objects entered the archaeological record. Likewise, we remain uncertain of the earliest Saxon-period ceramics.

Despite these issues, it is still possible to draw upon what we may expect to find in towns of the late Roman and early Saxon periods and to establish an interpretation of life within them. Two towns offer strong guides: the first, Leicester, has seen much valuable recent large-scale excavations (Figure 25), and the second, Lincoln, extensive publication of not-so-recent archaeological work (Figure 26).

10.4. FOURTH-CENTURY URBAN FORMS

Any research on late Roman Britain is likely to draw upon Faulkner’s study of active buildings and rooms in Roman towns (Faulkner 1998). The study is now outdated (especially so in Leicester’s case), though it remains of much use, demonstrating a change in building focus within Roman towns from public buildings earlier in the second and third centuries to an emphasis on private buildings and town defences by the fourth century. Yet Faulkner does perhaps exaggerate elements of ‘decline’ and fails to take into account issues of truncation as discussed above. It also greatly simplifies

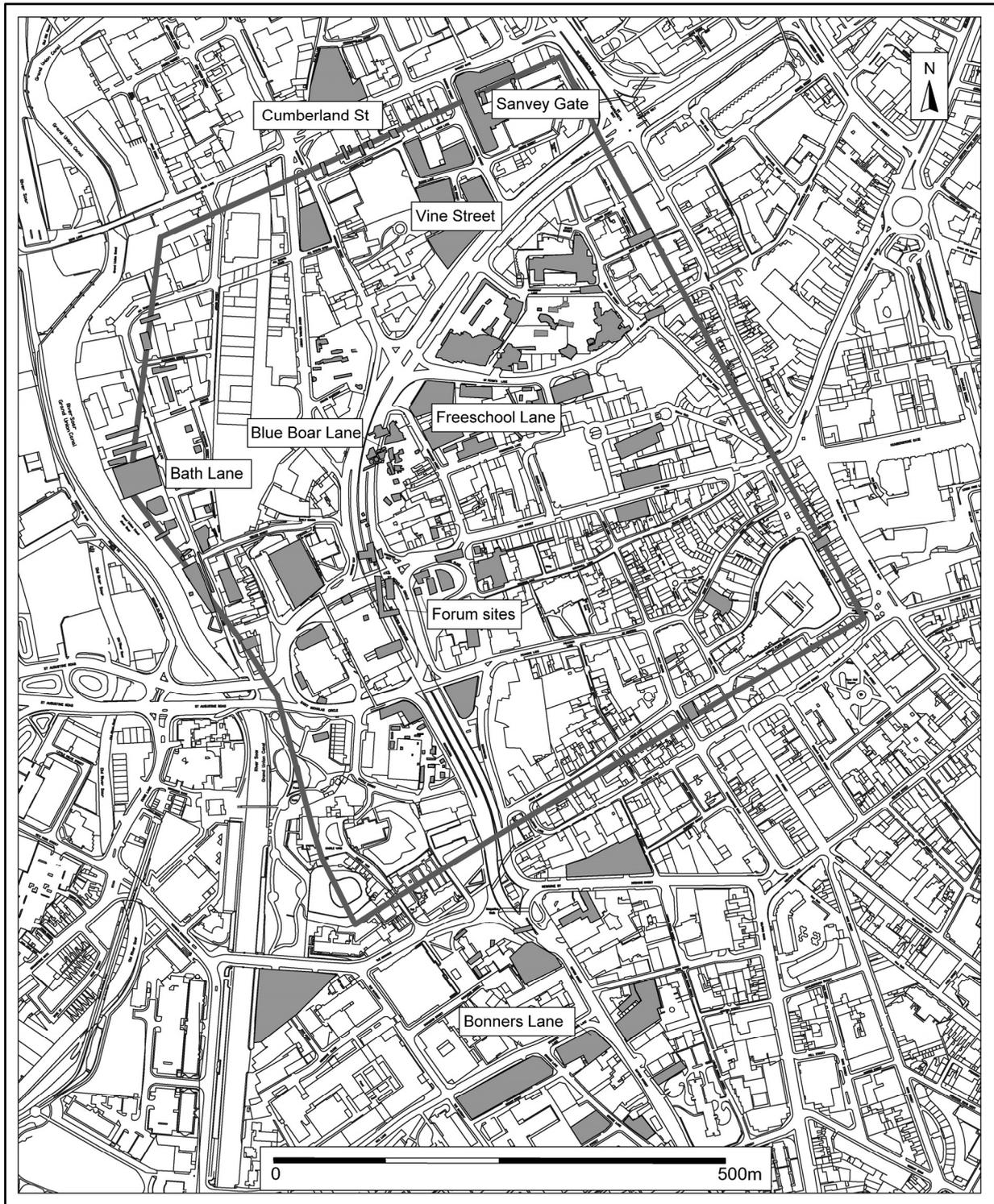


Figure 25. Key archaeological sites in Leicester (Data from Leicester UAD and ULAS unpublished sources)

what can be viewed as an active and vibrant urban lifestyle in the fourth century, as the focus of Faulkner's research was on tracing evidence of a rigidly defined classical Roman lifestyle over *c.* 350 years without accounting for evolving and transforming urban needs and lifestyles.

By the fourth century at both Leicester and Lincoln, the townscapes had been greatly altered from those of the

earlier centuries, especially in terms of a de-monumentalisation. However, this change should not necessarily be viewed as an urban 'decline'. Instead, the evidence should be examined to understand what town forms were like during this period. Then these can be viewed within the context of wider changes across the empire (Mattingly 2006, 325-352 for a detailed review of the political and economic changes in Britain during this period).

10.4.1. Public Space

Upon closer inspection of the archaeological evidence, it is clear that within public spaces different activities were occurring. Some similar patterns are visible at both sites. In the fourth century, the forum within each town reveals evidence for metalworking in side rooms (Hebditch and Mellor 1973, 42; Jones 2003, 127), a trend noted in many other towns across late Roman Britain (e.g. Silchester: Fulford and Timby 2000). Similarly, the public baths in both towns show evidence for continued use into the second half of the fourth century (Kenyon 1948; Jones 2003, 127).

At Leicester, there is evidence for a fire within the forum after AD 364 (Hebditch and Mellor 1973, 42), which has in the past been viewed as marking the end of use of the space; however, where the archaeology survives later truncations, it is evident that the damaged areas were cleaned of debris and further floor surfaces added. In other words, the forum area continued to be used and renovated. Similarly, within the latest phases of the *macellum* (market), evidence for the illegal extraction of silver from coins is evident (Wacher 1959), showing that the space was repurposed for private industry in a manner similar to both *fora*.

Clearly, therefore, the public spaces were still utilised during the fourth century, if for different activities. Yet we lack accurate dating methods to pinpoint exactly how long they were maintained. Such traces of industry demonstrate continued site usage and human presences and demands, but also signify altered townscapes in the fourth century.

Christianity within towns is another important component of fourth-century public urbanism. Lincoln is known to have had a bishop from the 310s, and intriguingly a timber beam-slot building was found in excavations within the central courtyard of the forum, which, while poorly dated, may possibly represent a small early church (Steane and Darling 2006, 129). But there is little evidence to suggest what function the building may have served, and indeed, Gilmour's (2007, 233) recent re-assessment argues that the first building may have served as a small temple or shrine rather than a church. Either way, this building makes for an interesting encroachment upon the most central urban space within the town.

10.4.2. Private space

The complete plans of town buildings are rarely excavated completely due to constraints imposed by modern redevelopment within towns and cities as outlined above. Often it is only part of these buildings that can be investigated. The interpretation of these buildings is therefore complex. For example, Faulkner (1998, 118-9), assessing room use in private urban buildings, suggests that activity peaked in Leicester around AD 300, swiftly declining by 325, with only 2-4

houses showing later signs of habitation. At Lincoln, Jones et al. (2003, 132), drawing on Faulkner's study, suggest a greater and more prolonged occupation of town houses to AD 375, but a sudden and almost complete drop by AD 400. Unfortunately, despite the basic proposal that the number of active rooms in town houses should give ideas of population levels and an indication of how long a 'Roman' way of life continued, the data should be viewed with caution for two primary reasons. First, the loose typological and chronological frameworks for pottery and other artefacts create the previously-discussed problems in dating final phases of occupation. Second, truncation must be taken into account, as this strongly limits the survival rate of the deposits (Buckley and Cooper 2003, 41), meaning we might never know the true extent of occupation or room use. Perhaps, then, the speed of urban and population decay is exaggerated and a more flexible interpretative approach is needed, taking into account the available archaeological data but not assuming fixed dates of occupation or drawing conclusions based on small-scale excavations. Of course, with larger-scale excavations a more rounded understanding of the development and changing use of space within town houses (reflective of wider changes within towns?) could be achieved.

Noticeably, evidence from both Leicester and Lincoln demonstrates that parts of houses were repurposed, not abandoned. The dating for this change in use of space is, as ever, unreliable. Within Lincoln some early town houses, especially in the lower city, show continuity, too. Less evidence exists for commercial and industrial activity (e.g. at West Parade), but this seems centred in the southern suburb at Wigford (Jones et al. 2003). There is some indication of a possible contraction by AD 350 at Wigford and in Lincoln's upper city, but most townhouses in the lower city remained active until at least the 360s or 370s (Jones et al. 2003, 130).

At Leicester, prior to the recent Highcross excavations, data remained piecemeal, based on very small-scale excavations. The only clear evidence for new building activity was the addition of mosaics to some town houses within the later fourth century in areas close to the forum (Clay and Pollard 1994). The recent excavations add much to the discussion of fourth-century town life: thus, at Vine Street in the north-east corner of the town, a large town house has been fully excavated (Higgins et al. 2009). First erected in the second century, the complex was partly divided up in the third century, and was further altered in the mid-fourth century to create smaller strip properties fronting onto a resurfaced street. In addition, timber structures were built within the former courtyard and adjacent open area. There is also evidence of smithing, bone-working, and metalworking in the house (Higgins et al. 2009). Contrary to Faulkner's view, this perhaps indicates an increasing and active population within Leicester, with parts of the buildings containing evidence of occupation well into the later fourth and possibly the fifth century (Higgins et al. 2009, 20).

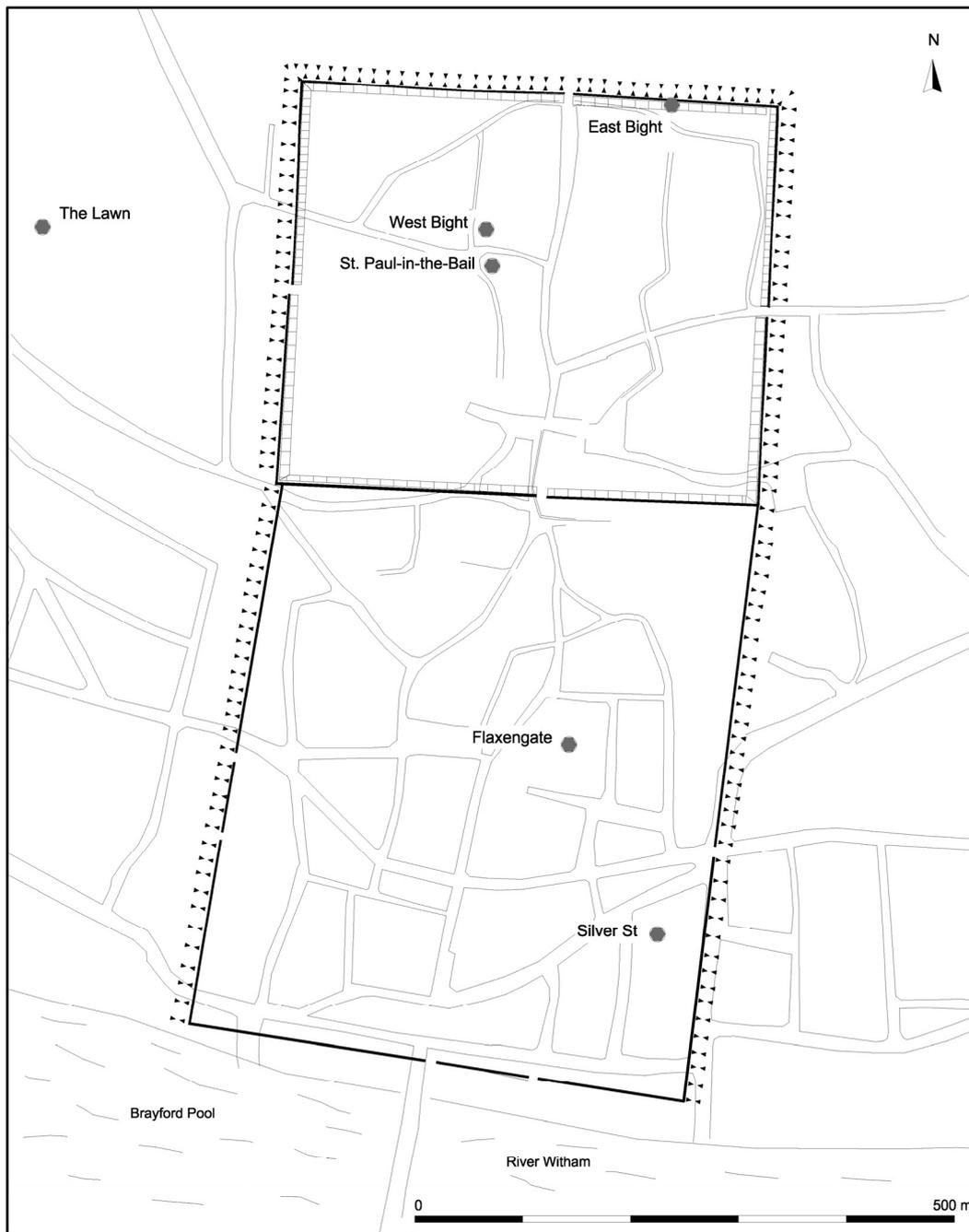


Figure 26. Key archaeological sites in Lincoln (Data from Lincoln UAD)

10.5. TOWN DEFENCES: SYMBOLS OF SOCIETY, A FORM OF IDENTITY?

These changing townscapes saw another redefinition in the late Roman period: namely, an apparent entrenchment inside walled circuits. Research into Roman urban defences has progressed little since a wealth of publications in the 1980s (e.g. Johnson 1983; Maloney and Hobley 1983), despite new excavations that have refined the understanding of defensive sequences in individual towns (e.g. papers by Crummy, Esmonde-Cleary, Magilton, and Manning, in Wilson 2003). The

development of urban fortifications within Britain differs quite markedly to other provinces in the North-West (Esmonde-Cleary 2003, 79); without being prompted by warfare or threat, their development is an almost sluggish affair, and such walls did not become integral to the towns until the 3rd century, when most towns were provided with a stone circuit (Hobley 1983, 81). In the fourth century, there is archaeological evidence to show that over half of these towns had urban defences that were further enlarged, heightened, and strengthened, and in some towns, projecting stone towers were added, as at London and Caerwent (Maloney and Hobley 1983; Mattingly 2006, 328-329). Historically these later additions have been associated with a single program by

Count Theodosius (Frere 1987, 340); however, dating evidence from town sites differs, suggesting that these 4th-century additions came at various points in the century, and not as a single state policy (Mattingly 2006, 330). This may indicate that these were added as and when needed (or for a variety of reasons), perhaps funded by local elites and/or prompted by the state authorities.

The primary reason for the construction of town fortifications is often viewed as defence. However, this may not have been the only function: walled towns became easier to control and police with regards to traffic (and taxes) in and out of the town. Defences would have also acted as a visual barrier to would-be attackers or raiders. In addition, the importance of walls as symbols of civic pride and competition should not be underestimated in the late Roman period (Christie 2000, 58). A clear example of this can be seen at Verulamium, where bastions were only added to the southern wall, without a clear purpose other than to create an impressive façade on the approach from London (Niblett 2001, 123). There are also examples of large circuits vastly exceeding the built-up urban space within (e.g. Wroxeter, London, and Verulamium). This may have been to enclose or control food-production zones or water sources, or possibly to cover more defensible terrain. Leicester and Lincoln differ from many other towns, as the circuits are much smaller, more compact, and conservative, and thus more 'functional' in nature.

Until recently, the sequence at Leicester was, as elsewhere, unevenly understood, based on too little coherent archaeology (Buckley and Lucas 1987). In the last decade, though, a series of major excavations have clarified the chronology. The western wall along the river (see Figure 25) has been located at the Bath Lane sites (Cooper 2007; Kipling 2007), and the northern defences at Cumberland Street (Cooper 1998) and at Sanvey Gate (Jarvis 2012). Based on the current evidence, it appears that a stone wall was built through the earlier timber revetment and rampart in the late third century. Later additions have been noted in two places along the north defences, the most extensively excavated part of the circuit. The only hint of a projecting tower was found at Elbow Lane in 1958. Wachter (1959, 78) argued that footings for a bastion tower were located there, forming a stone apron over the inner lip of the ditch, but from studies at nearby Cumberland Street, Cooper (1998, 104) reassessed this feature as a consolidation of the inner lip of the south ditch prior to the construction of the town wall. The only other addition to the walls is an internal tower added at Sanvey Gate, which lacks secure dating and cannot be viewed as a definite 4th-century addition (Jarvis 2012). Intriguingly, in the 4th century when the large Vine Street town house was broken up into small shop-units, parts of the building (away from the street-frontage) were systematically dismantled. Perhaps these building materials were being reused for maintaining or expanding the town defences, as the building lies very close to Wachter's stone apron.

Evidence for the sequence of the defences at Lincoln is well-developed, and has changed little since Jones's overview almost 30 years ago (Jones et al. 1980, 48). The stone wall was probably added in the early third century along with an enlarged rampart. In the fourth century, a ditch was dug around most of the circuit, and at various places evidence for thickening (2.5m to 4m) and heightened walls (c.7m) is apparent. The second-century interval towers were replaced by solid internal platforms. There is no evidence for external bastions, although the gates may have had projecting towers (Jones et al. 1980, 54). There is some re-use of earlier Roman materials in the later additions to the circuit of the lower city, where tombstones and architectural fragments were added as elements to the newly-thickened parts of the wall (Blagg 1983, 131). Clearly reused material within town defences is quite unusual in Britain, and perhaps highlights a lack of stone or brick building material (hence the appearance of timber buildings in late/sub-Roman towns?). Alternatively, the material may have been culled from extra-mural buildings and cemetery space when the ditches were extended – entailing major clearance operations; such removal of old burials could be construed as a clear disregard of past generations.

Town defences represent indicators of political, cultural, and social importance. But what did they represent to the individual? The maintenance and enlargement of the defences surely provided a substantial and functional barrier. In the archaeological record defences are static entities, but their importance likely took on a symbolic meaning, when entering or leaving the *urbs*, which may have lasted into the fifth and sixth centuries. These walls would have lasted and so had an impact on life within them, and while we lack the evidence for repairs in the early post-Roman period, it is clear from later development that towns were still framed by these walls, for they (along with the ruinous buildings) influenced the layout and development of the town into the medieval period and beyond (e.g. at Chester: Mason 2007). Urban defences remained, and along with other traces of the Classical past, likely took on new roles in the post-Roman period, perhaps even shaping identities.

10.6. LIFE AMONGST THE RUINS: EARLY 'POST-ROMAN' POPULATIONS

The changes in urban space of the fourth century, with re-purposing of some public spaces, transformations in the private realm, and the creation of fortifications, created a new environment that could be exploited by populations of the fifth and sixth centuries. People continued to live in towns; Figures 27-28 show the locations of evidence for occupation in Leicester and Lincoln in this period. At the same time, following the collapse of Roman control of Britain and population shifts to the countryside, ruinous urban buildings and city walls offered ready building materials. In short, the evidence from both sites provides a picture of changed settlement and ideological patterns.



Figure 27. Locations of finds datable to the fifth to seventh century AD in Lincoln

10.7. THE DIVIDE BETWEEN LATE ROMAN AND EARLY MEDIEVAL

One characteristic shared across excavations of many towns in England – including Leicester and Lincoln – is ‘dark earth’, usually a thick, dark soil layer separating the final Roman deposits from the later Saxon and medieval features (Brooks 1986, 80; Yule 1990, 620). Recognition of dark earth only really came with excavations in London in the 1970s, but its interpretation is still debated. Dark earth varies in its composition according to local conditions, but in general terms it can be described as a dark brown/grey silt-clay loam. It includes small pieces

of granite rubble and tile building debris, often finely mixed. Finds within this material usually consist of both late Roman (fourth century) pottery and coins, along with early Saxon pottery sherds and even brooches of c. AD 400-650. The thickness of the deposit varies from site to site from 20-30cm to 2m. Generally there are no visible internal archaeological features, though stratification has been noted on some excavated sites in London (Yule 1990, 620-8; Macphail 2010).

So what does this soil represent? Interpretations vary markedly, and quite often the soil is only briefly mentioned in excavation reports, with little or no discussion on how it was formed, where it is located, and

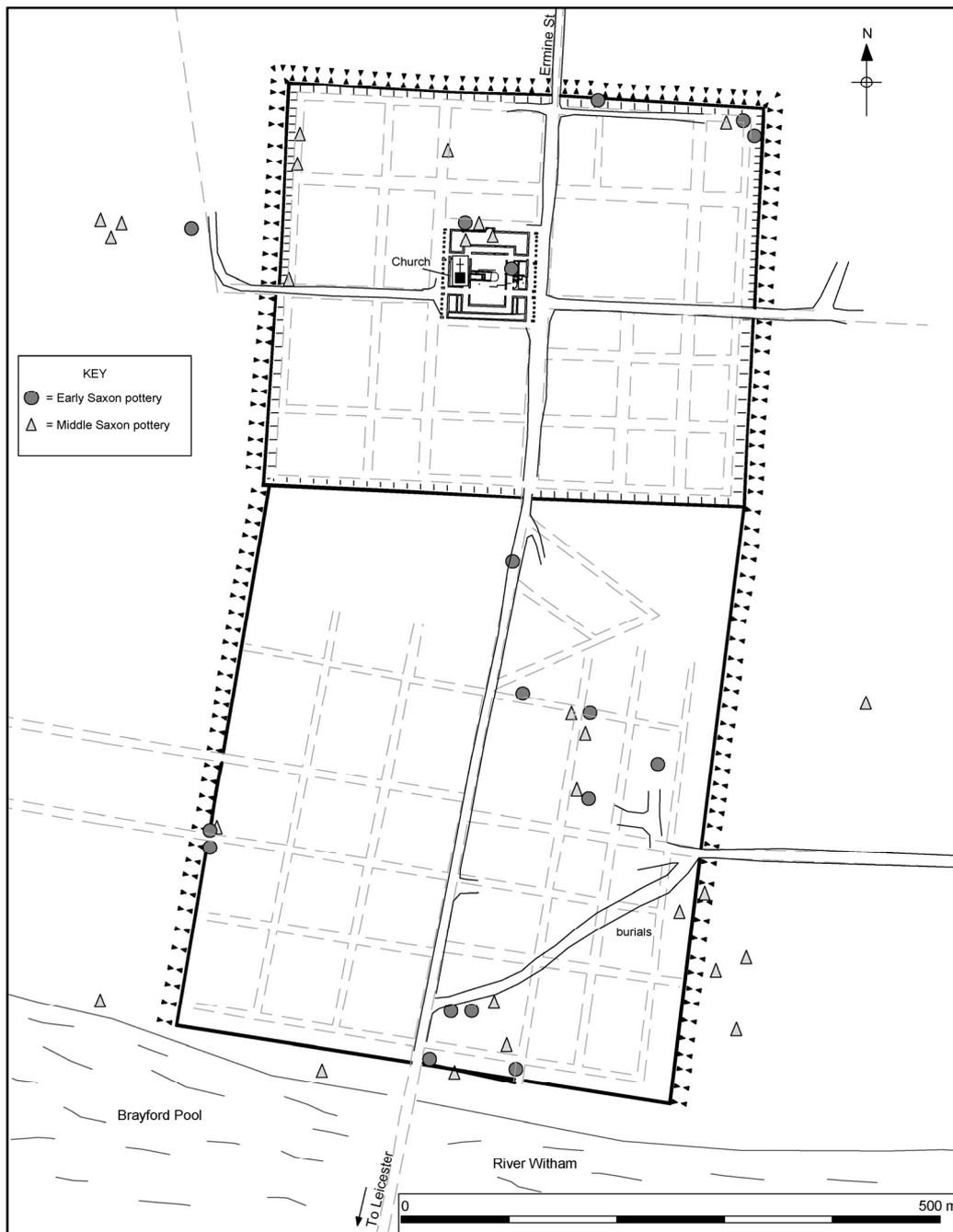


Figure 28. Locations of finds datable to the fifth to seventh century AD in Leicester

What it indicates for activity in towns. Some see the deposits as wind-blown rubbish and dust (Frere 1966, 93), indicating decay, collapse, and decline and a regression to a ‘squatter occupation’ (Reece 1980, 88; Faulkner 2004, 174). Alternatively, it is interpreted as a cultivation soil and dumped deposits which seal the end of the Roman structural sequence (Yule 1990, 625). Rather grandly, Carver sees these as indicating parts of the urban space being utilised by the rich for villas in newly landscaped parks and gardens (Carver 1987, 46). More functional is the view of this soil as an indication of remains of timber structures and animal waste and

therefore of intense occupation (Dark 2000, 52). Detailed analysis by Richard Macphail of the chemical, physical, geophysical and soil micromorphological make-up of dark earth reveals how some deposits were formed by accretion and biological reworking of occupation soils and waste. He does stress, however, that a generic term should not be used as its formation process could belong to any period and a wide range of activities (Macphail et al. 2003, 357). Certainly, the few examples excavated in Leicester and Lincoln show different types of dark earth that cannot fit into an unvarying interpretation.

At Leicester, deposits have come from around the Roman civic centre, overlying the edge of the street to the south of the forum and surrounding streets (Clay and Pollard 1994; Kipling 2004; Coward and Speed 2009). Detailed analysis of the deposits at Freeschool Lane indicates three sequences of activity. The earliest layers appear to represent dumps of domestic material and floor sweepings, perhaps from the late fourth century, with the later deposits providing evidence of timber remains from the fifth-sixth centuries, and the final upper layers indicating animal waste.

By contrast, at Lincoln, the examples are from the lower city, close to the town houses; in each case the dark earth is seen in a different part of the site matrix, and represents differing developments within the town. Most appear as dumped deposits, either overlying ruined walls or associated with animal butchery (Jones et al. 2003, 136). Clearly, therefore, more research is needed to clarify the formation processes within the deposits. Overall, however, the dark earths are significant features: they appear to demonstrate some decay, yet also a level of continued and changing use of the urban space.

10.8. OTHER EVIDENCE FOR SAXON OCCUPATION AND USE

Similarly, archaeology is now also starting to recognise and better appreciate hints and debris of early Saxon activity in towns in the fifth and sixth centuries. Within Leicester, evidence for a nearly post-Roman urban population has until recently been based solely on a scattering of residual pottery sherds within the walls and two sunken-feature buildings 50m south of the south gate (Gossip 1999; Finn 2004). But since 2005, structural evidence has been clearly identified within the walls at a number of major excavations (Speed 2005; Coward and Speed 2009, 13; Gnanaratnam 2009, 9; Speed 2010). While there are still major constraints on the data, including limited excavation in the north-west area (see Figure 25), enough has been excavated for the locations of the occupation evidence to be mapped meaningfully and potential patterns of occupation noted. Figure 27 shows four probable sunken-feature buildings in *insulae* away from the town's civic centre, in areas that have little or no Roman structural evidence (and these areas have been extensively excavated). The buildings lie between two zones of dense Roman occupation in what was largely an open *insula* in the Roman imperial period: the public buildings to the south-west and the Vine Street town house and other buildings to the north. Might this represent an active choice by the inhabitants to avoid areas of the town that contained ruinous and dangerous buildings of the recent past, rather than to engage in the active reworking of their surroundings via site clearance and redevelopment? The only known exception is the sunken-feature building built close to the civic centre at Freeschool Lane, which was constructed over and within the collapsed gable wall of the Roman *macellum* (Plate 10). That being said, the building was set up away from the earlier standing structures, in a virtually open *insula*,

over solid foundations consisting of Roman masonry and road gravels (Coward and Speed 2009, 13). A further possible post-built structure has been located within the far north-east corner of the town at Sanvey Gate. Here, very truncated remains indicate a possible structure built adjacent to a Roman street, close to a Roman building active in the late fourth century (Jarvis 2012). Fortunately, much Saxon pottery was recovered from one of the post-holes, allowing an early Saxon date to be proposed. Close by at Vine Street, another post-built structure was located. This, however, was undated, though two sherds of early Saxon pottery were recovered close by (Higgins et al. 2009, 120), as further indications of settlement within this area of the town.

It is also useful to plot the other early Saxon finds (Figure 27). Strikingly, following a detailed re-analysis of the Historic Environment Records and excavation reports from Leicester, the other chance discoveries and residual pottery sherds seem to be focused within the north-east area of the walled town, indicating a general emphasis of settlement within this area. Some caution is necessary, as we may only be seeing this area as a settlement focus because it has been more heavily excavated than some other regions of the intra-mural area. Other find-spots of early Saxon artefacts, including burials outside the east gate and close to the west gate (where numerous swords and other objects indicate the possibility of high-status burials) show most finds along and close to the major N-S and E-W routes of the Roman street grid, in and out of the town. Arguably this shows evidence of some continued maintenance of the major urban route-ways; a similar pattern of continued use of the major routes can be traced at early Saxon Winchester (Biddle 2007).

At Lincoln, settlement activity from the early Saxon period is unclear. There is no evidence for Saxon structures such as sunken-feature buildings or post-built structures. The only evidence for an early Saxon period presence within the town is limited to low levels of pottery discovered in later medieval features as residual finds. These may give an indication for some active areas within the town during this period (Figure 28). In the upper city, small clusters of potential occupation lie around the presumed church within the forum, in the north-east area close to the defences (East Bight), and outside the west gate (the Lawn). It is uncertain if the few sherds of pottery located actually represent settlement within the intra-mural area, or simply some kind of less permanent activity. Excavation is particularly limited within the upper city because of the dominant presence of the castle and cathedral (Figure 25). In the lower city, sherds are clustered almost exclusively to the east of the main N-S street through the town; there have been numerous excavations in the west area of the lower city with virtually no Saxon material recovered. There is a focus within the walls close to the south gate, and within the Flaxengate area. It is notable that the mid-Saxon pottery offers a similar possible settlement pattern; clusters are seen outside the west gate of the upper city, and around the east gate of the lower city.

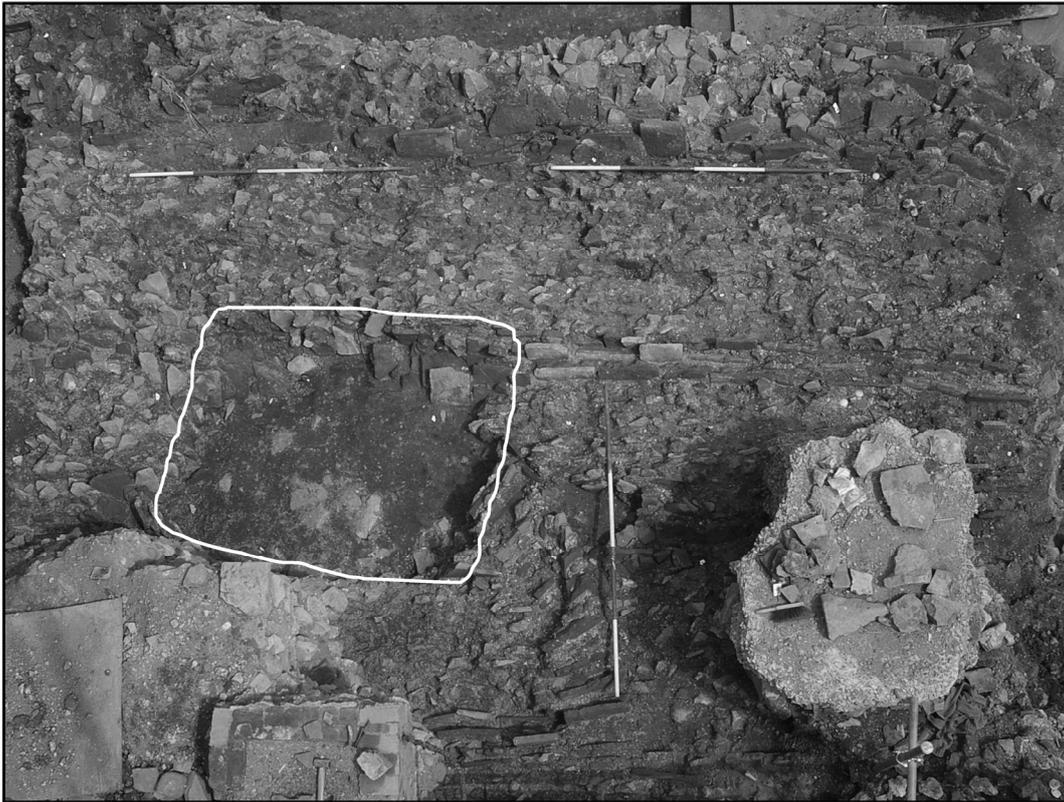


Plate 10. The Saxon sunken-featured building built over a collapsed gable-end of the Roman *macellum*
(From Freeschool Lane, Leicester)

10.9. NEW EMERGENT POWERS: THE 7TH CENTURY

By the seventh century, settlement within towns is more easily read from the archaeological record, although problems with identifying and dating artefacts from this period persist. The presence of new emerging powers within both towns is evident from the later seventh century as a bishopric was created in Leicester possibly by the 680s (Courtney 1998, 110), and for Lincoln we hear of the documented visit of St. Paulinus in AD 628.

The site of Leicester's seventh century bishopric is unknown, but the most likely candidate is the late Saxon church of St. Nicholas, built within the former Roman basilica adjacent to the (still standing) Jewry Wall of the baths and the forum area immediately to the east (shown on Figure 27). Indeed, following a re-analysis of the Jewry Wall excavations of the 1930s, Courtney (1998, 130) identified stone foundations within the church of potential early/mid-Saxon date, meaning that this church could be of seventh-century date.

Work close to the centre of Roman Lincoln offers a picture of a settlement of scattered ruins that its post-Roman/early medieval inhabitants were actively attempting to shape. The strongest evidence for this is provided at St. Paul-in-the-Bail. Here, rather than avoiding areas of potential dereliction or ruin, there is clear evidence for a choice to live in and amidst the

(largely ruinous?) remnants of the former Roman forum at Lincoln. The St. Paul-in-the-Bail excavations of 1972-79, only recently fully published (Steane and Darling 2006, 129-211), uncovered a site with limited dating evidence. Overlying the likely late fourth- or early fifth-century church (discussed above) is a further church building that probably dates to the early seventh century, with the addition of a centrally-placed burial in the later seventh century, which contained a hanging bowl (Steane and Darling 2006, 211). This implies a focal point for the church and for a local power.

Also of note are five inhumation burials at Silver Street that may be of mid-Saxon date (Wacher 1979), and which, together with a concentration of finds within this area, point to a possible mid-Saxon church either within the walls or just outside the gate. Certainly both indicate an active Christian presence within Lincoln from at least the seventh century.

The chronology of both Leicester and Lincoln may continue to be debated, but until further discoveries occur, we may come no closer to fully understanding and interpreting the complex and fragmentary chronology of the early church phases. Such is the nature of mid-fourth- to seventh-century urban archaeology. What is visible at both towns is the small-scale alteration, rather than large-scale redevelopment, of the former urban spaces, coupled with the re-use of urban space by new emerging powers (especially ecclesiastical) by the seventh century. The church was utilising space at the heart of the old Roman

centres and demonstrating the constantly changing and evolving use of towns. Choosing to live inside a walled space in itself was also symbolic of a continuity of town site usage.

10.10. CONCLUSION: THE ROMAN STRUCTURAL LEGACY

The period from the late fourth-fifth centuries may have seen profound changes in the reasons for living within a town, perhaps from necessity to choice. As the overriding impression at both towns considered is of people living in and not having a large impact upon a ruinous settlement, this may explain why archaeological deposits of this period are so hard to identify. However, the two urban case studies demonstrate quite different types of occupation and a likely breakdown of the regulation of urban space in the fifth century. Is this simply the reuse of conveniently redundant private and public spaces? Occupation within these urban centres may have been a logical (and convenient) outcome resulting from the scarcity of financial and material resources available to the post-Roman populations.

In the case of Leicester, individuals were seemingly allowed to make use of areas of the town as they saw fit. Certainly, occupation overlying fallen masonry and on disused road surfaces constitutes a profound change in terms of the use and character of urban space, and indicates a breakdown in terms of any residual 'classical' format; Roman 'urban culture' almost seems lost in this context. It is also indicative of small-scale post-Roman urban populations picking their way between masonry foundations and ruinous but standing walls. Determining the attachment to these sites is difficult, though symbolic associations with a monumental past appear to have been lacking with the remains exerting no draw upon people; instead, they chose largely open space within the town for new building.

Yet at Lincoln, the church built in the forum indicates an active choice to build within an area surrounded by a (ruinous?) Roman structure of the recent past. The presence of a late fourth-/early fifth-century Roman church may have influenced the location and positioning of the seventh century church. Perhaps groups there chose to draw upon the Roman urban legacy, potentially in order to bolster their position amongst those residing within the former *civitas*.

This paper has thus used Leicester and Lincoln as case studies to demonstrate that there is still much research to be done to help clarify later sub- and post-Roman urbanism. Studies of this period (c. AD 350 to 650) are plagued by simplistic assessments of towns. Refining material culture chronologies is a key priority here, and scientific dating from well-recorded urban stratigraphic sequences will certainly help. Archaeology, especially commercial, developer-funded projects, is adding vast new data, so that we are now more adequately piecing together a fragmented urbanism: the picture we draw

from these still remains shadowy at present, but it is one that can nevertheless paint a nuanced picture of the people who continued to exploit these Roman sites in the post-Roman period.

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Chapter 11 Establishing a Foothold or Six: Insect Tales of Trade and Migration

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ABSTRACT

In recent years the concept of human movement and trade has returned to the fore in the archaeological arena. However, there has been no explicit assessment of the role that palaeoentomology may be able to play in this field. A range of techniques may be employed across various areas of research, including species biogeography, palaeoecology, and isotopic analysis, which can make significant contributions to the field. Furthermore, several other methods may help to elucidate the problem of associated human and insect movement, including the recognition and sourcing of insect-associated products and genetic analysis of modern insect populations and ancient insect remains. The integration of these fields of study with other methods is fundamental to the understanding of human interaction.

Keywords: *Sitophilus granarius*, trade, Roman, medieval, palaeoentomology

11.1. INTRODUCTION

Human populations have migrated and interacted throughout time and, in their travels, have both intentionally and unwittingly carried other organisms with them. From archaeological sites dating to the Roman occupation of Britain, the remains of the garden dormouse (*Eliomys quercinus*) have been recovered and interpreted as potentially imported Roman delicacies reminiscent of the edible or fat dormouse (*Glis glis*) (O'Connor 1986, 1988; Younger 1994; Carrott et al. 1995a), and similarly, Roman imperial-period sites have yielded another introduction in the form of the pest *Rattus rattus*, the black rat (Rackham 1979, 1980; Carrott et al. 1995a; Dobney et al. 1996). Although some of these human-introduced fauna were able to successfully colonise these new geographical regions, a number of species struggled to find suitable niches when confronted with environmental or climatic restraints. Our ability to recognise and distinguish the indigenous species from the foreign is of great archaeological interest as the mapping of animal movement can provide insight into the movement and interaction of past peoples. Considering this, faunal remains may serve to as proxies to elucidate past exchange and trade networks (e.g. Hodges 1982; Iregren 1988) as well as migration and population movement (Ashby 2004).

The ability to recognise former exchange and trade patterns is valuable to our understanding and interpretation of the past. An inclusive concept, exchange may be perceived as the spatial distribution of material items, ideas, and information between individuals and social groups (Earle 1982) with the payment being either immediate or delayed and indirect (Alden 1982). Trade, however, is a more narrowly defined and archaeologically observable index of exchange (Crabtree 1990), referring specifically to material goods (Roslund 1992). It has been postulated that exchange and trade were impetuses for urban and social development as well as cultural change (Hodges 1982; Wells 1980)—making the study of these concepts of archaeological interest. By improving our knowledge of exchange and trade routes,

new insights may be realised regarding economic conditions, population pressures and settlement patterns in the past (Hodges 1982).

Archaeological cultures are not absolutes and, as such, direct correlations cannot be drawn with ethnic units (Jones 1997, 60). While in the past cultural historians have claimed to identify culture contact, often on the solitary basis of the application of a singular analytical method such as the stylistic variation of material artefacts, these studies must be viewed with caution (for example, style may simply signal acculturation (Wells 1980, 57), and the differences in function risk being mistaken for ethnic variation (Jones 1997, 107), and the application of more holistic approaches to material-based culture contact considered. Alternatively, it may be more effective to approach the study of culture contact through an index that reflects social and cultural relations but is less dependent on arbitrary cultural distinctions, i.e. ethnic expression (Jones 1997, 135). This paper outlines the preliminary findings of PhD research at the University of York which explored the application of palaeoentomology (the study of insect fossils) towards the discernment of culture contact in the past (see King 2010).

If we are to begin to recognise and understand the patterns of human movement in the past, it is paramount that all avenues of research be explored. Entomofaunal remains are a medium which may be effectively employed towards this problem. Here, I will discuss the application of an assortment of methods towards the investigation of culture contact.

11.1.1. Background: Choice of Organism in Relation to Problem

While insect fossils have been noted in archaeological sites for over a century (e.g. Roeder 1899; Bayford 1903), most of the advancements in the field of Quaternary palaeoentomology have occurred within the past forty years (Elias 1994). Insects have proven to be immensely valuable for the reconstruction of past climates (e.g.

Coope et al.1998) and environments (e.g. Hill 1994). They have been employed in spatial reconstructions of structures (e.g. Buckland et al.1983), interpretations of living conditions (e.g. Panagiotakopulu 2001), and the elucidation of biogeographical problems (e.g. Buckland 1979, 1988). Insect remains are typically recovered from three types of archaeological deposits: waterlogged, very dry, and permafrost. The most common palaeoentomological ecofacts are the fragmented remains of beetles and flies. However, a variety of other insects, including bugs, fleas, and lice, are occasionally discovered.

Pioneered by G.R. Coope, the study of Quaternary and late Tertiary insect remains in sediments is based largely upon the geological principle of uniformitarianism (the present is the key to the past) and the assumed relationship between the modern ecological community, the *biocoenosis*, and the fossilised death assemblage, the *thanatocoenosis*. The crux of this assumption is Coope's argument that in most temperate and arctic environments of the northern hemisphere, 'it can be demonstrated that wherever fossils are available the Coleoptera show a remarkable degree of morphological stability throughout the Quaternary' (Coope 1977, 324), and 'the majority of species seems to have remained physiologically stable during this period' (Coope 1970, 107). Underpinning this is the theory of species constancy, that under repeated conditions of change, insect communities will migrate rather than adapt through evolution (Coope 1978). Although there are studies of isolated island and mountain populations where migration is rare and speciation dominates (Elias 1994), extensive paleontological research has confirmed that some insects have remained physiologically and morphologically constant for up to 30 million years (Elias 1994). On this premise, palaeoentomologists are able to identify insect fossils based on comparative analysis with modern species and extract palaeoecological information in a similar fashion to anthropological analogies—superimposing the habitats of modern insects over the fossil record.

While palaeoentomology has proven proficient in utilising insect remains to reflect upon myriad areas of human activity in the past, its potential as an indicator of culture contact has yet to be sufficiently addressed. The few attempts to connect insect transportation to human movement have been constructed on biogeographical grounds within the documented historic period (e.g. Lindroth 1957; Hammond 1974) or through a loose combination of biogeography and palaeoentomology (e.g. Buckland 1979, 1988; Buckland and Sadler 1989; Sadler 1991a, 1991b; Kenward 1997). However, these studies fail to provide a systematic index for the identification of transported insects or a means to substantiate their point of origin.

Insect remains have the potential to stand directly (e.g. silk, honey, wax, and pets) and indirectly (via associated habitats) as indicators of trade and human interaction.

Through application of palaeoecological, biogeographical, and biomolecular methods, it is hypothesised that insect remains will provide insight into culture contact in the past. This paper will present the initial results of the study as made evident by investigation of the highly synanthropic granary weevil *Sitophilus granarius* and its arrival in Britain.

11.2. RECOGNISING TRADE-ASSOCIATED ALIENS

11.2.1. Entomology and Palaeoecology

Perhaps the clearest evidence for human-induced insect movement is the presence of species recorded beyond their ecological and geographical range. The fundamental concept of palaeoentomology is founded upon the currently existing ecological interplay having persisted in Quaternary insects unchanged. This enables researchers to invoke the ecological requirements of modern species towards palaeoecological reconstructions, which enables the remains of species to be identified and their associated habitat requirements deduced. As such palaeoecological assessments of archaeological sites are able to address the issue of trade by highlighting species associated with exchangeable products and targeting species that are outside the climatic and environmental range of the site, i.e., potentially imported individuals.

Sitophilus granarius is a major pest of stored cereal grains and has been recorded from a wide range of products, including wheat, rye, barley, maize, oats, buckwheat, millet, chickpeas, and, more rarely, chestnuts, corn, and corn-meal (Hoffman 1986, 1046). In the United Nations Food and Agriculture Organisation's report of 1947, it was suggested that 10% of the world's cereal production was lost to insect attack; 5% of the loss was attributed to infestation of the granary weevil (Munro 1966, cited in Buckland 1978, 43). Modern accounts (Tyler and Boxall 1984; McFarlane 1989; Payne 2002) estimate insect-induced losses as ranging from 5% in wheat to 40% in other stored products in areas of the world in which insecticides are not employed or 'industrial' integrated storage control practiced.

Because of its strong ecological association with stored cereals, the archaeological presence of *S. granarius* may be read as indirect evidence of the presence of stored cereal products. Additionally, the species' elytra are fused and its wings severely reduced, rendering it flightless, which means that it is completely dependent upon humans for long-distance dispersal. While the presence of the adults, dark brown and 2.5-5mm in length, would have been easily detectable, the egg, larva, and pupa stages of the beetle occur within the grain kernels, which would have made the early stages of infestation less discernible. Under optimum temperature conditions, the new adults emerge from the grains in 3-5 weeks (up to 21 weeks at lower temperatures) and live 7-8 months (Knopf 1980). As its larval stages occur within the grains, it is easy to imagine how this synanthropic species could have

remained hidden from early human detection and have been unwittingly transported to various locations in the security of a tradable commodity.

Because of its lifecycle and habitat, the granary weevil seems a prime candidate for assessing human movement and trade in the past, but how can we determine whether it was actually transported or simply native? *Sitophilus granarius* requires a temperature range of 15-35°C (with an optimal range of 26-30°C) to complete its development (Howe 1965; Sinha and Watters 1985; Sinha 1991). While *S. granarius* has proven relatively impervious to cold (Solomon and Adamson 1955), its developmental temperature limitations impose a northern limit on its natural distribution.

In order to determine whether the granary weevil was native to Britain, the temperature ranges for sites from various periods were estimated utilising the Mutual Climatic Range (MCR) method (Table 13). When these figures are compared to the developmental temperature range for *S. granarius*, it is apparent that the species would have had extreme difficulty surviving in Britain's natural environment prior to the medieval period. The estimated temperatures for the warmest month (TMax), excluding the Low Petergate site, were typically in the range of 15-18°C, which is near the minimum temperature in which *Sitophilus granarius* is capable of completing its development. As such, the granary weevil is unlikely to be native to Britain. While the slightly elevated temperatures within the confines of large grain store houses served as artificial micro-habitats enabling the species to complete its development and reproduce once it entered Britain, the results of the MCR-based palaeoecological reconstruction indicate that the initial arrival, at least, of *S. granarius* in Britain prior to the medieval period must have been through human transport from areas within its native ecological zone, or which were capable of accommodating similar conditions.

11.2.2. Biogeography

Biogeography is the study of living things in space and time in order to discern elements such as the diachronic distribution of species, the mechanisms behind the distribution, and the human influence upon these patterns of species distribution (Cox and Moore 2000, 1). By applying the methods inherent in biogeography towards the field of palaeoentomology, it is possible to gain insight into the question of trade.

In the modern day, *Sitophilus granarius* has a rather cosmopolitan distribution. However, analysis of its fossil record indicates that this was not always the case. Its earliest fossil occurrences are during the Neolithic Period (Figure 29). One of the earliest records is c. 7700-7550 BP from the layer VI at Hacilar, southwest Anatolia (Helbaek 1970). By c. 7090 BP, the species had spread as far northwest as the Bandkeramik well of the Jülicher Börde in Erkelenz Kückhoven, Germany (Schmidt pers. comm.). The presence of *S. granarius* outside the considered region of agricultural distribution for the Pre-

pottery Neolithic C (PPNC) (the Near East, Transcaucasia to the north, Greece to the west and Transcaucasia to the northeast (Kislev 1999; Lev-Yadun et al. 2000; Zohary and Hopf 2000 cited in Kislev et al. 2004) at this date is intriguing and may be indicative of the early transportation of cereals. It is evident that sea transportation of cereals was already occurring by the Bronze Age, as the remains of the granary weevil have been recovered from sites on the Greek islands of Akrotiri, Santorini (Panagiotakapulu and Buckland 1991; Panagiotakapulu 2000) and Crete (Jones 1983; Shaw and Shaw 1995).

Additional evidence for the sea transport of *Sitophilus granarius* is available from shipwreck evidence of the Roman imperial period. Fragments of the weevil have been recovered in grain cargo of a second century AD ship at the Roman fort of Laurium im Woerden (Province of Zuid-Holland) (Pals and Hakbijl 1992) and from a third century AD Gallo-Roman shipwreck near Guernsey (Rule and Monaghan 1993). The shipping of infested grains is thus the likely cause for the granary weevil's appearance in the British archaeological record in the first century AD (Figure 30).

Despite extensive archaeological work on Pre-Roman sites in the United Kingdom, the remains of *Sitophilus granarius* are first apparent in sites dating to the Roman invasion. The arrival of the Roman military in Britain paved the way for the invasion of a number of synanthropic insects. In addition to *Sitophilus granarius*, the saw-toothed grain beetle *Oryzaephilus surinamensis*, the rust-red grain beetle *Cryptolestes ferrugineus*, and the scavenger *Palorus ratzeburgi* have been noted in numerous Roman sites, both urban and rural (e.g. Kenward and Williams 1979; Hall and Kenward 1990; King and Hall 2008). Further pests seemed to have arrived early on in the Roman invasion and were perhaps Roman imports, notably *Tenebroides mauritanicus*, *Alphitobius diaperinus* (Panz.) and *Tribolium castaneum* (Hbst.), as well as the churchyard beetles, *Blaps*. The remains of *Hesperophanes fasciculatus*, a well-known pest of structural timbers and furniture, from mid- to late second century AD Alcester, Warwickshire, have been noted as a potential trade indicator species (Osborne 1971) indicative of imports from the border regions of the Mediterranean (Picard 1929 cited in Osborne 1971). The recovery of *Blatta orientalis*, the 'oriental' cockroach, from Late Roman Lincoln (Carrott et al. 1995b; Dobney et al. 1998) reflects Roman trade connections, direct or indirect, with Africa (Rehn 1945; Roth and Willis 1960). Moreover, the Lincoln *B. orientalis* may well signify a long-established population in the town (Kenward pers. comm.), which serves as a reminder that the absence of a species in the fossil record should not be taken as absolute confirmation of its absence in an area or period, as taphonomy and site selection may bias perceptions.

Sitophilus granarius seems to have been present in Britain almost immediately after the arrival of the Roman military. It has been recovered from Poultry, Central

Table 13. A chronology of MCR data for selected British sites
(after Atkinson et al. 1986; Buckland and Buckland 2006)

Site	Period	Source	<i>T</i> _{MaxLo}	<i>T</i> _{MaxHi}	<i>T</i> _{MinLo}	<i>T</i> _{MinHi}
Star Carr	Mesolithic	Hall et al. 2007a	12	16	-12	5
Thorne Moors Track way	Neolithic	Buckland and Johnson 1983	16	18	-3	3
Silbury Hill	Neolithic	Robinson 1997	15	18	-11	7
Bedern Well, York	Roman	Kenward et al. 1986	16	18	-8	6
Alcester, Warwickshire	Roman	Osborne 1971	15	18	-7	6
Copthall Ave. London	Roman	Allison and Kenward 1987	15	18	-7	6
16-22 Coppergate, York Period 4b	Anglo-Scandinavian	Kenward and Hall 2000	16	18	-6	6
Hull Magistrate Court	Fourteenth Century	Hall et al. 2000	15	18	-7	7
62-8 Low Petergate, York	Fourteenth Century	Hall et al. 2007b	15	24	-11	10

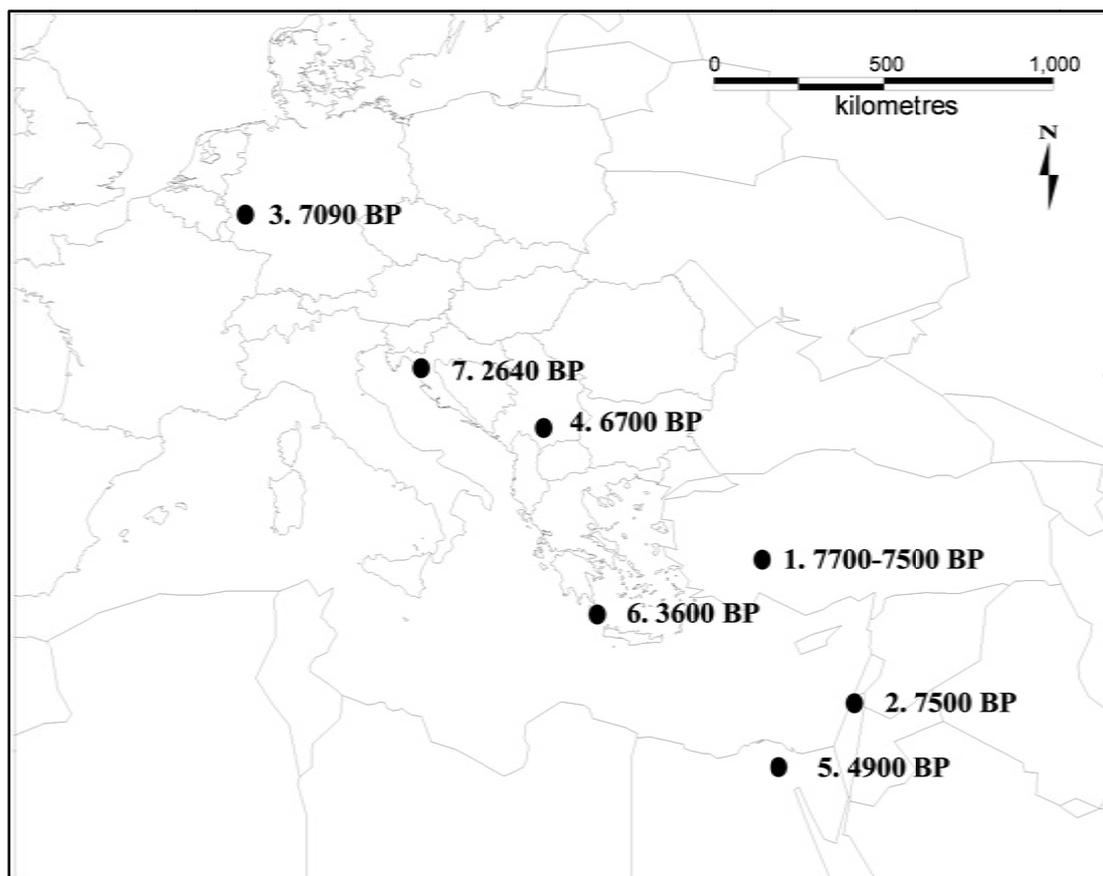


Figure 29. The earliest Neolithic records of *Sitophilus granarius* in Europe, the Near East, and Africa: a preliminary plot
1. Hacilar, SW Anatolia (Helbaek 1970); 2. Atlit-Yam (Kislev et al 2004); 3. Jülicher Börde in Erkelenz Kückhoven, Germany (Schmidt pers. comm.); 4. Servia (Hubbard 1979); 5. Zozer’s Tomb Saqqarah, Egypt (Solomon 1965); 6. Akrotiri, Santorini (Panagiotakapulu and Buckland 1991; Panagiotakapulu 2000); 7. Okruglo, Croatia (Smith et al. 2006)

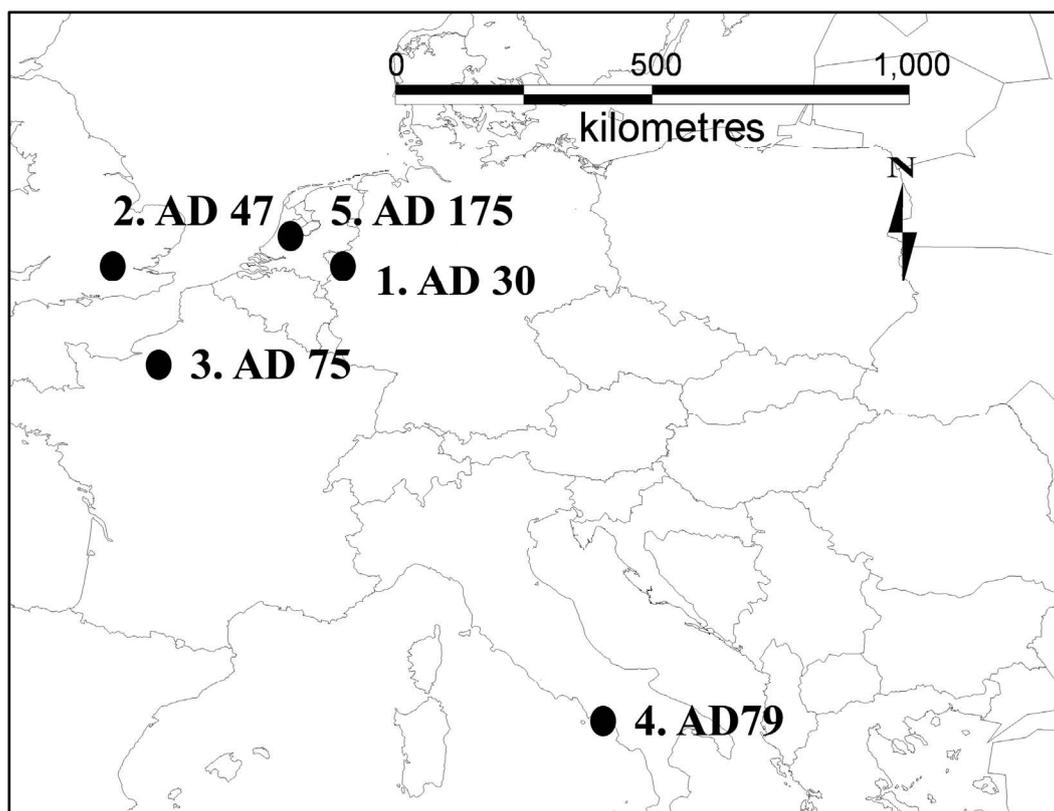


Figure 30. The Earliest Roman Records of *Sitophilus granarius*: A Pilot Survey of the European Evidence

1. Neuss (Novaesium), Germany (Cymorek and Koch 1969); 2. Poultry, London (Smith 2011); 3. Touffréville Calvados, France (Ponel et al. 2000); 4. Ercolano (Herculaneum), Italy (Monte 1956); 5. Woerden (Laurium) Fort (Pals and Hakbijl 1992)

London (Smith 2011), which dates to AD47, and has been noted in northern British sites such as the Roman Fort at the Millennium site at Carlisle Castle of AD 72/3 (Smith pers. comm.), Old Grapes Lane A, near the Roman fortress at Carlisle (Kenward et al.2000), and the fort at Ribchester, Lancashire, dated to AD 71-74 (Large et al. 1994; Buxton and Howard-Davis 2000). The conditions presented by the Roman military lifestyle and storage facilities were ripe for the transportation and sustainment of populations of the granary weevil. Consequently, with the Roman withdrawal from Britain, the grain beetles become notably absent in the archaeological record from AD 400 until the Norman Conquest in AD 1066.

11.3. TOOLS FOR TRACING MOVEMENT

11.3.1. Isotopic Analyses

Isotope analyses of beetle chitin have typically been employed for palaeoecological reconstructions (e.g. Gröcke et al. 2006); however, the same methods may be used to address issues of past trade. Focusing on hydrogen isotopes, the hydrogen in chitin (a polymeric amino-sugar which constitutes 40% of the cuticular weight in arthropods: Muzzarelli 1977) is derived from hydrogen that was ingested either as organic food or water hydrogen. Meteoric precipitation is the primary

source of hydrogen in an environment and produces a distinct and climate-dependent D/H ratio signature in the vegetable matter supporting the food chain (Hayes 2001; Chikaraishi et al. 2004). On this premise, insects feeding on locally grown vegetation would possess a different isotopic footprint than those feeding solely on imported vegetation.

To test this hypothesis, hydrogen isotopes were extracted from selected beetle remains from the third century AD Park View School, Chester-le-Street, County Durham (King and Kenward unpublished), 14th century AD 62-8 Low Petergate, York (Hall et al.2007b), and a modern specimen of *Sitophilus granarius* donated by the Central Science Laboratory in Yorkshire (Table 14). With the exception of the modern specimen, all the calculated D/H ratios fell within the potential range variant for the same region. If the D/H ratios portrayed by *Aphodius granarius*, *Aglenus brunneus*, and *Anobium punctatum* are taken as representative of the isotopic signature for local environment in the Roman imperial and medieval periods, respectively, then the isotopic values of the cereal fauna, *Sitophilus granarius*, usually imply that the grain beetles were feeding on vegetation grown in the local environment. Thus by the third century AD, the Romans were probably/likely to be growing cereals in northern England or trade was occurring at a highly localised level. Likewise, regarding the 14th century site, the same inference can be formulated. However, while *Aglenus* and *Anobium* are arguably representative of the

Table 14. Hydrogen Isotope Data for Beetles from Northern England

<i>Species</i>	<i>Age</i>	<i>Amount</i>	<i>D/H</i>
<i>Sitophilus granarius</i>	Modern	1.468	-103.18
<i>Aphodius granarius</i>	Roman	0.381	-81.15
<i>Sitophilus granarius</i>	Roman	0.353	-84.12
<i>Sitophilus granarius</i>	Fourteenth Century	0.661	-84.89
<i>Anobium punctatum</i>	Fourteenth Century	0.263	-87.53
<i>Aglenus brunneus</i>	Fourteenth Century	0.133	-84.67

local environment for the 14th century, the case of the Roman *Aphodius granarius*, a species ecologically associated with dung, most commonly of domestic animals, and decomposing vegetable matter (Jessop 1986), is less clear cut. Although domestic animals like cattle would have had a diet largely consisting of local vegetation, it is likely that cereals would have served as a supplement. Without the isotopic value of a species known to have fed solely on the local vegetation, it is impossible to determine whether the Roman *Aphodius granarius* is representative of the local signal or imported. To better ascertain the cereal trade situation during the third century, species that more accurately represent the isotopic signal for the local environment should be analysed in the future and multiple species should be tested where possible to substantiate the findings. As the biogeographical studies suggest that the granary weevil was introduced to Britain in the first century AD, isotopic investigations need be conducted on specimens from Coney Street, York and Poultry, London for comparative analysis.

On the other hand, the isotope value for the modern specimen of *S. granarius* was -103.18 which is outside the D/H value for England and Europe during the growing season according to the IAEA (2001). This suggests that the weevil was feeding upon grains imported from outside Europe. Based on such limited analysis, however, the origin of the imported cereal cannot be determined with any degree of certainty.

Isotopic analysis of beetle remains, on its own, seems promising in its ability to identify beetles which were feeding on imported and local vegetation (King 2012). If isotopic values were determined for various geographic locations in the past for separate time periods (feasible, though time-consuming), then the method would gain the additional benefit of being able to highlight potential origins for the imported products.

11.3.2. Phylogeography

The study of the spatial and phylogenetic aspects of genetic variability through the ordering of intraspecific mitochondrial DNA mitotypes into gene trees overlaid with coinciding geographic locations is known as phylogeography (Avice 1994). In this manner, DNA lineages and population movement of modern beetle species have been discerned through analysis of the cytochrome oxidase I and II genes (e.g. Juan et al 1998;

Moya et al 2004; Smith and Farrell 2005). Given the recent successful recovery of mitochondrial DNA in archaeological granary weevils from Roman and medieval waterlogged sites (King et al 2009), phylogeography may be employed in future studies.

Unfortunately, a phylogeographic study has not yet been completed for *Sitophilus granarius*. Ancient mitochondrial DNA exploration has been conducted on a conserved portion of cytochrome oxidase I (COI) gene and as expected yielded no signs of population variation (King et al. 2009). As further investigation of the Genbank records for modern *S. granarius* revealed variation in the COII gene (DQ462235.1; M83970.1) and population studies of the darkling beetle, *Hegeter politus*, (Juan et al.1998) have shown promise for the variable portion of the COI gene which corresponds with sites 2410 and 2665 in the *Drosophila yakuba* mitochondrial genome, current experiments are exploring these promising gene segments.

The discovery of DNA variation in ancient remains of *Sitophilus granarius* would be significant in regards to approaching past trade. Phylogeography would assist in geographically mapping population movements based on phylogenetic relationships. For example, if the study revealed a closer genetic relationship between the Roman fossils in York, UK and Amiens, France than Naples, Italy, then it could be hypothesised that France was a more likely source for the export of cereals to Britain than Italy. Additionally, if the sites in Roman York yielded several genotypes of *Sitophilus granarius*, suggesting multiple introductions, then that would shed light on issues such as the intensity of trade, implying that several host regions were involved in shipping cereals to York (a large initial genotypic difference revealed) or that intense exchange was occurring over a period of time from a single source (presenting low levels of initial genetic variation due to founder effect).

11.4. DISCUSSION AND CONCLUSIONS

How do any of these methods further our understanding of culture contact, specifically human trade and migration? Unlike cases involving myriad vertebrate fauna, it is unlikely that the majority of invertebrates directly represent the deliberate introduction of the taxa. Rather, like the case of the black rat, the entomofaunal remains are probably the result of accidental transportation and introduction. By focusing on

synanthropic species, it is possible to infer that most often they are indirectly representative of human action, whether trade or movement.

Through entomological investigation of the interactions, roles, ethology, and associations that a species has within its habitat, it is possible to ascertain correlations between a species' microhabitat and a humanly utilisable product or good. Through our knowledge of the modern habitat of the granary weevil *Sitophilus granarius*, we know that the presence of *S. granarius* in the fossil record is indicative of stored grains and cereal products. Additionally, by taking into consideration palaeoecological factors, it is possible to infer that the *Sitophilus granarius* is not native to Britain and thus its presence, at least at various periods of time, is representative of the importation of cereals into the region. However, palaeoecological assessments alone are unable to pinpoint when or how the weevil entered Britain. Since palaeoecological methods do not consider the human manipulation of the natural environment or the accidental creation of artificial microhabitats which may mimic a species' natural habitat, they are unable to account for *Sitophilus granarius*' presence in Roman Britain. However, the integration of biogeographical mapping reveals that the granary weevil was first introduced during the Roman invasion.

Unfortunately, the presence of a synanthropic species in a context is not sufficient to determine whether it is evidence of trade or population movement. When the palaeoentomological and biogeographical information is integrated with the historical and material archaeological evidence, it can be inferred that the weevil-infested grain was introduced to northern and southern Britain through the movement of the invading and occupying Roman legions.

Once a species has been introduced to an area it becomes more difficult to differentiate between a newly established population and one that is continually re-supplied through trade. The application of biomolecular tactics, such as isotopic and genetic analyses, potentially allows researchers to make this determination. The similarity of the isotopic signature for *Aphodius granarius* (if the species, for this example, is tentatively construed as representative of the local vegetation signal) and *Sitophilus granarius* demonstrates that the granary weevil may have carried out its life-cycle in cereals grown in the local environment by the third century AD; thus it may be inferred that grains were no longer a long-distance commodity for the Romans by the period. Additionally, studies of ancient DNA may be able to evaluate the issues of founder effect and trade intensity at a genetic level. The integration and application of these methods will assist in the interpretation of palaeoentomological remains as a strategy for assessing trade and migration in the past.

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Chapter 12 Taranto before Magna Graecia: Long-Term Interactions between Italy and Greece and their Consequences¹

Giulia Saltini-Semerari

ABSTRACT

Mobility in the ancient Mediterranean was a recurrent catalyst for change. This is particularly evident in one of the most intense and wide-ranging phenomena that shaped the classic world: the Greek colonisation. In this study, I highlight how archaeology can be used as a privileged instrument to investigate the processes responsible for, and characteristics of, this pivotal set of encounters. To this end, I present a re-evaluation of the site of Taranto. Although highly significant for being one of the earliest cases of colonisation in southern Italy, Taranto is also one of the most problematic. Until very recently, it was believed that the arrival of the Greeks from Sparta caused an immediate expulsion of the local population, with long-lasting consequences in terms of hostile relationships between the two. Since the archaeological evidence concerning the early colony is scant at best, this picture was mainly based on ancient literature. However, a reassessment of the published archaeological evidence, together with new material from the excavation at the nearby site of l'Amastuola, suggests that a more complex, indeed even converse, situation occurred. Rather than immediate competition and/or conflict upon permanent colonisation, initial relations were more likely characterised by collaboration, if not co-existence, no doubt facilitated by the familiarity born of centuries of contact. Only once the Greeks became more established in the region and intensified their power base may relations have degenerated. I argue that these relationships can be understood by examining and comparing long-term developments throughout the Early Iron Age in the Taranto area, neighbouring areas, and Greece itself, and show that social change and the construction of identity are linked to long-term changes in the nature and intensity of these contacts.

Keywords: Greek colonisation, Early Iron Age, contact, Taranto, long-term interaction

12.1. INTRODUCTION

The term 'Greek colonisation' is a general definition that encompasses a number of phenomena ranging widely in time, space, and character. In short, it refers to a movement of people from Greece to an area spanning from the Western Mediterranean to the Black Sea during the eighth to the early sixth centuries BC. The study of this movement has a very long history, yet debates on its causes, nature and consequences are far from exhausted. In this paper, I will focus in particular on the Greek colonisation of southern Italy and, more specifically, on the area around the city of Taranto (Figures 31 & 32).

Research on the Greek colonisation of southern Italy has traditionally been concentrated on later, more archaeologically visible phases of the colonies. For the reconstruction of the earliest phases of colonisation, authors have relied heavily on literary sources (Burgers 2004, 252-253). The traditional view has it that the Greek colonies were created by single acts of foundation brought about by groups of immigrants coming from one, or more rarely two, Greek *pol(e)is*. In many cases, the colonists were thought to be directed by the Delphic oracle, under whose blessing they installed themselves in foreign lands. The mother cities were conceived as having been actively involved in the act of foundation, although it was recognised that the colonies were at least politically (but not culturally) independent. The relationship with the indigenous population was seen as one of cultural dominance by Greeks, defined by notions

such as 'acculturation' and 'hellenisation' (see, for example, Dunbabin 1948; Boardman 1973).

In the last two decades, however, authors have increasingly challenged the traditional interpretation of Greek colonisation. Post-colonial thought has brought into question many of the theoretical premises on which the study of the Greek expansion in the Mediterranean rested, and unveiled the biases created by imposing ideas of modern colonialism on the interpretation of the literary and archaeological evidence of such movements (Van Dommelen 1997, 306-307; Osborne 1998, 255-256; Owen 2004; Shepherd 2004; Snodgrass 2004). These approaches have brought the role of indigenous people into focus, while criticising traditional assumptions such as the cultural dominance of the Greeks and the power imbalance between the colonisers and the colonised (Dietler 1995, 95; Owen 2004, 16). Most importantly, an increased amount of archaeological evidence made available through excavation and publication has challenged the linear picture of Greek colonisation suggested by the literary sources, showing that the process was complex and highly varied both geographically and chronologically. In particular, archaeological research has unearthed widespread evidence of contacts preceding the traditional dates of colonial foundations and of contexts where items belonging to indigenous and Greek traditions are found together. Along with the renewed interest in the indigenous populations, the latter evidence has sparked

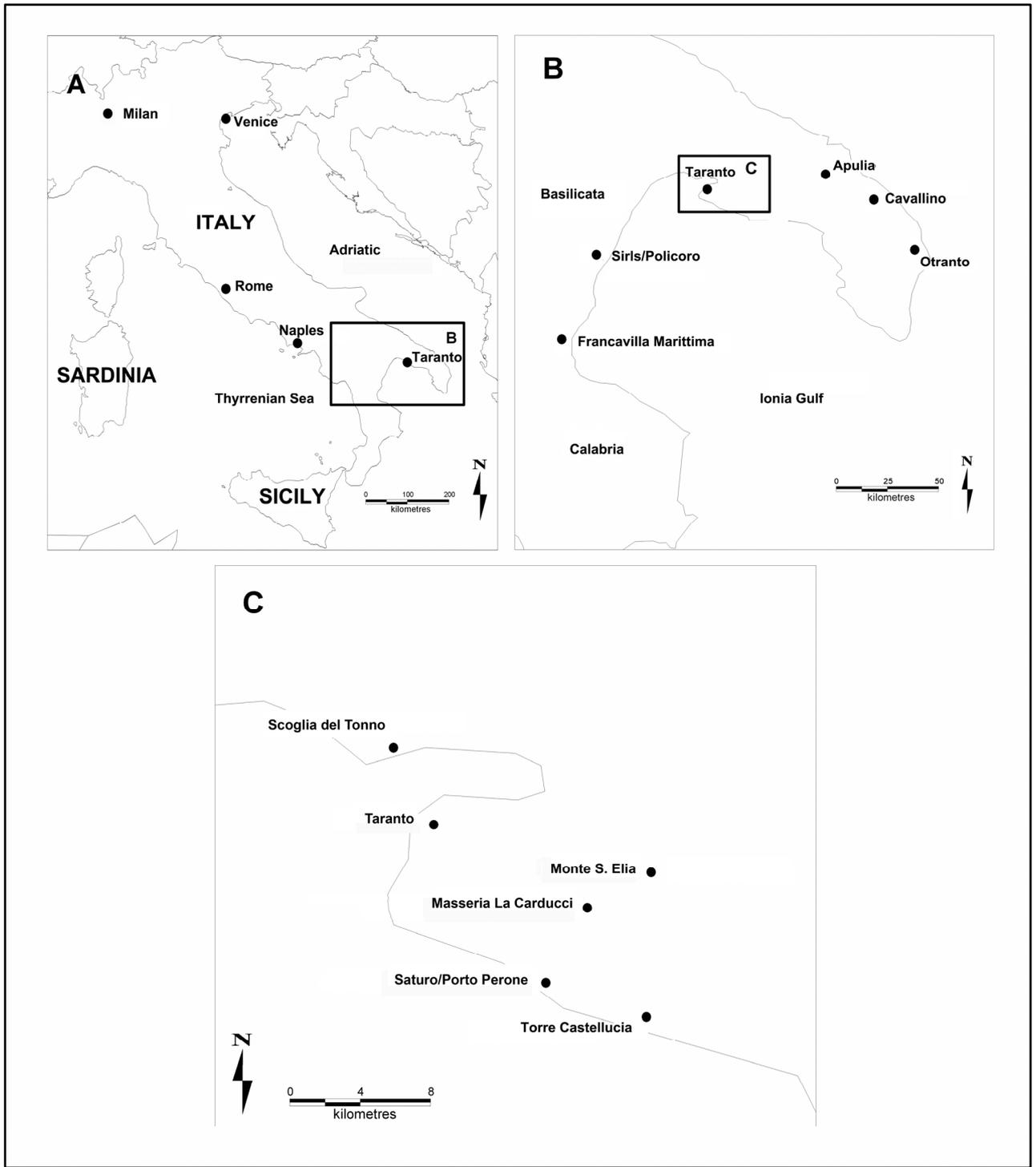


Figure 31. Archaeological sites around Taranto

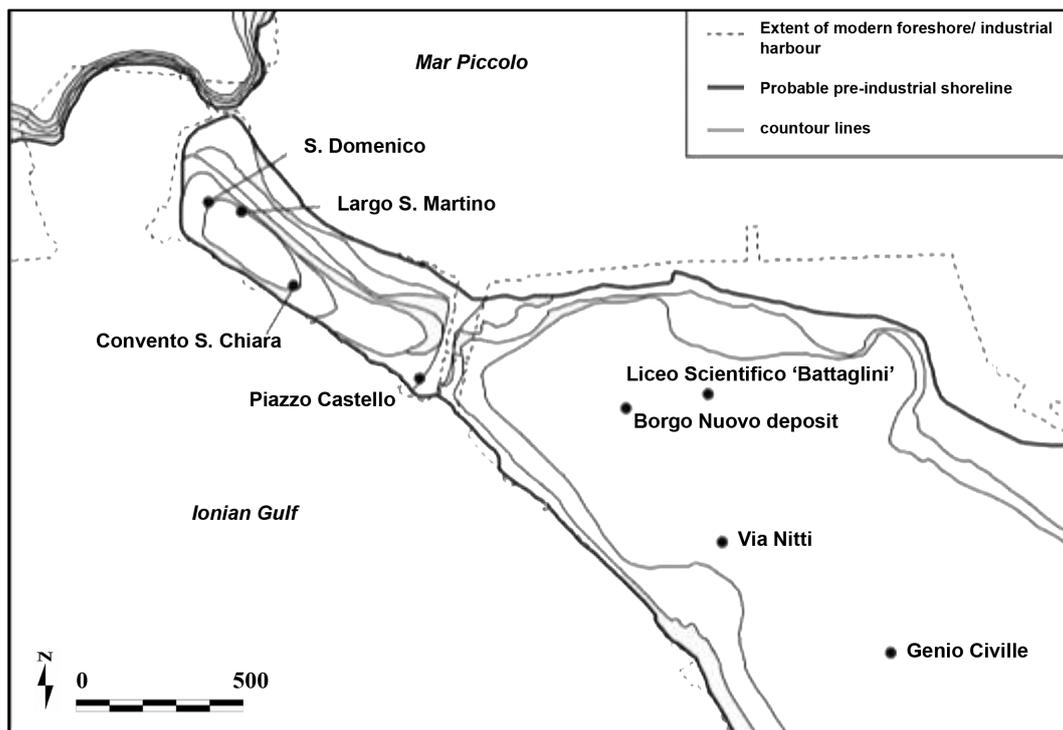


Figure 32. Taranto

an extensive debate on issues of identity, ethnicity, mixing and hybridisation in pre- and early colonial phases. New perspectives have consequently emerged on the social and economic causes of the colonisation, its developments in different areas of the Mediterranean, and its implications in terms of interactions with local populations (see, for example, Dietler 1995; Van Dommelen 1997; Osborne 1998; Jones 1996; Ridgway 2000; Yntema 2000; Foxhall 2003; Burgers 2004; Gosden 2004; Hurst and Owen 2004; Antonaccio 2004; Shepherd 2005; Hodos 2006, Tsatskheladze 2006).

While identity has emerged as a major field of debate, authors have focused on evidence of mixing, adoption and re-elaboration of foreign cultural traits in the context of colonial interactions. Before the colonies were founded, Early Iron Age contacts do not appear to have produced any noticeable alteration in the material culture of either Greek or Italian traditions, perhaps because of their limited intensity and range. It is well understood that these material cultures were not monolithic, but instead both constituted a mosaic of local variations. Nevertheless, macroscopically, they were still well defined and differentiated before the colonisation, so that it is relatively easy, for instance, to identify a Greek object in Taranto as an import. This changed in the course of the seventh century, when Greek settlement in Italy was consolidated and Greek influence on the indigenous material culture, together with the mixed and novel realities created in colonial situations, blurred these categories substantially. But such developments go

beyond the scope of this article. Here, I will use the terms 'Greek' and 'indigenous' as primarily geographical entities to describe the two material cultures characterising Greece and the area under investigation (Taranto and Salento, the southern part of Apulia in which Taranto lies) during the Early Iron age and the very early stages of the Greek colonisation². Issues of hybridity will not, therefore, be addressed in this article since they only became relevant later.

In this paper, I will approach some of the larger issues involved in the debate about Greek colonisation with data from one colony in southern Italy and its surroundings. My central question is whether it is possible to gain a better understanding of the early colonisation phase, its causes and modes, through the study of Late Bronze Age and Early Iron Age indigenous society and its long-term interaction with Greece. As Owen (2004, 21) states, 'approaches which concentrate upon the Greek side of the equation, and only on the period after Greek settlement, are missing a crucial part of the process: the long-term processes that only archaeology is in a position to explore.' I agree with Owen, and argue here that an understanding of pre-colonial, Early Iron Age processes is valuable in order to frame meaningful questions and attain answers about the colonisation that followed.

The choice of the site was dictated by several factors. First, Taranto was one of the earliest Greek colonies; the traditional foundation date is the end of the eighth century BC (706 BC). Second, several sites in the immediate

vicinities of Taranto have yielded evidence of contacts with the Mycenaeans up to the end of the Greek Bronze Age, during the Late Helladic IIIC, and even Sub-Mycenaean periods (roughly the fourteenth to the eleventh centuries BC). Finally, according to the literary sources, Taranto is considered the only Greek colony from Sparta, and one thought to typify the hostile relationships between the Greeks and the indigenous population (Cordano 1986, 64; Presticci 1990; Malkin 1994, 115-127). A case study of Taranto thus offers the chance to investigate both long-term contacts between Italy and Greece and Greek-indigenous interaction.

After considering the relationship between textual and archaeological sources, I shall offer a brief description of the published archaeological evidence of contacts between the Taranto area and Greece from the end of the Bronze Age to the early colonisation period. This is for the most part composed of painted pottery and metal finds, as perishable goods did not survive. It is important to note at the outset that the presence of foreign material in a local context does not in itself prove that foreigners were present, and different interpretations will be suggested for different periods. This will be followed by a discussion of the social context in which these contacts developed and the wider implications of this relatively narrow study.

12.2. METHODOLOGICAL APPROACH

A final, but no less important, point concerns methodology, in particular the use of literary sources. For periods that have a larger, more reliable corpus of literary sources, their use alongside archaeological data is extremely valuable and important. There are, however, a series of issues concerning their use for the analysis of early Greek colonisation. First, all literary sources post-date the actual events by several centuries. The fact that there are no contemporary sources for the early Greek colonisation in southern Italy should serve as a warning call to use them carefully in this context. Second, they are exclusively Greek, thus portraying interactions with the indigenous populations from the exclusive viewpoint of the colonisers. Third, the traditions that are illustrated may have been created in later periods, in order to support political agendas unrelated to earlier situations (Yntema 2000). In the case of Taranto, the main tradition on the colony's foundation comes from Strabo's first century BC *Geographia* (VI, 3, 2), itself derived from two earlier authors, Antiochus (end of the fifth century BC) and Ephorus (fourth century BC).

Modern approaches to each source in early colonisation studies vary greatly depending on the author: the variety of attitudes ranges from dismissal of literary sources, to critically analysing them along with the archaeological record, to using them as the prime source in interpreting the latter. This last approach, which is intrinsically limited as it imposes an artificial and potentially distorting lens on the interpretation of archaeological

data, has nonetheless been central to even recent studies in the area of Taranto. For example, in several instances authors have automatically associated Greek pottery finds with the existence of the colony, and interpreted the discontinuity in neighbouring settlements' occupation as evidence for the colony's expansion into the *chora* (the territory of the colony). With few exceptions (Herring 1998; Yntema 2000), the identity of the colonisers as Spartans has also been accepted without any serious discussion. An approach that is more focused on the archaeological data, without presumptions based on literary documents, is thus useful in order to restore a balance between the two sets of sources.

Archaeological evidence has two further advantages. First, it allows the identification of long-term, socio-economic developments. Second, it provides first-hand, contemporaneous data that is not influenced by later perspectives and political agendas (Yntema 2000, 41-45).

Archaeological data themselves are not devoid of problems, which mainly stem from post-depositional processes (in Taranto, for example, recent building activities have made excavation difficult and obliterated much of the evidence) and the methods with which excavations are conducted. Emergency excavations (common in Taranto) are, for example, more partial in their results and publications than extensive excavations conducted over several fieldwork seasons (as in L'Amastuola, see below). Furthermore, early twentieth-century fieldwork (carried out in Scogliodel Tonno and Torre Castelluccia) was obviously less accurate both in terms of excavation techniques and recording. Nevertheless, other recent excavations have produced more reliable data that are worth analysing as a whole, if only to build an alternative picture against which later sources can be analysed or tested.

12.3. CONTACT: THE ARCHAEOLOGICAL EVIDENCE

The modern city of Taranto lies on the west coast of Apulia, the south-eastern-most region of Italy. The most striking feature in the Tarantine landscape is a large inlet, called the *Mar Piccolo*, which connects to the sea through a narrow canal and constitutes an outstanding natural harbour. The *Mar Piccolo* is protected by a narrow promontory, which in Archaic and later times became the city's acropolis. The south-western side of the site faces the Ionian Gulf, while the other sides are surrounded by a fertile plain. In the Bronze Age, most settlements in the area were situated along the coast (Scogliodel Tonno, Taranto, Saturo/Porto Perone, and Torre Castelluccia). These sites experienced continuity in occupation until the end of the Early Iron Age, but from the eighth century BC onwards new settlements were also founded inland (Burgers 1998, 173-175; Burgers and Crielaard 2007, 105-106).

Despite the fact that the area around Taranto is rich in archaeological remains, poor standards of excavation and publication have rendered the amount of data that is actually available for this study fragmented and partial. A fortunate exception is the site of L'Amastuola, which has recently been extensively excavated and surveyed by the Vrije Universiteit Amsterdam, and received an accurate preliminary report (Burgers and Crielaard 2007).

Also fortunate is that evidence from the regions of Salento (part of modern-day Apulia), Basilicata, and Calabria can be usefully employed for comparisons and analogies in the interpretation of the fragmentary evidence from in and around Taranto. Comparisons with Salento are the most straightforward since communities throughout the region show very similar traits and appear to share a common material culture, which extends from architecture to burial customs, pottery style and, in many cases, settlement pattern. Nearby Basilicata and Calabria show differences in burial customs and pottery style, and should therefore be considered distinct from Salento in terms of material culture. Nevertheless, both regions show the same broad developments in terms of demographic, economic and social expansion throughout the Early Iron Age. Furthermore, since they also saw the establishment of Greek settlements during the eighth and seventh centuries BC, they can be usefully compared and measured against the Taranto area. It is also necessary to examine Taranto and its environs within the wider context of contacts and exchanges in the Mediterranean world. In the following paragraphs, I shall trace the developments of the Taranto regions against this background, from the earliest contacts with the Mycenaeans to the earliest traces of Greek settlement.

The end of the Bronze Age is characterised by extensive contacts and exchanges between Italy (in particular southern Italy, Sicily and Sardinia) and Greece (including the Aegean Islands and Cyprus). These exchange networks had already long been established, and although shifts in the distribution pattern and provenance of imports occurred after the fall of the Mycenaean Palaces in Late Helladic IIIB period, they continued until the end of the Late Helladic IIIC (about the middle of the eleventh century BC) (see Vagnetti 1993, 1999; Bettelli et al. 2001-2002).

This is evidenced on the one hand by imports—mostly in the form of pottery, but also metal objects such as swords and daggers (Eder 2005)—and on the other hand by large amounts of locally produced pottery of Mycenaean type (so-called Italo-Mycenaean pottery, along with a class of *pithoi* decorated with bands) (Bettelli et al. 2001-2002; Bettelli 2002). The presence of Italian objects in Greece represents the other side of these trade routes (Bettelli 1999). Further evidence of direct contact between the two areas comes in the form of exchange of technological know-how. This is evident both in the similarities in metal production between the two regions during the twelfth and eleventh centuries (Bietti-Sestieri 1973;

Carancini and Peroni 1997, 596-597) and in the use of Mycenaean technologies (fast wheel, high temperature for firing) in the production of local southern Italian 'grey ware' (Bettelli 2002, 126-132).

In Apulia, these contacts were particularly intense, and although the earliest Mycenaean imported pottery (found at Roca Vecchia and Scogliodel Tonno) dates to the Late Helladic IIIA (Guglielmino 2004-2006, 88-90; Taylour 1958, 82-88; Biancofiore 1967, 82; Jones 1993, 132), the Late Helladic IIIC period witnessed an increase both in imports and in local production. In the Taranto area, most sites received small quantities of imports in this period, but produced larger quantities of Italo-Mycenaean pottery (Jones 1993, 132). By far the largest concentration of such evidence is found at the sites of Scoglio del Tonno (Taylour 1958; Biancofiore 1967; Fisher 1988) and Roca Vecchia (Guglielmino 2004-2006). The first site is located directly at the entrance to the *Mar Piccolo*, on the opposite shore of the Taranto promontory. It is considered one of the most important settlements in southern Italy with regards to contacts with the Mycenaeans (Bettelli et al. 2001-2002, 67), and Bettelli (2002, 62) suggests that it was occupied by a group of Mycenaeans during the Late Helladic IIIC.³ The second settlement was located at the end of the Salento peninsula, along the route that Mycenaeans would have followed to reach Italy. It has yielded a large assemblage of imported and locally produced Mycenaean pottery, together with evidence of religious activities linked to Mycenaean traditions (Guglielmino 2003, 108-113; 2004-2006, 97-101). Furthermore, both sites have produced rich metal assemblages which show links with northern Italy and central Europe as well as the Aegean, together with evidence of local metal production (Quagliati 1900, 464; Guglielmino 2004-2006, 97).

The situation changed completely in the following period, the Greek Sub-Mycenaean period and the Early Iron Age, corresponding to the Final Bronze and Early Iron Age in the Italian chronology (roughly from the eleventh to the end of the eighth centuries). During the Sub-Mycenaean period, contacts between southern Italy and Greece decreased drastically. However, sparse evidence suggests that even if reduced (and clearly changed in terms of intensity, but also in modes and quality), long-distance contacts continued, if somewhat sporadically, throughout this period. First, a find in the Mottola hoard, not far from Taranto, contains a Sub-Mycenaean pin and a hammer of Aegean type, together with chisels and axes (Quagliati 1903, 116-119).

Two similar pins have been found in Basilicata, in the necropolis of Timmari, indicating that this sort of exchange in metal objects was not an isolated phenomenon (Quagliati and Ridola 1906, 92-94). Sub-Mycenaean pottery has also been identified in Salento, although, with the exception of finds in Roca Vecchia (Guglielmino 2004-2006, 93), its identification is debated (Lo Porto 1963, 1964; Vagnetti 2002). From end of the

Sub-Mycenaean period, pottery ceased to be imported and no longer indicates any foreign contacts. This situation appears to last until the end of the ninth century BC.

During the Early Iron Age, a lack of imports of painted pottery—the class of evidence upon which archaeologists have tended to focus—renders long-distance contacts less visible. Yet similarities in metal objects in central Europe, the Balkans, and Greece, and the trade of amber, still present both in Italian and in Greek sites, point to possible if indirect connections via the Adriatic (Bietti-Sestieri 1969, 264-265; 1973, 410-412; Vagnetti 1979, 545-546; Yntema 1982, 88-90). From the tenth to the end of the ninth centuries BC, therefore, direct contacts with Greece appear to have been extremely sporadic. Bietti Sestieri (2003) proposes a model of diffused, or short-range, ‘chain’ contact possibly via the Balkans to explain the type of pattern encountered here. It has also been proposed that such a pattern of finds could be related to itinerant craftsmen who shared and adapted technological and morphological knowledge, as may have been the case in the western Mediterranean (Giardino 1995).

The earliest Greek pottery imports in the area date to the Middle Geometric (late ninth century BC). Apart from one fragment decorated with the pendant semicircle motif found in Scoglio del Tonno (Taylour 1958, 118-119, pte 14, nos. 19-20; Biancofiore 1967, 112), these finds are concentrated in Otranto, located on the southern tip of Apulia (the closest part of the Italian peninsula to Greece, and not far from the Bronze Age settlement of Roca Vecchia) (D’Andria 1979, 15-25; Yntema 1982, 90). Although less numerous in comparison to the imports from the Balkans dating to the same time, they mark the beginning of a new trend: from the late ninth century BC, Greek imports gradually increased, reaching wide distribution towards the end of the eighth century BC, when Greek decorative motifs were adopted and re-elaborated in the production of local matt-painted pottery (Yntema 1991, 152-155). By this time, imports are found in all the sites of the Taranto area, and in many sites along the whole Salento coast, although never in large numbers. These could have reached the latter sites via Otranto, or directly via the sea, as their appearance coincides with an increase in maritime activity in the west by variegated groups of Greeks (in particular, but not exclusively, from Euboea and Corinth), whose route could have followed the coast of the Ionian Gulf in order to cross towards Sicily or turn into the Tyrrhenian Sea.

According to written tradition, it was at this point (706 BC) that the Spartan colony was founded. Indeed, there is some scant evidence which could be interpreted as indicating a Greek presence in the Taranto area towards the end of the eighth century BC. An analysis of preliminary notes from rescue excavations in Taranto (published in the journal *Taras* and in the yearly *Attidel Convegno di Magna Grecia, Taranto*), reveals both occupation and funerary evidence. The former consists of

few Greek-style sherds found in early contexts and the latter of a couple of Greek-style burials. As we have seen, authors have often associated these finds with the foundation of the colony and, employing a rather circular argument, taken this as proof that the indigenous population was no longer living in the area (Lippolis 1995, 65; De Juliis 2000; Dall’Aglia 2001). Upon closer investigation, however, this evidence appears to be more ambiguous and complex.

From the occupation levels it emerges that the earliest Greek materials (fragments of Protocorinthian pottery dated to the end of the eighth century) have been found *mixed* with indigenous materials. This has been reported for excavations at S. Domenico, in the Ex Seminario Arcovescovile, and in via Nitti (Lo Porto 1971, 357-358; De Juliis 1984, 429; Degrassi 1964, 150).⁴ Authors have attributed early Greek finds to the newly-founded colony without acknowledging these indigenous associations. If these are taken into account, it becomes difficult to distinguish the Taranto evidence from that of other sites in Salento, where Protocorinthian imports are also found in indigenous contexts. It is only from the middle of the seventh century BC onwards (and especially from the end of the seventh/beginning of the sixth century BC) that contexts containing exclusively Greek materials are found: at least half a century later than the traditional foundation date (Stazio 1967, 300; Favia 1988, 119-120; Guzzo 1988, 572; Dell’Aglia and De Vitis 1994, 141-143; Dell’Aglia 2001, 120-123). The interpretation of such finds will be discussed further below.

The funerary evidence consists of one single cremation with Greek grave goods (an Early Protocorinthian *kyphos* and *aryballos*) dating to the turn of the eighth/seventh centuries (Dell’Aglia 1990, 57; De Juliis 2000, 18). There are several reasons to believe that this burial is likely to be associated with an individual of Greek origins (or with somebody portrayed as such). First, in Salento indigenous burials have been found dating from Early Iron Age and until the late seventh/beginning of the sixth century BC. Thus indigenes likely disposed of their deceased in an archaeologically undetectable way (Lombardo 1994; Burgers 2004, 267). Second, the origin of the grave goods and the ritual context (secondary cremation) also point to a Greek origin of the deceased. Finally, the early date of the grave makes a phenomenon of hybridisation or wholesale adoption of Greek customs by an indigenous individual unlikely. It can thus be reasonably argued that one, and most likely a small group of Greeks was present in Taranto at the end of the eighth century.

Two further Greek-type tombs are dated to the first four decades of the seventh century BC. This means that so far, only three tombs with recognisable Greek features appear to span roughly the first fifty years after the traditional date of foundation of the colony. It is only after this time that Greek-type burials start to increase (Neeft 1994, 187, fig. 168). Unfortunately, these data

cannot be compared to indigenous burials since, as I have discussed above, no such evidence has thus far been found.

Archaeological data from Taranto's surrounding area offer further insight into developments at the end of the eighth/first half of the seventh century. To the south of Taranto are the sites of Torre Castelluccia and Saturo. Torre Castelluccia ceased to be inhabited at the end of the eighth century (Gorgoglione et al. 1993, n. 1), whereas the excavator of Saturo claims to have found Greek layers directly on top of indigenous contexts with no Greek artefacts (Lo Porto 2001, 14). However, the methods by which the site was both excavated and published raise issues of whether Lo Porto (1964, 2001) accurately interpreted the stratigraphy. This problem is highlighted by the fact that indigenous and Greek pottery overlap chronologically during the first decades of the seventh century; they thus appear to contradict the excavator's assumption that the indigenous settlement had been impermeable to Greek presence until it was overpowered (Yntema 2000, 21). Evidence of a Greek cemetery and an open-air sanctuary date to the second half of the seventh century, and by that time any detectable trace of indigenous presence (defined by the local material culture) is no longer found in Taranto and its immediate surroundings (Lo Porto 2001, 14-17; Yntema 2000, 23).

So far, therefore, the sequence of events emerging from the archaeological data for the area south of Taranto seems to be the following: the last decades of the eighth century, when single imports reached the different indigenous sites, appear to be a period of sporadic but intensifying contacts with the Greek groups that were sailing towards Sicily and central Italy, whether this happened directly or via Otranto, or both. The turn of the century and the first decades of the seventh century offer evidence of mixed indigenous and Greek materials. In Taranto, a few Greek-type tombs point to the fact that a small group of Greeks might have lived at the site. They could have been living together with the indigenous population or alternatively could have used indigenous material themselves. It is also very possible that indigenous people used Greek-style artefacts as well. These hypotheses would seem to suggest that the relationship between indigenes and Greeks was not hostile during the early period after their arrival.

From the middle of the seventh century, however, Taranto and Saturo started to acquire a more defined 'Greek' character. This process consisted of the establishment of Greek religious institutions, such as a doric temple on the Taranto acropolis (dated to the end of the seventh-beginning of the sixth century) (Lippolis 1982, 85-86; Pucci 1991, 299-301; Lippolis 1995, 65-70) and open-air sanctuaries where early archaic votives have been found (Lo Porto 2001, 14-17; Lippolis 1995, 77-80), as well as by the establishment of substantial necropoleis both in Taranto and in Saturo (Neeft 1994; Yntema 2000,

23; Lo Porto 2001, 14-17), where only Greek grave goods are found.

This admittedly rough picture is substantially refined by data from the site of L'Amastuola, to the north of Taranto. Before the Vrije Universiteit Amsterdam excavations, a number of trenches were opened by the *Soprintendenza*. In the publications of the latter, early seventh century rectangular stone structures, interpreted as Greek, appear to cover curvilinear indigenous ones, and indigenous pottery in Greek contexts was interpreted as intrusive. L'Amastuola was thus taken as a proof of the early expansion of the Spartans into the territory of Taranto (Maruggi 1996, 2002). The Dutch findings alter this picture considerably. First, indigenous-style pottery, often found mixed with wares of Greek types, appears to be used until the end of the seventh/beginning of the sixth century (Burgers and Crielaard 2007, 85-89, 102-103, 106). Second, an indigenous funerary stele, similar to those found both in Salento and in Northern Apulia (the so-called 'Daunia' region: Burgers 2004, 267) was found in the purportedly Greek archaic cemetery (Burgers and Crielaard 2007, 100). In the opinion of the excavators, this evidence indicates that at L'Amastuola, situated only 15km from Taranto, Greek and indigenous communities appear to have tolerated living alongside one another. This contrasts the idea derived from the literary sources of an early, aggressive expansion of the Spartan colony at the expense of the surrounding indigenous population.

Coexistence and mixing of Greek and indigenous people during the seventh century is also suggested in Basilicata and Calabria, the other two regions on the Ionian Gulf. In Basilicata, the most interesting evidence comes from Siris, where two necropoleis with apparently mixed Greek/indigenous burial types were found dating to the end of the eighth/seventh century (Adamesteanu 1974, 111-115; Berlingò 1986, 1993), and from the site of Incoronata, where a small indigenous cemetery and the remains of indigenous huts and indigenous pottery have been found alongside Greek material (both imported and locally produced) and rectangular stone structures dating to the seventh century (Carter 2006, 51-90 with references). In Calabria, the site of Francavilla Marittima has evidence of both indigenes and Greeks participating together in the cult of Athena (Burgers 2004, 256-264; Kleibrink 2006, with references). These sites, like L'Amastuola, testify to the diverse and not necessarily unfriendly form that Greek-Indigenous relations likely took during the early colonisation period (see also Burgers and Crielaard 2007, 107). They also underscore the complex forms that interaction processes likely took and their consequences for identity. The fact that mixed features occur very early in funerary and religious/ritual contexts—both important with regards to defining identity—reinforces this point (cf. Jones 1996; Van Dommelen 1997; Morgan 2003; Antonaccio 2004; Gosden 2004).

12.4. SO HOW DID IT HAPPEN?

Now that the evidence related to contacts between the Taranto area and Greece has been briefly outlined, I shall address the question of how the social and economic framework of these contacts can lead to a better understanding of early Greek colonisation. For the moment, such a socio-economic background can only be crudely reconstructed. This is mainly because the archaeological evidence is not extensive enough to provide a full picture. Nevertheless, some general ideas can be put forward.

Overall, archaeological evidence from southern Apulia points to gradual growth and regionalisation throughout the Early Iron Age. Both phenomena are also discernible in the rest of southern Italy (see Peroni 1994), with a somewhat vague beginning (i.e. more difficult to detect archaeologically) during the tenth century BC and a rapid intensification of both phenomena towards the end of the period (end of the ninth/eighth century BC). Archaeological indicators of growth in the Taranto area and in southern Apulia are: (1) the growth in size of some settlements (such as Taranto); (2) the production and diffusion of a local fine ware, called matt-painted pottery (Yntema 1985, 1990; Herring 1998); (3) the expansion of the settlements inland (Burgers 1998, 173-175; 2004, 268-274; Burgers and Crielaard 2007, 105-106); (4) an increasing number of metal hoards (Pigorini 1900; Quagliati 1903; Bernardini 1953; Müller Karpe 1959; Bietti-Sestieri 1973, 1969; Peroni 1994, 449); and (5) evidence of long-distance contacts, especially with Basilicata, Calabria, the Balkan regions, and (subsequently) the Aegean (Bietti-Sestieri 1973; Yntema 1982).

Archaeological indicators of increased regionalisation consist of a gradual definition of local styles in the production of matt-painted pottery (Yntema 1990; Herring 1998) and the existence of archaeological features specific to southern Apulia (e.g. a high density of hoards and the predominance of axes within them, and the absence of funerary evidence). In nearby Basilicata, further evidence of growth and increasing social differentiation can be found in the rich burials of an emerging elite, characterised by large amounts of metal goods, including spears and swords for males, and elaborate ornaments for females (Lo Porto 1969; Chiartano 1977, 1994a, 1994b; Frey 1985, 1991).

Two further points merit consideration. First, the eighth and early seventh centuries witnessed a general increase of trade around the whole Mediterranean. Greek imports, along with the foundation of Greek settlements, spread around Italy and Sicily. Second, the new settlements appear to have been characterised by the presence of groups coming from different parts of Greece and an emphasis on trade and the production of ceramics and metal. This has been argued on the basis of the 'mixed' assemblages found in the early colonies of Italy and

Sicily, and of the establishment of workshops for metal and 'colonial' pottery production in numerous early colonies, where stylistic elements originating in different areas of Greece and the Aegean are found in the same contexts or even combined together in the same vessels (including at Siris in Basilicata) (Adamesteanu and Ditley 1978; Osborne 1998; Ridgway 2004; Shepherd 2005).

With all of the above in mind, to reconstruct the socio-economic dynamics that structured Greek colonisation, we must try to understand the role played by indigenous decisions and interests. As the traditional picture of a newly-arrived group of 'civilised' Greeks driving the local population into the hinterland by force is progressively abandoned, new aspects of this process are coming into focus. Although more work needs to be done, especially in areas like Taranto that seem to have been neglected in the mainstream debates, indigenous society in the eighth century appears to have been well structured, organised, and flourishing (Burgers 2004). The numbers of indigenes were also probably much larger than the new settling groups (Yntema 2000, 34).⁵ An active indigenous involvement in the early stages of colonisation is therefore suggested by the fact that, at least during the eighth and early seventh centuries, the Greeks appear more likely to have represented a good opportunity for exchange rather than an organised threat (for an analogous argument concerning Incoronata, see Carter 2004, 386).

From an indigenous perspective, some evidence suggests that contacts with Greeks were exploited for local elite display and competition. At the site of Cavallino, located in the interior of southern Apulia, the highest concentration of pottery was found in the largest hut of the village, suggesting elite control over the circulation of exotic objects (Burgers 1998, 182, 191); unfortunately, contextual data of this sort is generally too scarce to allow this type of examination. This evidence accords with a general trend towards increasing social differentiation and wealth accumulation that characterises southern Italian indigenous societies from the eighth century. As we have seen, wealth was accumulated in the form of metal hoards (Apulia) or displayed in rich burials (Basilicata). Increasing competition among members of the elite can also be identified by increasing regionalisation and the new drive towards the exploitation of interior land, which was possibly also connected to community fission (Burgers 1998, 173-175). The use and display of Greek objects, particularly of those related to banqueting (Whitehouse and Wilkins 1989, 110-114; Herring 1991, 212-122), is therefore one of a number of strategies used by emerging elites to compete socially in an increasingly complex society (Burgers 2004, 275).

Although the use of imported (including Greek) artefacts in contexts linked to elite activity (e.g. hoards, and later the large Cavallino hut) shows a tendency to integrate foreign artefacts into the local material culture throughout the Early Iron Age (cf. Bietti-Sestieri 1973), this trend

increased greatly with time. From the middle of the seventh century, indigenous communities outside the colonies adopted aspects of Greek material culture, generally in contexts associated with elite activity, such as warfare, banqueting, and even religious activity (D'Andria 1979; Bottini 1988; D'Agostino 1988; Yntema 2000, 35; Gosden 2004, 60-72; Burgers 2004, 275). This behaviour also characterised other communities in central and southern Italy (for example, Etruria and Basilicata). These changes in the indigenous material culture thus ultimately appear to be the consequence of two main converging factors: the success and diffusion of Greek elite behaviours (and associated material culture) from the Orientalising period onwards (cf. Gosden 2004), and the economic growth and increasing social competition in the indigenous world.

In the areas where Greeks settled, like Taranto and Saturo, the situation from the middle of the seventh century had a distinct development. Traces of an indigenous presence disappear only after a first long 'mixed' phase. This might indicate a physical expulsion of the indigenous population present in the settlement. Alternatively, Greek customs could have been adopted by indigenous peoples, perhaps precipitated by a gradually consolidated Greek presence combined with the above-mentioned tendency to accept Greek influences.

12.5. CONCLUSION

I have argued in this paper that, along with the more recent approaches to colonisation studies (derived from post-colonial theory, anthropology and archaeology), analyses of early Greek colonisation events can benefit from addressing long-term processes and indigenous perspectives. Although violent confrontation should not be ruled out completely, we have seen that several empirical and theoretical factors make it unlikely that the earliest contacts were characterised as such. In particular, mixed Greek/indigenous assemblages, the heterogeneity and entrepreneurial attitude of the Greeks, and the evidence for structured indigenous societies render an aggressive incursion implausible. Instead, internal competition in indigenous society probably helped create a 'niche' in which Greeks could establish themselves. This triggered major changes in indigenous society, not least of which was the adoption of Greek material culture associated with elite behaviour.

Endnotes

¹ This paper was written and revised in 2009. Relevant published literature that has appeared in the interim has therefore not been referenced.

² Whether they perceived themselves (or were perceived) as 'Greek' is another issue that falls beyond the scope of this paper. It should be noted, however, that identity reflected Early Iron Age situations. The construction of a *pan-Hellenic* identity as we know it from later periods was at this stage by no means complete. The same can be said for

indigenous populations. Furthermore, their close interaction likely influenced these processes for both parties.

³ A similar hypothesis has been formulated for the site of Punta Meliso, at the southern tip of Apulia (Benzi and Graziadio 1996).

⁴ Unfortunately, the absolute and relative quantities of these pottery fragments, or any more specific information about them, have not been published. Full publication of such data would be extremely welcome and would help an assessment of this phenomenon greatly.

⁵ Although there are no attested exact numbers for colonising groups, they have been estimated at about 300 individuals (Shepherd 2005, 129).

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Chapter 13 From Prosperity to Survival: Rural Monasteries in Palestine in the Transition from Byzantine to Muslim Rule (Seventh Century AD)

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ABSTRACT

This paper discusses the isolated monasteries that flourished in rural Palestine during the Byzantine period (mid-fourth–mid-seventh centuries AD) and with their diverging fate after the Muslim conquest in the 630s. The transition between the Byzantine and Early Islamic periods was accompanied by gradual political, administrative, and economic changes, which significantly affected the general Christian and in particular the monastic population. These changes brought a gradual weakening of the rural monasteries and led to their almost complete disappearance by the ninth century. This paper presents a proposed typology of these monasteries in the Early Islamic period using representative examples and outlines the probable reasons for their abandonment.

Keywords: monastery, rural, Palestine, Byzantine, Early Islamic period

13.1. INTRODUCTION

The monastic movement was an inseparable part of Palestinian Christianity as early as the fourth century AD and throughout the period of Byzantine rule over Palestine (AD 324-640). Influenced by Egyptian monasticism, the first monks of Palestine (both indigenous and foreign) were attracted to the arid regions of the country—the northwestern Negev desert (south of Gaza) and the Judean Desert (east of Jerusalem). It was here they founded the first monasteries. Subsequently, numerous others were founded throughout the country, especially between the mid-fifth and the late sixth centuries, the period during which Palestinian monasticism reached its zenith as an influential social, religious, and sometimes even economic movement. This expansion was closely related to the rise in Christian pilgrimage to the Holy Land during the fifth and sixth centuries. The monasteries supplied various services to the pilgrims who, in turn, donated to them and probably also helped with labour (e.g. Limor 2006, 352-3). Most of these monasteries continued to exist at least until the seventh century. Typically, the modern study of Palestinian monasticism of the Byzantine period has had two main aspects. The examination of contemporary literary sources and the study of archaeological evidence recovered over the last four decades (e.g. Chitty 1966; Hirschfeld 1992, 2002, 2004, 2006; Patrich 1993, 1995, 2004; Figueras 1995; Binns 1996; Tzaferis 2001; Goldfus 2003; Aviam 2004, 197-201; Brenk 2004; Bitton-Ashkelony and Kofsky 2006a, 2006b; Taxel 2008, 2009).

Political changes throughout the seventh century had a great impact on the local population, especially Christians, both before and after the Muslim conquest. The first event was the Sasanian Persian occupation of Palestine in AD 614-628 (Schick 1995, 20-48). The Persian invasion resulted in the massacre of Christian communities and the destruction of churches, mainly along the Persian army's route and in Jerusalem. Although Christians mostly recovered from these harms

in the following years, it can be said that 'the Sasanian invasion marked the beginning of the serious disruption of the Christian communities of Palestine' (Schick 1995, 19).

The Byzantine Christian community never recovered completely from the Sasanian occupation (Schick 1995, 67). As early as AD 634, the first Muslim invaders started a new epoch in the region's history. The Muslim conquest of Palestine was completed in AD 640 (Gil 1992, 32-60), after which the local Christian population, including the monastic one, had to face a new political, social and economic reality. In the rural monasteries, the reduction in the number of pilgrims and the forced severance from Byzantium (Hirschfeld 1992, 16-17; Limor 2006, 335-7) significantly reduced the donations that these monasteries received and probably also created a shortage of labour. The Islamic prohibition on wine consumption coupled with the decline in Mediterranean trade greatly impacted wine production, one of the two major economic branches of most of the rural monasteries. Viticulture dropped significantly in the seventh and eighth centuries, and almost entirely disappeared by the late eighth or early ninth century (Ayalon 1997; Kingsley 1999, 193-4; Hirschfeld 2002, 189, n. 2). With this weakened economic base, monasteries that could no longer maintain themselves through agriculture or without financial aid from local Christians were probably abandoned within a few decades after the Muslim conquest. Despite the relative tolerance of some of the early Muslim caliphs in their openness to local religions (Gil 1992, 469; Hirschfeld 1992, 17), those monasteries which did manage to exist into the late Umayyad or early 'Abbasid period (eighth to ninth centuries) experienced political and religious difficulties and pressures. These included the high poll tax (*jizya*) and land tax (*kharāj*) collected from the non-Muslim (especially Christian) populations. Furthermore, the administrative and monetary reform of the caliph 'Abd al-Malik (AD 685-705) increased the numbers of converts to Islam and led to the Arabisation of the

country's local population. Finally, the iconoclastic edict of the caliph Yazid II from AD 721 resulted in deliberate damage and destruction to figurative mosaic floors and chancel screens of many churches (Schick 1995, 139-219; cf. Walmsley 2000).

13.2. TYPOLOGY OF PALESTINIAN MONASTERIES

As noted by Hirschfeld (2006, 401), Palestinian monasteries reflect a great diversity in terms of location, size, physical characteristics, and nature. The majority of Palestinian monasteries belong to the communal (*coenobium*) type, 'in which monks live a communal life, with a daily routine of communal prayer, work, and meals' (Hirschfeld 1992, 33).

The other monasteries belong mostly to the eremitical (*laura*) type, in which monks live in separate cells and met only on Saturdays and Sundays for worship and communal meals (Hirschfeld 2006, 416).

Coenobium monasteries existed throughout the country, in various geographical and topographical locations, and they can be classified into four groups. The first group includes urban monasteries, built within or near the borders of large towns and cities, such as Jerusalem, Beth Shean/Scythopolis and Gaza (Goldfus 2003; Hirschfeld 2004, 2006, 405-7). The economy of the urban monastery depended mainly on donations made by locals and pilgrims, and in some cases by the imperial court. Extramural monasteries also participated occasionally in small-scale agriculture (Hirschfeld 2006, 405).

The second group includes desert monasteries, represented by most of the solitary monasteries (both of the *coenobium* and *laura* types) built in the arid regions of Palestine. In the Judean Desert, but also in the northern and central Negev (Hirschfeld 1992, 2006, 414-18; Figueras 1995), and as with the urban monasteries, the economy of the desert monasteries depended mainly on donations from various sources, on minor crafts and on small-scale agriculture (Hirschfeld 1992, 102-11).

The third group includes pilgrimage monasteries, built throughout the country, both in sown and in desert regions, mostly at pilgrims' destinations and along the pilgrimage routes. The available evidence suggests that their economy depended mainly on donations from pilgrims and local Christian visitors (Hirschfeld 2006, 410-14).

The fourth group includes rural monasteries built in cultivated areas and on the fringes of the desert, but in close proximity to rural settlements. Evidence of a measure of agricultural production in the environs of the monastery and/or processing of agricultural crops within the monastery complex or in its immediate vicinity

includes terraces, enclosed agricultural plots, and oil and wine presses. There was further evidence at some monasteries for animal husbandry, such as the remains of stables, pens, and animal bones. These monasteries thus functioned similarly to farmsteads (*villae rusticae*). Agriculture was their main (and at times their only) source of livelihood, though at least some probably received donations from pilgrims and local Christians (Brenk 2004; Hirschfeld 2006, 407-10).

There are two sub-groups of Palestinian rural monasteries. The first includes monasteries built within the area of villages (usually on their margins). These were an integral part of the villages' physical-architectural layout, and may thus be called village-annexed monasteries, such as the complexes at Shelomi (Dauphin and Kingsley 2003; Aviam 2004, 197) and Horvat Beth Loya (Patrich and Tsafrir 1993). However, these monasteries, such as those in the large Negev villages (Figueras 1995; Hirschfeld 2006, 409-10), do not always reflect the typical characteristics of an agricultural complex.

The monasteries of the second sub-group, the majority of Palestinian rural monasteries, existed as isolated agricultural complexes at least several hundred metres from civic settlements. In the present study, I focus on these isolated rural monasteries and present their variable history after the Muslim conquest.

13.3. TYPOLOGY OF ISOLATED RURAL MONASTERIES IN THE EARLY ISLAMIC PERIOD

The following is a suggested typology of the isolated rural monasteries of Palestine during the beginning of the Early Islamic period (from the mid-seventh to the ninth centuries). The present discussion includes only examples of the better-studied monasteries. These are excavated monasteries with a relatively complete plan, and which have yielded enough evidence to attribute them to one of the three types described below (Figure 33). Unexcavated monasteries, as well as partially or fully excavated monasteries with no clear indication as to their later history, are excluded. This includes instances where excavation material has yet to be published.

The monasteries discussed are located in various geographical regions, though mainly in the central hill country (i.e. in the Judean and the Samaria Hills). However, from the topographical point of view, all of the monasteries, including those located in the relatively planar regions of the northwestern Negev and the Beth Shean valley, were built in elevated locations such as hills and spurs. These topographical formations were traditional settlement locations in Palestine, especially for small settlements such as farmhouses and monasteries.

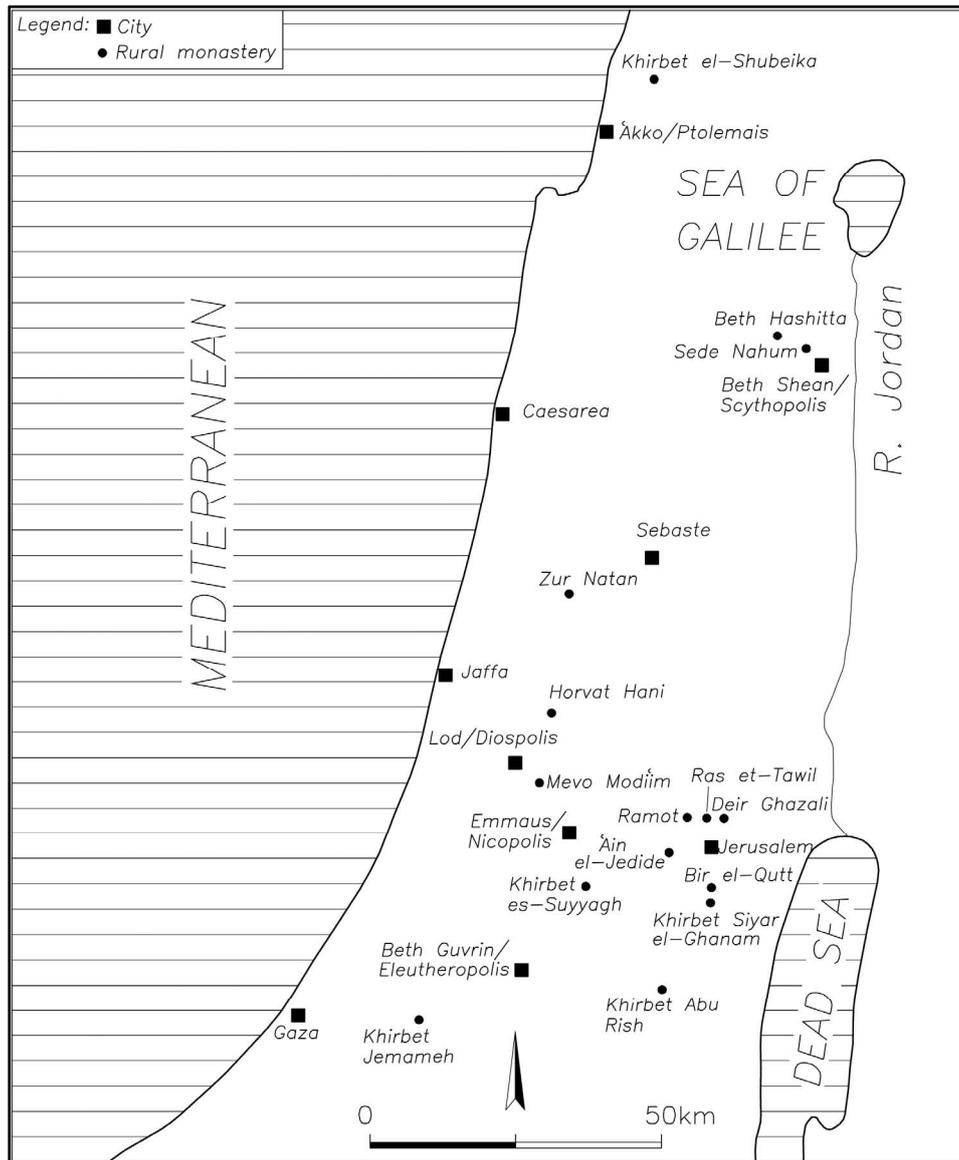


Figure 33. Central and Northern Palestine

13.3.1. Type 1

This group is comprised of monasteries that apparently ceased to exist at the very beginning of the Early Islamic period, probably around the mid-seventh century. For example, *Khirbet Jemameh* is located in the northwestern Negev, 20km east of Gaza (Gophna and Feig 1993; Hirschfeld 2004, 78-80). Based on the ceramic evidence, the excavators dated the monastery's abandonment to the early days of the Muslim conquest (AD 634) (Gophna and Feig 1993, 106-7, Fig.15), despite the fact that the latest pottery types found there continued until the late seventh-early eighth century.

13.3.2. Type 2

Monasteries that ceased to exist during the Umayyad period, between the mid-/late seventh and early eighth centuries fall under this category. Some of these

monasteries were re-occupied by a non-monastic and probably non-Christian population for domestic uses between the eighth and tenth centuries (Schick 1995, 129-31).

An example of this type is *Beth Hashitta* located in the Beth Shean Valley, 7km northwest of the city of Beth Shean/ Scythopolis (Aharoni 1954). Based on the pottery, glass sherds, the epigraphy and the style of the Greek mosaic inscriptions found in the monastery's chapel, the excavator dated it to the fifth and sixth centuries (Aharoni 1954, 215). Recently, Sussman (2004, 365) re-dated the chapel's mosaic (and the foundation of the monastery itself) to the sixth or seventh century, and its abandonment (based on unpublished Umayyad oil lamps found in the building) to the Umayyad period, not later than the mid-eighth century.

Another example is at *Zur Natan*, located in the western flanks of the Samaria Hills, 16km southwest of the city of Sebaste. Founded in the late fifth or sixth century over the remains of an earlier Samaritan village (Matthews et al. 1990; Neidinger et al. 1994; Ayalon 2002), according to the excavators, the monastery continued to exist until the late seventh century, and was reoccupied afterwards by Samaritans or Muslims, who built domestic and/or quasi-military structures within its confines. The end of this phase, based on the latest pottery sherds and coins, was dated to the mid-eighth century (Neidinger et al. 1994, 8-13; Ayalon 2002, 282-4), though some of the published pottery types (e.g. Matthews et al. 1990, Fig. 18) point to a date in the early ninth century.

A third example of this type is *Khirbet es-Suyyagh*, situated amongst the Judean Shephelah (foothills), 10km south of the city of Emmaus/Nicopolis (Taxel 2009). Based on the ceramic evidence, the monastery's foundation probably occurred in the second half of the sixth century. Severely damaged by an earthquake sometime around the mid-seventh century, it was partially repaired, though the building standards were low. It seems that it was abandoned around the late seventh or early eighth century. Re-occupied during the eighth century by a non-Christian population, the various units (including the church) featured as domestic spaces (Plate 11). Based on the ceramic and numismatic evidence, this phase continued until the ninth or tenth century (Taxel 2009, 71-83).

In contrast, the following three monasteries seem to have existed at least until the end of the Byzantine period; however, their fate during the Early Islamic period is unclear, whether due to abandonment or conversion into non-Christian domestic complexes. Thus, theoretically, places them in the Type 2 category. The first, *Sede Nahum* in the Beth Shean Valley is 3km northwest of the city of Beth Shean/ Scythopolis (Tsori 1962, 183-4). According to the excavator, the monastery existed during the fifth and sixth centuries (Tsori 1962), though the basis for this dating is unclear, nor were any dateable finds from the site published. However, according to Schick (1995, 450), the figurative mosaic floor unearthed in the monastery (Tsori 1962, 183) indicates that it was abandoned prior to the period of iconoclastic alterations in the eighth century. Based on the current data, we can tentatively date the abandonment of this monastery to the mid-seventh to early eighth centuries.

Deir Ghazali is situated in the Judean Hills, 4km northeast of the Old City of Jerusalem (Avner 2000). The foundation of the monastery appears to be somewhere between the mid-fifth to early sixth century. Based on the ceramic and numismatic evidence, the building continued to be occupied until the ninth or tenth century, although during its later occupation phase(s) it was no longer used as a monastery—rooms and corridors were re-divided, doorways blocked, and the oil and wine presses were abandoned (Avner 2000, 35*-50*) (Plate 12). The excavator could not accurately determine the exact time when the monastery ceased to function, and dated the

change to the period between the sixth and the ninth centuries (Avner 2000, 50*). However, a date within the Byzantine period (until *c.* the mid-seventh century) seems less likely to identify with such a change. Rather, I believe, this change should date to sometime between the mid-seventh and the eighth century, based upon the dating of analogous sites.

Mevo Modi'im is located in the Judean Shephelah, 9km east of the city of Lod/Diospolis (Eisenberg and Ovadia 1998). Based on few Byzantine pottery sherds and on the epigraphy of two Greek inscriptions on marble slabs found in the monastery, the excavators dated the monastery's foundation to the fifth or sixth century, and its abandonment to the end of the Byzantine period. It was re-occupied by a non-Christian population, who converted the refectory and the chapel's narthex into domestic spaces and the chapel's hall into an oil press, reusing some of the original Byzantine oil press (Plate 13). The majority of the pottery was found in this building phase (eighth-tenth centuries) (Eisenberg and Ovadia 1998, 10*-18*, Figs 14-16, 18-19). The excavators, however, did not provide a basis for dating the monastery's abandonment, and therefore, we cannot rule out the possibility that the abandonment occurred only in the late seventh or early eighth century.

13.3.3. Type 3

Type 3 includes monasteries that ceased to exist only at the end of the Umayyad period (mid-eighth century) or at the beginning of the 'Abbasid period (late eighth to ninth century). Some of these monasteries also had a later, post-monastic phase dated from the eighth to tenth centuries.

Khirbet el-Shubeika is located in the western Upper Galilee region, 11km northeast of the city of 'Akko/Ptolemais. The excavators identified the site as a village which was founded in the sixth century (based on the ceramic evidence), abandoned in the late seventh century and re-founded shortly afterwards as a monastery. During this phase, the monastery's church was paved with a new mosaic floor, which includes a Greek inscription dated to AD 785. The inscription mentions an abbot, which led the excavators to conclude that the settlement became a monastery only during the eighth century. The monastery was finally abandoned in the tenth century (Avshalom-Gorni et al. 2002, 345-6; Syon 2003; Tzaferis 2003). Aviam (2002; 2004, 192), on the other hand, believes that *Khirbet el-Shubeika* was a monastery from the start, and that it existed continuously from the sixth century until the Early Islamic period. Both the suggestions concerning the site's nature and history are hard to prove, though in either case this is a clear example of a monastery that continued to function well into the Early Islamic period.

Ramot is in the Judean Hills, 6km northwest of the Old City of Jerusalem. The northeastern corner of the



Plate 11. Khirbet es-Suyyagh: late divider wall with reused doorjambs blocking the monastery's main gate



Plate 12. DeirGhazali: late divider wall with a reused oil press crushing stone
(after Avner 2000, Fig. 15; courtesy of the Israel Antiquities Authority)

building included two rooms, and was partially preserved and excavated (Aravet al. 1990). The western room included a stone-built installation sunken into the floor, where excavators found a storage jar of Early Islamic

date (eighth-ninth centuries). The eastern room was paved with a mosaic floor, which covered an earlier wall that seems to belong to the original construction phase of the building. Some Byzantine pottery sherds and a



Plate 13. MevoModi'im: late oil press installations built over the chapel's mosaic floor
(after Eisenbeg and Ovadiah 1998, Figure 4; courtesy of the Israel Antiquities Authority)

fourth-century coin found in the building can also be attributed to this phase. At the centre of the floor was a Greek dedication inscription, dated to AD 762 (Arav et al. 1990, 315-19; Kloner 2003, *95) (see Plate 14). This inscription is the clearest evidence for the continuation of the monastery's existence at least until the second half of the eighth century. It appears that no post-monastic phase in the monastery existed.

Horvat Hani is on the western fringes of the Samaria Hills, 8km northeast of the city of Lod/Diospolis (Dahari and Zelinger 2008). The monastery's foundation dates to the fifth century. At the beginning of its latest occupation phase, some iconoclastic alterations to the figurative motifs in its mosaics are observable (Plate 15). These alterations are attributed to the edict of the Umayyad caliph Yazid II from AD 721. The destroyed parts of the mosaics show repair work with crude *tesserae* or plaster. According to the excavator, the monastery was abandoned early in the ninth century, and was used during the following centuries as a source for building materials and as a Muslim cemetery (Dahari and Zelinger 2008).

The following five monasteries also reflect an occupation phase during the eighth to ninth centuries. However, the nature of the relevant remains and/or finds is not clear enough to determine whether during this time these sites continued to function as monasteries or were occupied by a non-Christian population. Thus, these monasteries may actually belong to Type 3.

Ras et-Tawil is located in the Judean Hills, 5km north of the Old City of Jerusalem (Gibson 1986). The monastery's foundation dates to the late fifth or early sixth century. It continued to be occupied until the 'Abbasid period, as indicated by some structural alternations (such as floor raising or repairs) and a hoard of bronze coins, the latest of which are dated to the third quarter of the eighth century. According to the excavator, the site shows signs of abandonment dating from the late eighth century (Gibson 1986, 72-3), but he did not provide any details about the possible nature of the site during its last phase (see also Schick 1995, 440).

'Ain el-Jedide is located in the Judean Hills, 7km west of the Old City of Jerusalem. The monastery was already functioning in the Late Byzantine period (sixth or seventh century), as indicated by the style and epigraphy of the Greek mosaic inscription found before the chapel doorway (Hamilton 1935, 112). Pottery vessels of the seventh and eighth centuries and an Umayyad coin of the first half of the eighth century found in the building (Hamilton 1935, 115, 117, Figs 1-2, Plts 65, 2, 67-68). These finds point to *'Ain el-Jedide's* continuous occupation at least until the late Umayyad period, though the nature of this phase cannot be determined based on these finds alone (see also Schick 1995, 290).

Khirbet Siyar el-Ghanam is amongst the Judean Hills, 7km south of the Old City of Jerusalem (Corbo 1955, 19-55). Based on the ceramic evidence, the monastery's foundation dates to the late fourth or fifth century, and it flourished mainly between the sixth and eighth centuries, before it was abandoned, according to



Plate 14. Ramot: Greek inscription dated to AD 762
(after Arav et al. 1990, Photo 5; courtesy of the Israel Antiquities Authority)



Plate 15. Horvat Hani: mosaic floor with iconoclastic alterations
(after Dahari and Zelinger 2008, 1765; courtesy of the Israel Antiquities Authority)

the excavator, at the very beginning of the ninth century (Corbo 1955, 56-88). The latest pottery, glass and stone vessels and coins (Corbo 1955, Figs 15-25, Plts 21-27) do indeed point to an occupation phase during the eighth century (though probably not in the ninth), but again they cannot help to determine the nature of this phase. A later, apparently Muslim, grave dug in one of the monastery's rooms (Corbo 1955, 41-2) indicates a later use of the building some time after its abandonment.

Bir el-Qutt is in the Judean Hills, 6km south of the Old City of Jerusalem (Corbo 1955, 113-29). Based on the style, epigraphy and content of the Georgian mosaic inscriptions found in the monastery, *Bir el-Qutt*'s foundation date is likely to have been during the second half of the sixth century (Corbo 1955, 130; Tarchnišvili 1955). The latest pottery, glass and stone vessels found in the site indicate that it continued to exist until the late eighth or ninth century (Corbo 1955, Figs 40-41), though the nature of this phase based on these finds only is again moot.

Khirbet Abu Rish is in the Judean Hills 25km southeast of the city of Beth Guvrin/Eleutheropolis (Magen and Baruch 1997). Based on the ceramic evidence, the excavators dated the monastery's foundation to the early sixth century, and its abandonment to the seventh century (Magen and Baruch 1997, 141, Figs 9-10). Most of the published pottery types from the site point, however, to a continuation of the site's occupation until the eighth century, though not to its nature at that time.

13.4. CONCLUSIONS

Three major conclusions emerge, based on the data presented above. First, distinguishing between the different types of isolated rural monasteries in the Early Islamic period is difficult. This difficulty emerges in both the stratigraphy of these sites, which is not always clear, and in dating the material culture related to their latest phase. There was continuity of material culture employed during both the Byzantine-Umayyad transition and the Umayyad-'Abbasid transition, including pottery, glass, and coinage (see Walmsley 2000, 2007; Magness 2003).

Second, there is no clear evidence of abandonment of isolated (Type 1) rural monasteries in the very beginning of the Early Islamic period (see Schick 1995, 83-4, 96-100).

Third, the majority of isolated rural monasteries continued to exist until the late seventh/early eighth century, and sometimes into the eighth or ninth century (Types 2 and 3). We assume that the main reasons that led to the abandonment of Type 2 monasteries were economic, and less socio-political, since these monasteries did not face official political or religious Islamic pressure until the early eighth century. Type 3 monasteries, on the other hand, reflect both adaptation to the new religious edicts (e.g. iconoclasm of figurative mosaics) and continual building activity (e.g. the

construction of new mosaic floors in churches). These acts can be partially explained by Resilience Theory, suggested by Walmsley (2007, 146-7) as a way of interpreting social, economic, and cultural changes in Early Islamic Palestine. Nevertheless, a combination of political pressure and the deterioration of economic conditions finally brought about their abandonment, usually during the ninth century (cf. Schick 1995, 96-100, 123-9). Among the many Palestinian monasteries founded in the Byzantine period, only few urban and desert monasteries continued into the medieval period, and even fewer continue to exist through to the present (e.g. Hirschfeld 1992, 17).

These conclusions fit the picture seen in most rural settlements in Palestine after the Muslim conquest (Taxel 2005). The majority of the non-Muslim settlements underwent a significant change, either through abandonment, by undergoing major changes in the number of inhabitants, and/or religious identity. The isolated rural monasteries, as small, homogeneous communities of a clear religious nature, ceased to exist as such between the mid- to late seventh and ninth centuries, though some were re-occupied by a non-Christian civic population. The abandonment of monasteries was much more complete and easy to identify archaeologically than the usually partial abandonment of villages.

The case of fully abandoned rural monasteries in the beginning of the Early Islamic period does not seem directly connected to the process of Islamisation. These sites, if re-inhabited, were occupied by an already Muslim population, which could have been either immigrants who arrived to Palestine from eastern regions (i.e. the Arabian Peninsula, Persia or Syria), or nomads who were under a process of sedentarisation (Ellenblum 1998; Safrai and Sion 2007). As noted by Ellenblum, it is difficult to identify the kind of population that re-inhabited deserted sites (1998, 263), and the monasteries are not exceptional from this point of view.

Despite its difficulties, the study of the archaeological evidence of Palestinian rural monasteries in the transition from Byzantine to Muslim rule illuminates social and cultural aspects of a once-prosperous Christian sector, which became a diminished community fighting for its survival.

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Chapter 14 Mapping the Movement of Ideas: Cult and Army in Roman North Africa

Matthew M. McCarty

ABSTRACT

While much work on mobility focuses on evidence for the movement of people and goods in patterns of migration and exchange, archaeological remains can also provide evidence for an ever more elusive—but equally mobile—asset: knowledge. This paper seeks to explore the movement of one specific type of information—cultic knowledge and its expression in particular forms of ritual. Focusing on one particular region—the area north of the Aurès Mountains, in modern Algeria—and one particular cult—that of Saturn in the Roman Imperial period—will provide a case study of one means by which ideas were spread. Arguing against the prevailing conception of the cult as monolithic and pan-African, the paper will demonstrate how the movement of the Third Augustan Legion into the region encouraged the dissemination of the cult, and probe the relationships between ideas, archaeological evidence, and cultural change.

Keywords: religion, Romanisation, cultural change, Saturn, army

14.1. INTRODUCTION

The Roman empire was, in many respects, a closely-linked network of micro-regions where hegemony and technological prowess encouraged the short- and long-distance movement of people, objects, and, most elusively, ideas (cf. Horden and Purcell 2000; on movement in Roman Africa: Lassère 1977; Rebuffat 2004). The cumulative effects of these movements within the social and cultural spheres have often been neatly called ‘Romanisation,’ and although this term has frequently been challenged, especially in a postmodern, politically-correct era (e.g. Webster 1996; Mattingly and Alcock 1997; Woolf 1997; Mattingly 2004, 5-9; Wallace-Hadrill 2008, 9-14), the core model and assumptions underlying it have generally only been tweaked. In their current formulation, such models often see the nature of this change expressed in one of several ways: most recently, as ‘bilingual’ (Wallace-Hadrill 2008); as a ‘hybrid’ combination (e.g. Webster 2001); or, perhaps most commonly, as a ‘Romanised’ veneer grafted on top of local/indigenous cultural substructures and social hierarchies (e.g. Millett 1990; Woolf 1998, 239-41; Cadotte 2007, 385). Such a conclusion is not surprising, given that these studies are often based on the exchanges and appropriations of either material goods—objects such as *terra sigillata* bowls produced in Italy—or formal patterns, both of which can be adapted to different social structures and use contexts (e.g. Millett 1990, 123-4; Woolf 1998, 185-93; Mattingly 2003; for formal schemata in African sculpture as Romanisation: Kraus 1984; Baratte 1997). Yet mobile individuals and groups could also spread ideas and knowledge, assets which had the potential to transform worldviews and *façons de penser* in a deeper, more lasting manner; indeed, the rise of Christianity and its rapid spread may be the most notable example of this (cf. Rives 2005). Because archaeological evidence remains the most widespread and durable data set for tracking any sort of mobility in the ancient world, and because of the way the discipline often shies away from the realm of thought and belief (cf. Insoll 2004), the particular manner in which Roman

hegemony led to the diffusion of ideas has yet to be fully explored.

Perhaps the best evidence for the spread of information can be found in material connected to cults. Particular modalities of ritual action, executed according to religious knowledge (or at least imagination of such knowledge), result in particular site formations which can then be studied. At the same time, many forms of ancient religion were closely connected with commemorative practices and monuments which also survive. While the correspondence between thought and action remains far from clear (on this problem in ritual, see Bell 1992; Rüpke 2004, with challenge by McCarty 2011), the spread of particular rites, the remains they leave, and the evidence this offers for particular ideas about a deity or pantheon allows the possibility of tracing how information could be circulated. Of course, establishing the movement of a cult may not necessarily imply the travel of entirely new categories of thought or worldviews, particularly within the fairly loose polytheistic system that characterised much of the Roman world (Beard et al. 1998, 212; Rüpke 2007, 16-7), but it does at least provide evidence of the existence of networks whereby information could be exchanged (cf. Collar 2007). The full effects of contacts, networks, and cultic diffusion on thought patterns is an area much in need of further study; for now, the establishment of such links and their relationship to Roman imperialism shall suffice as a prolegomena to these larger problems.

One region, and one cult, will serve as a case study of the movement of religious ideas: the area north of the Aurès Mountains in the Roman provinces of Africa Proconsularis/Numidia, in modern Algeria (Figure 1), and the cult of Saturn.

Given the embedded nature of ancient religion within particular social patterns, a brief historical survey of the region is necessary. The area was one that, prior to its incorporation within the Roman Empire, was inhabited largely by semi-nomadic pastoralists; there seems to have

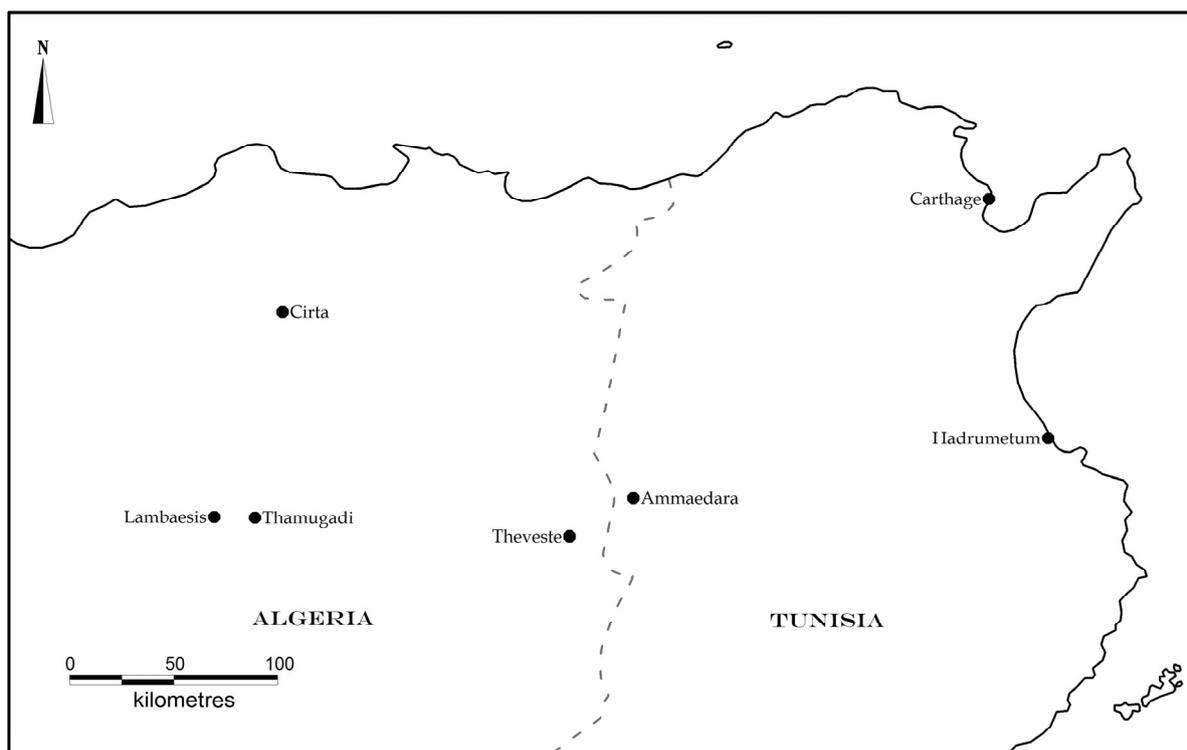


Figure 34. Archaeological sites in Northern Algeria and Tunisia

been little or no urbanisation in this area (Morizot 1997, 258-75). Comparison with the survey in the Kasserine region, further to the east, likewise found no evidence for pre-imperial nucleated settlements (Hitchner 1988, 39; Hitchner 1990, 246-7). Prior to falling under Roman hegemony, the tribes in the Aurès were responsible for paying tribute to the kings of Numidia, probably both in agricultural produce and manpower (Brett and Fentress 1996, 32). Although technically incorporated as part of a Roman province in 46 BC, the region received little official attention at first. Following a series of uprisings, however, a legion of the Roman army—the *III Legio Augusta*—was gradually moved into the area (see map, Figure 34). From some time before 14 BC, this unit had been garrisoned at Ammaedara (Le Bohec 1989, 341-2; Mackensen 1997); in AD 75, the legionary headquarters was transferred west to Theveste (Le Bohec 1989, 360-2). Six years later, a detachment of the legion was sent further southwest to Lambaesis, in the heart of the region under consideration. The construction of a permanent camp with stone walls here is recorded by an inscription (*Année Épigraphique* 1954, 137). A civilian settlement, populated largely by veterans of the Roman army who had completed their service, sprang up next to the camp (Gsell 1911, fe. 27.20; Janon 1973; Gros Lambert 2003). In the meantime, several colonies were founded in the northern Aurès, creating new, urbanised settlement patterns; Thamugadi was founded in AD 100, and an inscription reveals that the work was done ‘by the *III Legio Augusta*’ (*CIL* VIII, 2352, 17842)¹, while other settlements, such as *Diana Veteranorum*—‘*Diana of the Veterans*’—are attested at around the same time (Gsell 1911, fe. 27.62). The full legion was transferred to a

second, newly built camp at Lambaesis prior to AD 128 (Le Bohec 1989, 407), and outposts set up through the mountains and at strategic passes, such as that of El-Kantara, which allowed access to and from the Sahara. The impact of the army on settlement patterns and the economy of the region has been much-studied (eg, Fentress 1979; Janon 1982; Fentress 1983; Shaw 1983; Morizot 1991), often with conflicting conclusions; its impact on religion in the area less so.

The cult of Saturn has often been cast as a pan-African religion in the Roman imperial period, shared by the inhabitants of the Maghrib from Proconsularis to Mauretania (e.g. Le Glay 1966b, 484-7). This, however, was not the case; instead of being part of the tacitly assumed monolithic pre-Roman culture of Africa, the religious knowledge involved in the cult—both of the god and of his rites—needed to be actively spread.

14.2. THE CULT OF BA’AL HAMMON/SATURN

The worship of Saturn developed out of the pre-Roman cult to the deity Ba’al Hammon (Le Glay 1966b, 414-416; Ben Abid Sadallah 2003, 110), brought to Africa by Phoenician colonists who settled along the littoral from at least the ninth century BC. The cult was characterised by a particular form of sacrifice, generally only offered to Ba’al and his consort Tanit, although other gods are very rarely attested as receiving it within sanctuaries to Ba’al Hammon (e.g. Ba’al Reshef and Ba’al Shamin at Hadrumetum: Cintas 1947, 34). This sacrifice—probably the *mlk* and *mlk mr* attested epigraphically

(Eissfeldt 1935; Février 1953; Berthier and Charlier 1955, 29-31; Mosca 1975, 56-61)—involved the incineration of an infant and/or a small animal such as a lamb, the collection of the ashes from the pyre, and the burial of these sacrificial remains in an urn within an open-air sanctuary, referred to by convention as a *tophet* (cf. Bénichou-Safar 1988). Often, a stone stele was erected over the votive deposit to mark it and to commemorate the offering and/or the deity's response. In the first and second centuries AD, at sites dedicated to Ba'al Hammon where this offering practice continued, the name of the god was generally translated to the Latin Saturn, as is clear at Thinissut (Merlin 1910, 18-9; cf. Berthier and Charlier 1955, no. 1LAT). In the Imperial period as well, this form of sacrifice and the subsequent erection of stelae remained particular to the cult of Saturn.

Prior to the destruction of Carthage by Roman forces in 146 BC, *tophets* are attested at a very limited number of sites in Africa: those which were Phoenicio-Punic ports, such as Carthage (Bénichou-Safar 2004), Utica (Cintas 1951, 77-79), and Hadrumetum (Cintas 1947), or those interior urban agglomerations where Punic culture was in vogue, such as the Numidian capital at Cirta (Berthier and Charlier 1955) (Figure 35). After Carthage was destroyed, there appears to have been a boom in the number of *tophets* throughout the interior of the region in the late second and first centuries BC (Figure 36). The exact mechanisms for this cultic diffusion have yet to be explored in depth, but may be due to a combination of factors, including a diaspora of people from Carthage following its destruction and the need to re-establish (or create) religious identities in the altered social and political terrain of the region following the destruction of the metropolis (cf. Quinn 2011).

Although the cult spread through the hinterlands of Cap Bon, through the Sahel, into the mountains of the Tunisian Tell, and the northern Numidian territories, one region where it remained conspicuously absent was the area just north of the Aurès. In the surveys conducted for the *Atlas archéologique de l'Algérie* in the early twentieth century, neither pre-imperial stelae nor neo-Punic inscriptions were discovered there; given the amount of attention paid to this area in particular—largely due to the French army explorers' own interest in Roman militarised zones (Mattingly 1996, 54)—it would be surprising if a *tophet* escaped notice.² Yet by the end of the second century AD, at least 10 sites had open-air sanctuaries in which votive stelae were erected (Figure 38): Lambaesis (Le Glay 1966a, 80-113), Lambafundi (Le Glay 1966a, 114-124), Thamugadi (Le Glay 1966a, 125-161), Mascula (Le Glay 1966a, 163-177), Verecunda (Gsell 1911, fe. 27.10), Diana Veteranorum (Le Glay 1966a, 76-8), Calceus Herculis (Le Glay 1966a, 184-198), Lamiggiga (Domergue 1892), and two sites whose ancient names remain unknown, Ksar el Haïmeur (Gsell 1911, fe. 28.69) and Henchir Sidi Yahia (Gsell 1911, fe. 28.240). The sole traces of the burnt votive deposits often connected with the stelae come from Thamugadi and

Lambafundi (Le Glay 1966a, 114-5, 129), the only sanctuaries which have been excavated; nevertheless, the erection of stelae remained a visible aspect of the ritual particular to the cult, and was continued on other sites as a way of honouring Saturn even when the associated deposits ceased (e.g. at first century AD Hadrumetum: Cintas 1947, 80; McCarty 2011). The dating of stelae—and by extension the evidence they provide for cult of Saturn—is highly problematic (cf. Le Glay 1966b, 14-53; McCarty 2010), and in the case of the stelae in question, is dependent largely on two factors: the technical aspects of their carving and the dress of the figures represented on them.

All of the known stelae from the region, including Plate 17, are modelled in high relief. Such depth of carving was extremely rare on stelae in the entire swath of Africa where the votives were cut prior to the second century AD; earlier stelae generally either had their decoration engraved or cut as very shallow, flat relief (M'Charek 1995, 252). The technique on votives then has a general *terminus post quem* of the late first century AD. Although regional variation, and not chronology, could account for the high relief found in the northern Aurès, a second criterion, the dress of the figures on the stelae, also suggests a second century date. Almost all of the catalogued stelae from these sites depict figures either at an altar or holding up offerings such as bunches of grapes. The majority, showing male sacrificants, represent them wearing togas, the garment reserved for Roman citizens. Changes in the shape of the toga are well-documented chronologically; by the reign of Trajan (AD 98-117), the toga had acquired a slightly shorter, ankle length, and a sweeping loop of cloth (the *sinus*) that dropped well below the right knee. In addition, the arc of drapery across the chest (*umbo*) developed a more pronounced triangular shape (Goette 1990; Stone 1994). Although the style of toga favoured in the first century AD could continue to be worn, it does not appear on the stelae from the northern Aurès (Fig. 5), which must therefore date after the new style of toga came into fashion: that is, later than the beginning of the second century. The practice of erecting stelae within the cult to Saturn, then, is not attested in the region prior to the second century, meaning that either knowledge of the deity and his rites had not been spread there, or that it did not find a receptive audience.

14.3. SATURN AND THE LEGIONARIES

When the cult and its rituals did enter the region in the second-century AD boom of sanctuaries, there was a close correlation with the spread of the military in the region. Not only do the sites at which this modality of ritual practice is attested closely match military installations and settlements connected with the army, but the representations of sacrificants on the stelae also bespeak a close connection between the cult and the legion.

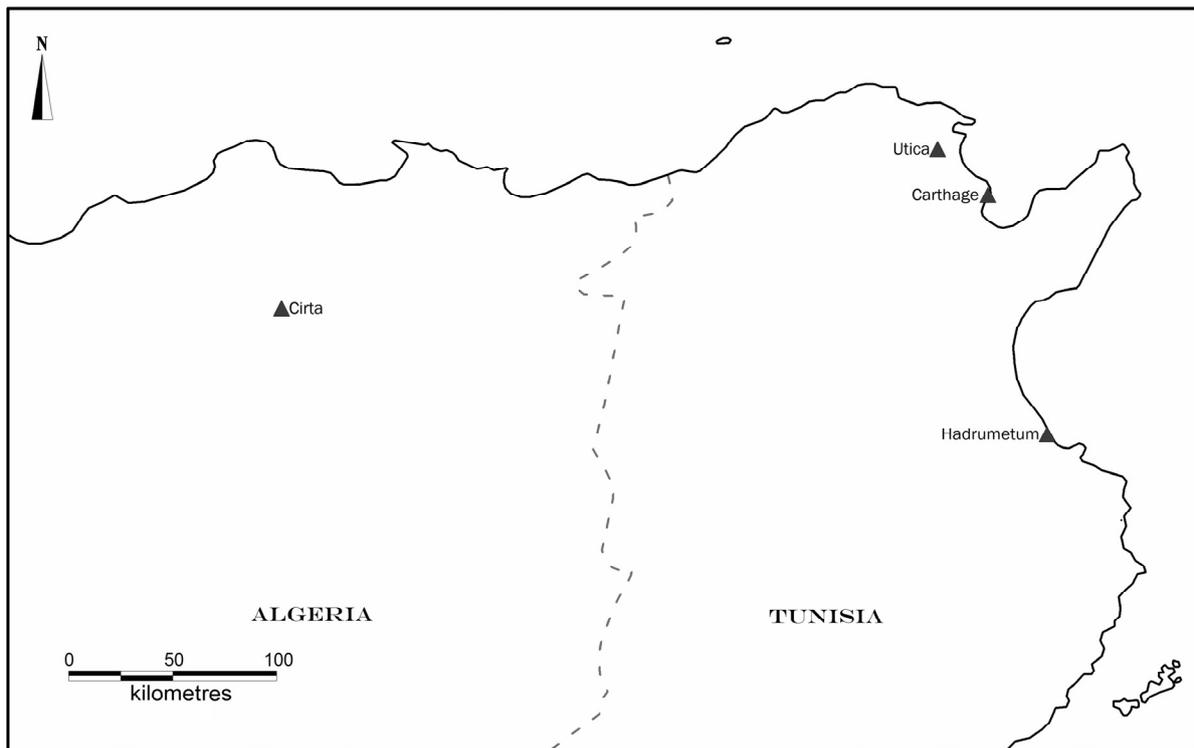


Figure 35. Locations of pre-146 BC tophets

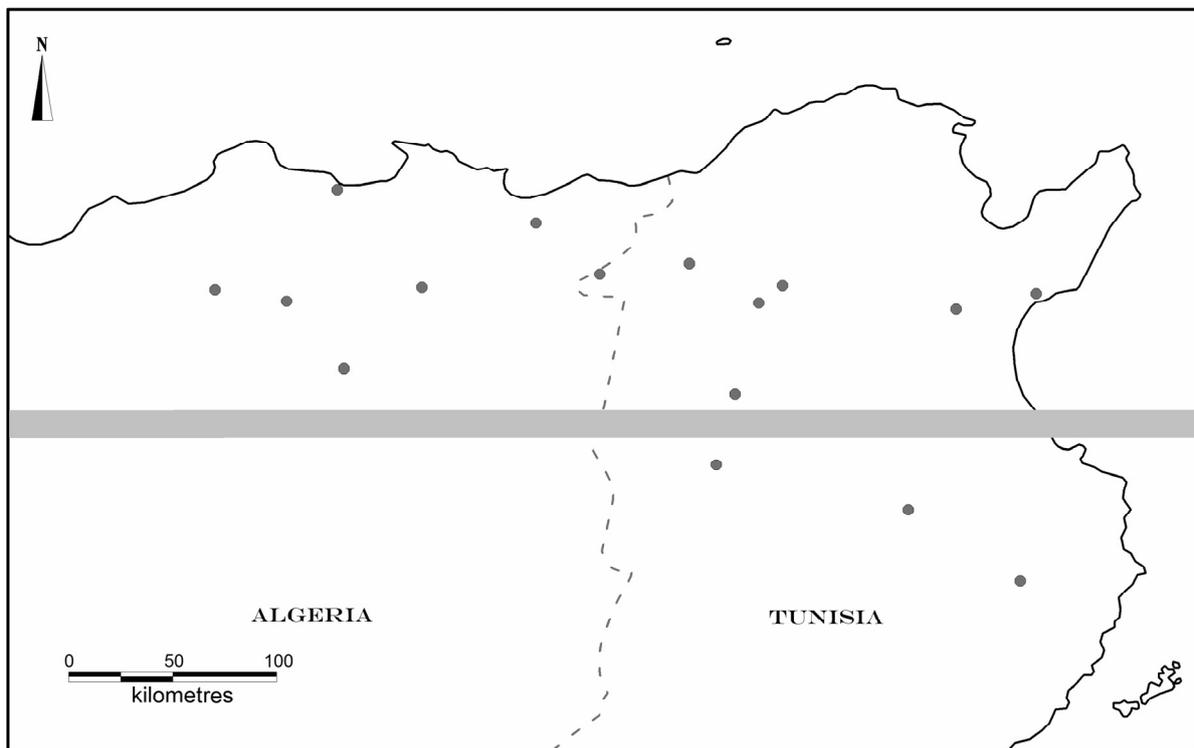


Figure 36. Locations of tophets probably established prior to AD 50

Of the sites on which stelae are found, three were legionary installations. At Lambaesis, the headquarters of the *III Legio Augusta*, the greatest concentration of stelae was found south of the camp used by the detachment sent there in AD 81 (Gsell 1911, fe. 27.20). Although a new

camp 2km to the northwest was established when the whole legion moved to Lambaesis, the camp of AD 81 continued to be used, probably in a military capacity (Janon 1973), while the area around it boasted a thriving civilian settlement—mostly of veterans—full of temples

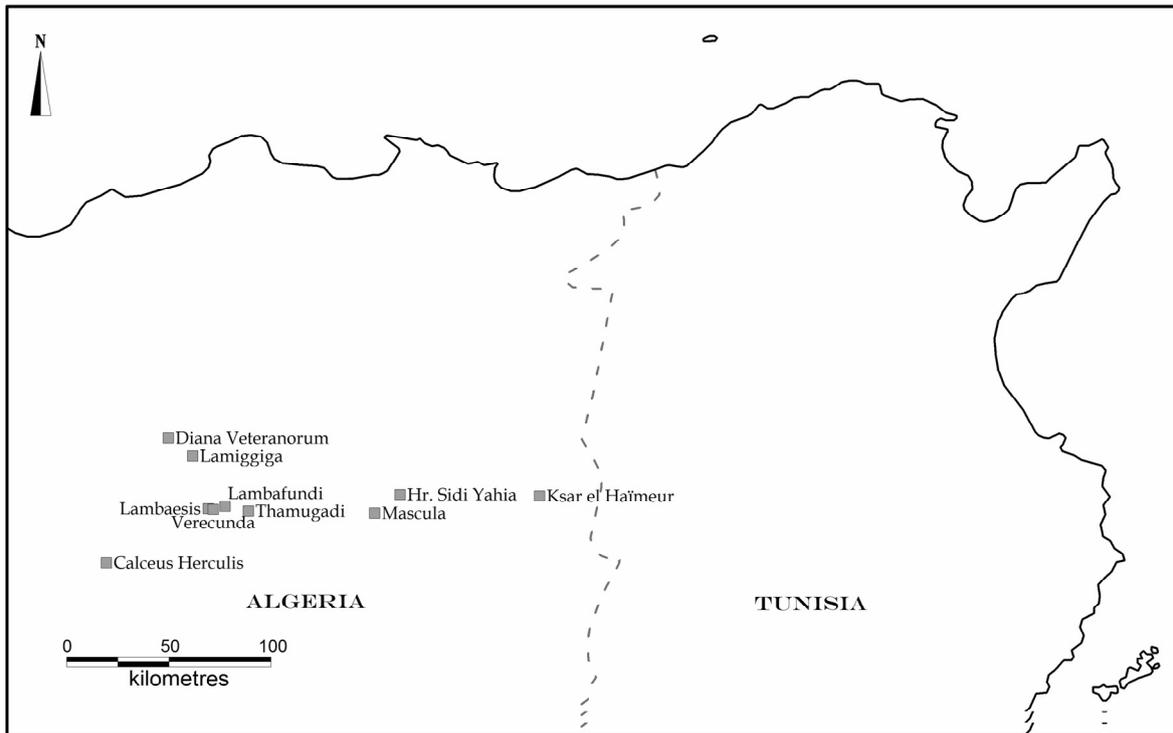


Figure 37. Stelae find spots and presumed tophets in northern Aurès region



Plate 16. Stele to Saturn with togate male offrand from Thamugadi (Timgad). 2nd century AD, limestone
Timgad, Musée Archéologique. Photo: author

which were also frequented by soldiers (e.g. *CIL* VIII, 18089). Another temple to Saturn, mentioned by an inscription which dates its construction to between AD 211 and 217, may have stood further to the northwest (*CIL* VIII, 2670). Mascula, the site where another series of 29 stelae were found, was used as an outpost for at least two cohorts of soldiers, possibly from as early as the late first century, but certainly by the second (Le Bohec 1989, 424). Calceus Herculis, occupying the strategic position at the pass to the Sahara, probably housed a detachment of the legion from AD 158, when either the legion or its legate made a dedication there (*CIL* VIII, 2501; Le Bohec 1989, 425).

Another four of the sites with stelae were settled heavily by army veterans, and maintained close social and economic ties to the legion. Thamugadi was founded by the legion, and although it had a large civilian population, veterans are attested there from its beginning and the city maintained close ties to Lambaesis, with almost all of the patrons of the city being legates of the legion (Fentress 1979, 132). Verecunda, situated only a few kilometres east of Lambaesis, also housed numerous veterans (e.g. *CIL* VIII, 4197, 4238-4248; Gsell 1911, fe. 27.240). Apart from its name, epigraphic evidence indicates that Diana Veteranorum was a settlement of veterans (Gsell 1911, fe. 27.62). Finally, in his survey Domergue reported numerous epitaphs of veterans around Lamiggiga, which led him to postulate a veteran colony (Domergue 1892, 126); at the same time, bricks stamped with the name of the *III Legio Augusta* found in the remains of the settlement attest, if not direct military involvement, at least economic links to the legion (Domergue 1892, 119).

Almost nothing is known of the final three sites. Lambafundi sits directly between Lambaesis and Thamugadi, well within the legion's sphere of influence. Of the other two sites, Henchir Sidi Yahia and Ksar el Haïmeur, the former has produced no other ancient remains other than the stelae, while the latter was the site of a Byzantine fort, possibly replacing an earlier military outpost, as was the case at other sites (cf. Pringle 1981, 98).

There is thus a strong, though not perfect, geographic and temporal correspondence between the sites on which stelae have been located and Roman military installations in the region. This correlation, however, does not prove causation: the army was not necessarily responsible for the transfer of cultic knowledge to the region. It is possible that such a communal cult instead depended upon the kind of urbanised settlement patterns which sprang up in the Aurès in the second century AD, perhaps—though not certainly—as a side effect of the Roman military presence (Fentress 1979; Fentress 1983; Shaw 1983; Morizot 1991; Mattingly and Hitchner 1995, 206). Nevertheless, another feature of the stelae strengthens the association between soldiers and the cult: the dress of the figures.

As already noted, the majority of the figures on the stelae wear togas, which indicate either Roman citizenship, or,

at the very least, aspirations of citizenship. Table 15 tabulates the number and percentages of togate figures at each of the five sites where the stelae have been catalogued. Many stelae show post-antique damage, making the dress and/or gender of figures difficult to identify in some cases; others are missing the portion depicting the sacrificant, while sites such as Thamugadi and Lambaesis have a high proportion of stelae that depict female dedicants, excluding them from a count of toga-wearing citizens. With the exception of Lambafundi, all of the sites show well over 60% of the male offrands in togas. For comparison, another site which provided a series of nearly 40 stelae of the imperial period, Tiddis (Berthier and Le Glay 1958), in the more heavily urbanised north near the Numidian capital of Cirta, has only 10% of the dedicants figured wearing togas; the rest wear tunics or long robes. The proportion of togate figures at the military sites around the Aurès, then, is significantly higher than elsewhere. While the choice of dress for dedicants on the stelae was part of a constructed self-representation that responded to local concerns, and is not simply uncomplicated evidence for citizenship, it nevertheless seems probable that this number of *togati* found in the Aurès does represent a higher percentage of citizen-dedicants in the area than elsewhere. Since the settlement of Lambaesis did not receive a grant of colonial status from the emperor, which would have made male inhabitants Roman citizens, until sometime after AD 197 (Gascou 1972, 194-5), and the togate figures do not wear the *toga contabulata* that would have been standard after the *Constitutio Antoniniana* of AD 212 made all free males in the empire full citizens, the stelae dedicants were probably citizens who had moved into this area. Since citizen-colonies unrelated to the military do not seem to have been implanted in the region, or groups of citizen-settlers moved in large numbers, the presence of legionaries—who were required to be Roman citizens—provides the most plausible explanation for this. Such a view receives further support from the representation on a stele from Lambaesis of a figure wearing a cuirass, the armour of a legionary (Le Glay 1966a, 108, no. 95).

Such images demonstrate the probable participation of legionaries in the cult of Saturn in the northern Aurès, despite the fact that the cult has often been seen as a non-military, peasant cult (e.g. Le Glay 1966b, 402-5; Shaw 1983, 149; Le Bohec 1989, 568). Coupled with the correlation between the cult sites in the region and the military presence, this would strongly suggest that the Roman army and its movement into the area in the second century was responsible for the diffusion of the knowledge about the god and about the proper forms with which to worship him: sacrifice, the deposition of offerings, and the erection of stelae.

If military movement alone could account for the diffusion of the cult, however, comparable sets of stelae and evidence for military participation might be expected at the two legionary camps used prior to settlement at Lambaesis, Ammaedara (c. AD 14-75), and Theveste (AD 75- c.120). Such evidence, however, is lacking.

Table 15. Catalogued stelae from Northern Algeria and Tunisia showing *togati*

<i>Site</i>	<i>Total Stelae</i>	<i>Stelae with Males in Identifiable Dress (A)</i>	<i>Togati (B)</i>	<i>% A that are B</i>
Lambaesis	168	74	68	92
Lambafundi	15	10	3	33
Thamugadi	134	44	38	86
Calceus Herculis	40	23	15	65
Mascula	29	10	9	90

A small set of 18 stelae has been found at Ammaedara (Le Glay 1961, 329-31; Baratte and Benzina Ben Abdallah 2000, 64-72); of these, only four show *togati*, and all wear second-century togas and are thus datable to after the legion had decamped. Most of the evidence for the cult of Saturn at Theveste comes from a cache of statues, stelae, inscriptions, and other cult paraphernalia at Henchir Rohban, 700m northwest of the forum area, apparently formed in the fourth century AD (Pouille 1878, 455-7; Farges 1879; Farges 1884). One statuette of the god bears an inscription stating that Publius Vettius Saturninus, a veteran, dedicated it (Farges 1879, 229; Le Glay 1961, 336, no. 3). Yet the dating of the piece is uncertain, and it could easily belong to after the period in which the legion was in residence. More tellingly, a list of priests of the cult found nearby contains only two men who used the full *tria nomina* of Roman citizens (Gsell 1917, 329; Cagnat and Merlin 1923, 3018; Le Glay 1961, 344-5); the rest were apparently not of citizen status. Thus, even if soldiers or veterans could participate in the cult—and again, it is uncertain when Saturninus made his dedication—the leadership of the cult was certainly not in their hands; there was nowhere near the link between legionaries and Saturn found in the northern Aurès. The cult then does not appear to have been ‘picked up’ by the army while based at these sites and simply carried to its new quarters at Lambaesis (cf. Stoll 2001, 348)

Instead, this discrepancy suggests that the new recruitment practices of the second century may have been responsible for the spread of this religious knowledge. In the first century AD, only 16% of soldiers in the *III Legio* who recorded their place of origin in their epitaphs came from within Africa; the majority came from Italy and the Gauls. Under Hadrian (AD 117-138), however, this pattern of recruitment changed dramatically; over 58% of the soldiers recorded came from Africa, the majority from northern Proconsularis and the Sahel (Le Bohec 1989, 494-508), where the cult of Saturn was well-ensconced, and most of the others from settlements like Ammaedara, where, by the second century AD, there is evidence for the worship of Saturn. This change in recruitment patterns corresponds chronologically with the spread of the cult, and explains

why evidence for links between military personnel and Saturn are lacking during the period of the legion’s presence in Ammaedara and Theveste. Unfortunately, the lack of inscriptions on the stelae from the military sites prevents the direct confirmation that soldiers moving to the region from other parts of the province brought the cult of Saturn with them; nevertheless, the balance of evidence seems to point this way. If nothing else, the new recruitment patterns ensured the wide popularity of the cult and its physical manifestation on stelae in the region. The Roman army and its movement into the Aurès in the second century AD, coupled with contemporary changes in recruitment practice, brought about the dissemination of cult knowledge about a particular deity as well as about a particular rite seen as fitting for that god. Not only does this demonstrate that the cult was hardly static and ‘pan-African’, as it has often been cast, but also reflects the creation of a new network whereby ideas could travel within a single province. If the cult of Saturn, both in its scale and in the particular rites involved, is peculiar to North Africa, the creation of this measure of cultic homogeneity was more the result of Roman defensive programs than it was of there being a monolithic African culture.

14.4. DISCUSSION: CULT AND NETWORKS OF KNOWLEDGE

That religious knowledge moves with people is not surprising. Nor is it surprising that soldiers carried cults and gods that were familiar to them from their homes to their distant postings; this has long been recognised (e.g. Domaszewski 1895, 57-66; Birley 1978, 1518; Stoll 2001, 185), and is clearly attested in the Aurès in other ways: a legionary probably from Palmyra, a caravan city in the Roman East, stationed at Calceus Herculis made a dedication to a deity from his homeland, Malagbel (*CIL* VIII, 2497; *Année Épigraphique* 1980, 954). That the army encouraged the spread of religions is hardly a novel point; it has been proven that the long-distance and frequent movement of officers such as centurions helped to spread Mithraism, perhaps using their superior/trusted positions to encourage soldiers under them to take up the cult either by active proselytising or simply by emulation

(Daniels 1975; Clauss 1992, 267-9). Yet the mechanisms that resulted in the spread of ideas, and their effects, seen in the movement of the cult from the northern and eastern edges of Africa into the Aurès demonstrate the potential for a different model of cultural change.

First, the decisions made by a central power had a profound impact on the cultic landscape of the empire. Even if some have questioned the economic impact of the presence of the Roman army on the region, its effects on the cultural and religious landscape have clearly been shown. Similarly, although many scholars have sought to downplay the importance of Roman imperial authority in religious change across the empire (e.g. Rives 1995, 63-76), this case shows that the emperor could have lasting effects, even if such changes were the indirect effects of imperial directives (*pace* Whittaker 1997). Roman imperialism encouraged the spread of ideas not just across long distances, but also on a much smaller geographic scale—in this case, within a single province—by more closely linking micro-regions via new types of networks.

As a corollary, the types of religious changes created by the military were not simply the further ‘Romanisation’ of soldiers through the dissemination of ‘official’ or ‘state’ cults (e.g. that of the Jupiter *Optimus Maximus* or of the emperor) at the expense of ‘native’ cults as Haynes (1993) suggests. Instead, the movement of religious knowledge in this case worked to spread practices and the popularity of a deity peculiar to Africa further within that region. This was not by any means opposed to, or a measure of resistance against, Roman culture (*pace* Bénabou 1976); the same soldiers and veterans who participated in the cult of Saturn would also have participated in these ‘official’ cults (cf. Fink et al. 1940). But the spread of the cult did lead to a greater degree of shared ideas in the area, and was no doubt one factor which marked the Maghrib, or at least the area between Sétif and Syrtic Gulf, as a unified zone (*pace* Shaw 1983, 148; cf. Fentress 1983, 169).

Of course, to speak of the cult as homogenous even within the Aurès is an oversimplification. There was not one cult of Saturn; each of the sites shows a unique set of concerns. At Mascula, a site set in the middle of important grazing lands, for example, there is a far greater iconographic emphasis on animals, mirrored also in the inscriptions of the stelae, which often highlight the fact that an offering was made *de pecoribus*, ‘from the flock.’ Likewise, at Calceus Herculis, a peculiarity not found elsewhere is present on 20% of the stelae: in the lowest register, two clasped hands are shown. While such differences reflect how the cult was adapted to address local concerns, preoccupations and interests, at the same time, the shared practice of erecting figured stelae bespeaks a basic level of shared religious knowledge.

Second, the movement of cultic knowledge via the movement of military personnel appears to have had an impact in communities beyond the legion and its veterans. The Roman army was not a closed, ‘total

institution’ (Shaw 1983, 144), but had an effect on the ideas and outlooks of the communities around it (cf. Stoll 2001, 418-40). Lambafundi, for example, although sited between two important military settlements, shows very little evidence of having a large veteran, soldier, or citizen population; one of the most notable traits of such groups is their ‘epigraphic habit,’ which was minimal at the site. The settlement produced a tophet with stelae and offerings where a minority of the figures were shown togate; while this does not necessarily mean that they were not citizen-soldiers, it raises the probability that they were not. Likewise, Thamugadi had a mixed population, which, by the mid-late second century AD, seems to have had a minority of veterans, especially in the high civic offices they often occupied upon leaving the army (Fentress 1983, 132; Bassignano 1974, 284-300). Yet the sanctuary of Saturn was renovated some time during or after the reign of Marcus Aurelius (161-180) (Le Glay 1966a, 129), implying its continued importance in the community; the cult was not unique to those with military backgrounds or settlers for whom this was a ‘home’ cult. Once brought to the Aurès with soldiers recruited from other parts of the province, the religious knowledge connected to Saturn spread from there into civilian populations.

The mobility of information and its spread, seen here through the presence of a particular cult and its unique practices, demonstrates one network by which ideas and knowledge could travel. The knowledge did not stay confined to the population upon whom its movement originally depended, but spread out from there. The networks in operation in the Roman world did not only move goods and people, a flow which resulted in particular site formations that favour models of Romanisation as little more than a veneer over traditional, local substructures. Instead, these networks also facilitated the spread of knowledge—an asset harder to trace in the extant archaeological record, but nevertheless possible—which could encourage more thorough cultural shifts and realignments of worldviews. Much work remains to be done on the types of transformations resulting from the spread of ideas. For now, the means for tracing the avenues and mechanisms that allowed this possibility have been established.

Endnote

¹*CIL = Corpus Inscriptionum Latinarum*

²Although prior to 1892, Domergue saw stelae in the area around Pasteur which, based on the motifs he recorded—‘*le pavot, la pomme de pin, la grenade, le raisin, symboles de la fécondité ; la main levée, le croissant et le disque, le caducée, le palmier, le gâteau divin, le gros et menu bétail des sacrifices*’ (Domergue 1892, 122)—he attributed to Punic manufacture, no graphic record of the stelae was made and subsequent explorations of the region did not discover any traces of them (Le Glay 1966a, 179 n. 1). All of the motifs singled out by Domergue recur on the second-century AD stelae in the region. The one stele that Domergue describes in detail

was carved in high relief—a trait of imperial-period production—and showed two figures pouring libation over an altar—a motif that is also not attested prior to the imperial period. It seems most probable that the stelae he saw were, in fact, later.

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