

PART I
Introduction to the Site

'Every now and then discoveries are made which...illuminate as it were in a flash aspects of the life of the more or less remote past previously only dimly perceived...Star Carr is such a site.'

(Clark 1971, v)



CHAPTER I

Introduction

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Introduction

In the spring of 1949 Dr Grahame Clark, a lecturer in archaeology at the University of Cambridge, visited an excavation near the village of Seamer in North Yorkshire: the site was Star Carr (Figure 1.1). The excavation had been carried out by John Moore, a founding member of the Scarborough and District Archaeological Society who had spent the previous few years recording archaeological sites on the low-lying carr-lands of the eastern Vale of Pickering. Through this work Moore had identified nine areas of early prehistoric activity, many dating on typological grounds to the Mesolithic. In some cases, these sites had been buried by layers of peat that had formed within a large, now in-filled lake, which Moore referred to as Lake Flixton (Moore 1950). Through the curator of the Scarborough Museum, Moore was put in touch with Clark. Clark had undertaken the first systematic study of the British Mesolithic as part of his doctoral research and had gone on to carry out a more extensive survey of the evidence from across Northern Europe (Clark 1936). In doing so, Clark noted the important role that wetland excavations had played in creating a much richer record of Mesolithic life on the continent, both by preserving organic materials such as animal bone and wood but also ecological material such as pollen that was being used to establish a broad chronology for these sites.

That summer, Clark began the first of three years of excavation that would revolutionise our understanding of the British Mesolithic and make Star Carr one of the most important archaeological sites in the country. Within the sediments that had formed at the edge of the lake Clark recorded a large assemblage of bone and antler artefacts, worked flint, and animal bone (Clark 1954) (Figure 1.2). The organic artefacts included almost 200 barbed projectile points as well as the remains of the red deer antler from which they had been made, scraping tools made from aurochs metatarsals, bodkins made from elk metapodials, and modified red deer frontlets, possibly used as headdresses or as hunting disguises. To this day it remains the largest assemblage of bone and antler artefacts from a Mesolithic context in Britain and many of the artefacts have yet to be found at any other site.

Drawing together the analyses of the different artefacts and materials, and studies of the plant remains preserved in the lake sediments, Clark drew (what was for its time) an incredibly detailed picture of life at Star Carr. The site, he argued, had originally been located at the shore of the lake with activity taking place on a

Figure 1 (page 1): The excavation of the birch tree (looking north) in 1950 (Copyright David Lamplough, CC BY-NC 4.0).

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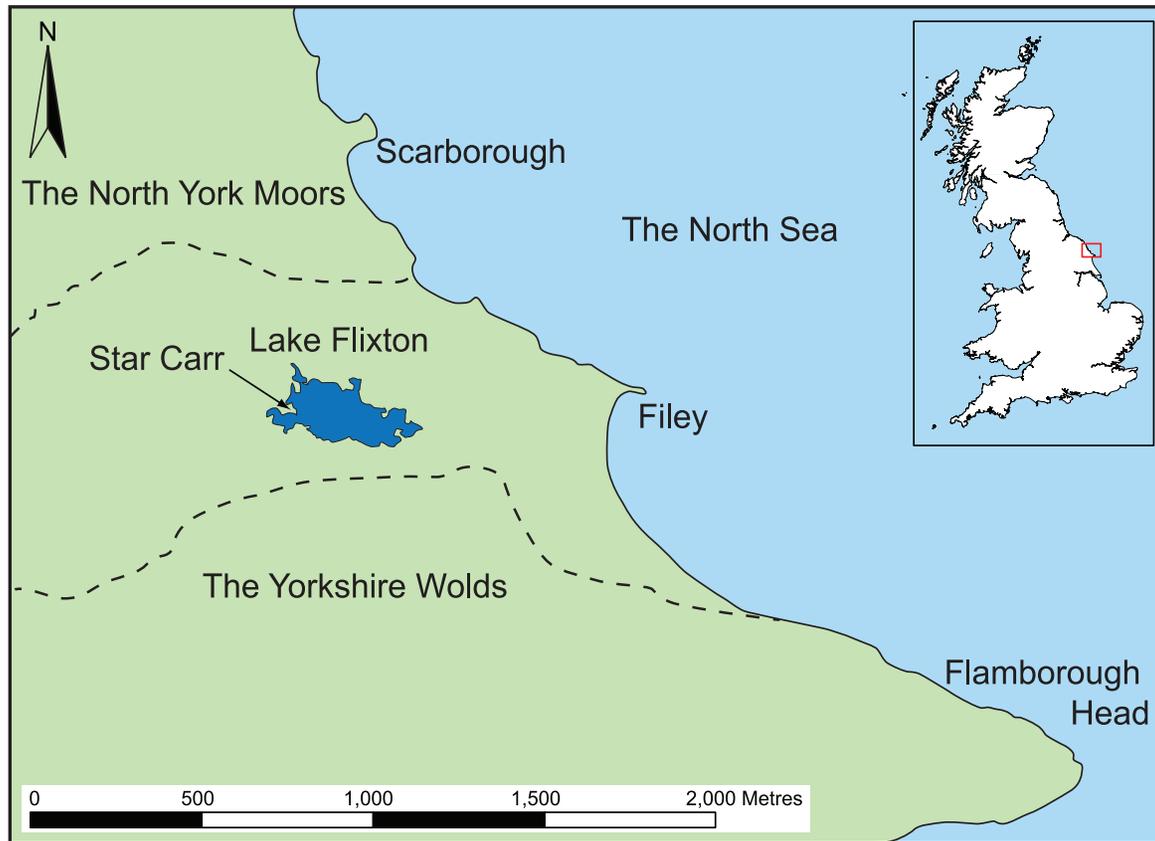


Figure 1.1: Location of Lake Flixton and Star Carr (Copyright Star Carr Project, CC BY-NC 4.0).

platform made from unworked birch branches. It had been inhabited on at least two occasions by a small group of families who had occupied the site during the winter and spring and who had subsisted largely by hunting in the surrounding landscape (Clark 1954). In 1972 Clark revisited these interpretations, arguing that Star Carr had been the winter camp for a group who had moved seasonally from the lowlands of the Vale of Pickering to the uplands of the North York Moors as they followed herds of migrating red deer (Clark 1972). In doing so, Clark also emphasised the close relationship between Mesolithic people and their environment and in particular how the spatial and seasonal availability of resources determined the choices they made in terms of patterns of settlement and mobility.

The effect on Mesolithic studies

The results of Clark's excavations and his subsequent interpretations of the site were to have a profound effect on the way we have come to understand the Mesolithic in Britain. In particular, the model of Mesolithic life as characterised by small, highly mobile groups moving seasonally between upland and lowland areas, or between inland and coastal sites, became a dominant theme in subsequent studies of the period (e.g. Jacobi 1978; Rowley-Conwy 1994; Donahue and Lovis 2006). In part, this is due to the influence that Clark himself had in shaping the discipline in Britain and beyond. However, it also reflects the richness of the material recorded by Clark, the high quality of the subsequent excavation report, and the failure to record a comparable assemblage at any other British Mesolithic site. Importantly, as more Mesolithic wetland sites have been excavated it has become evident that Star Carr is not at all typical of sites of the period (Conneller and Schadla-Hall 2003).

The fact that a single site has had such a strong influence on the period is itself symptomatic of a much broader failure to appreciate the dynamic and complex nature of the British Mesolithic. This is perhaps both a



Figure 1.2: Excavations at Star Carr by Clark (Copyright David Lamplough, CC BY-NC 4.0).

cause and a consequence of the fact that the Mesolithic has been significantly understudied compared to other periods. The term 'Mesolithic' was first used in 1866 by Westropp after Lubbock defined the terms Palaeolithic and Neolithic; however, it was far from clear what was meant by this term (Milner and Woodman 2005). In Britain it was only in the 1930s that the concept of a Mesolithic period came into more general use, notably by Grahame Clark. However, others such as V. Gordon Childe tended to ignore it and were dismissive of its contribution to the development of civilisation (Childe 1925). More researchers, many taught and enthused by Clark, became specialists in the Mesolithic period in the second half of the 20th century but it is only in the last 20 years or so that there has been a significant increase in numbers of Mesolithic scholars in Europe. This slow start for Mesolithic studies and some degree of negativity towards the period has undoubtedly led to the premise that it was homogenous and unchanging. However, a further subtext to this view is the persistent trope that hunter-gatherers lack history, continuously adapting to a particular set of ecological circumstances. This has been perpetuated in archaeological studies that describe Mesolithic lifeways in terms of broad, unchanging patterns of seasonal mobility. Within this context it is unsurprising that a single site can have such an influence on the way the Mesolithic has been studied.

The relatively late development of Mesolithic studies has also contributed to its poor representation in other media (Wickham-Jones 2010; Milner et al. 2015). Museum exhibitions or displays focusing on the Mesolithic

are rare and the period is underrepresented in television programmes and in popular accounts of the British past. Although some exciting new discoveries have been reported in the popular media such as the Warren Field 'calendar', the 'discovery' of Doggerland and the Goldcliff human footprints (Blinkhorn and Milner 2013), many out-of-date stereotypes can still be found. These often refer to Mesolithic technology as being basic or rudimentary and describe subsistence practices as 'hand-to-mouth'.

In reality the Mesolithic was both culturally rich and highly dynamic, a fact that was known to Clark and which has been the focus of considerable research by archaeologists who work on this period. This can be seen most clearly in the considerable chronological variation in forms of projectile points (see Conneller et al. 2016) but is also apparent in the use of resources, architecture, and patterns of mortuary practice, settlement, mobility and territoriality (e.g. Spikins 1999; Conneller 2006; Waddington 2015). There are also significant regional differences in the character of Mesolithic material culture across Britain and Ireland, such as the distinctly maritime lifeways evident on the west coast of Scotland. These differences are likely to reflect a complex mixture of the specific cultural identities and histories of Mesolithic groups as they adapted to the regionally diverse landscapes of Mesolithic Britain. These landscapes also changed dramatically over time: throughout the Mesolithic, the composition of the native vegetation changed, as birch and pine forest was replaced by hazel, and then by mixed, broadleaf deciduous species. At the same time rivers changed behaviour and rising sea levels caused the gradual inundation of the North Sea plain, separating mainland Britain from continental Europe. Whatever the reasons, the Mesolithic cannot be seen as a single, uniform period but was instead both spatially and chronologically diverse.

Star Carr was occupied at the very start of the Mesolithic, which was itself a period of profound change. Less than four hundred years before the site was inhabited, the Northern European climate had warmed rapidly, marking the end of the Late Glacial Stadial and the start of the Holocene. Vegetation responded to the warmer climate, with grassland and scrub communities becoming established across much of the landscape, and wetland and aquatic vegetation recolonising lakes and the edges of rivers. Humans had arrived into this new landscape at the transition to this warmer environment, crossing over the North Sea plain from Northwest Europe. The nature of Terminal Palaeolithic human society at this time remains poorly understood but the archaeology suggests that they adopted a very mobile, versatile strategy in which the hunting of horses in particular played an important role (e.g. Conneller 2007).

By the time people had begun to occupy Star Carr and other Early Mesolithic sites, areas of open grassland were being replaced by birch woodland, changing the character of much of the landscape. Animal communities were also changing, with species such as roe deer and aurochs becoming established whilst horse and reindeer probably became extinct in mainland Britain (Jacobi and Higham 2009). Increasingly, the dating of these Early Mesolithic sites and the preceding episodes of Terminal Palaeolithic human activity suggest that there was a hiatus between the two, which coincided with a relatively short-lived deterioration in climate known as the Preboreal Oscillation (Conneller and Higham 2015). If this is the case, then the start of the Mesolithic represents the second Early Holocene settlement of Britain. However, the character of this Early Mesolithic activity appears to have been different to that of the groups that had arrived a few centuries before. Stone tool technology changed with a greater emphasis on flexibility and new tool types such as axes appeared (e.g. Barton 1991). Other technological developments include the management of plant communities through deliberate, repeated burning of wetland and woodland flora (e.g. Dark 1998a; Cummins 2003; Barnett 2009), along with the first evidence for large-scale, controlled carpentry (Mellars et al. 1998). There is also a sense that activity in particular places became more intensive; sites tend to be larger, were occupied for longer, and were revisited on numerous occasions.

However, what has been lacking is a real understanding of the lives of people who inhabited Britain at this time. Well-excavated sites of this period are rare, particularly those where organic materials have been preserved. Where sites have been investigated in the past they have often lacked the contextual and chronological detail necessary to pick out and explore specific aspects of people's lives or to unpick the different episodes of activity that were taking place. This detail is crucial if we are to write an account of the Early Mesolithic in which the people inhabiting these sites had their own history.

We have also lacked the capability to study in detail the relationship between Mesolithic people and their environment and the effect that climatic and environmental change may have had upon patterns of human behaviour. Whilst there is increasing potential to link palaeoclimate and palaeoenvironmental records with past human activity for the post-glacial period, archaeologists and palaeoclimate scientists have rarely taken advantage of each other's data. Climate and environmental studies previously have rarely been carried out at a human scale, whilst archaeological studies often fail to consider the complexity and variability exhibited in

local environmental records. Part of this is due to problems of scale and resolution, with archaeologists all too keen to attribute poorly dated cultural changes to the closest climatic or environmental fluctuation, a problem described by Baillie (1991) as 'suck in'. It is also becoming clear that the major climatic events glimpsed in the Greenland Ice cores had varied effects in different areas of Northwest Europe. Therefore, it is only by looking at human activity and landscape at a local level that the complexities of the relationship between people and environmental/climatic change can be discerned.

Returning to Star Carr

It was to resolve these issues that we returned to Star Carr to undertake new excavations from 2004. Whilst Clark thought he had excavated the entire site, small-scale fieldwork in the mid-1980s had already shown that Early Mesolithic activity was far more extensive, extending across larger parts of the lake edge wetland as well as onto the adjacent dryland areas (Cloutman and Smith 1988; Mellars and Dark 1998). This made it very likely that assemblages of well-preserved archaeological material still survived within the wetland deposits, as well as raising the possibility that different forms of activity, including structures, may be found on what would have been the drier ground above the lake shore, an area almost entirely neglected in Clark's excavations.

Crucially, new excavations could provide the contextual and stratigraphic data that would be necessary to precisely date episodes of activity and which would allow us to study changing patterns of activity at a far tighter chronological scale than had been possible previously. More recent chronologies had been established for Star Carr, showing that the site had been occupied for at least 250 years (Mellars and Dark 1998; Dark et al. 2006); however, tying these chronologies to the artefacts excavated by Clark was problematic. At around the same time as we recommenced excavations, work that was being carried out on the British Neolithic had shown that it was possible to establish chronologies at the scale approaching that of individual human generations through the application of radiocarbon dating and Bayesian modelling (e.g. Whittle and Bayliss 2007). If a new assemblage of material could be recorded at Star Carr then it might be possible through the application of further radiocarbon dating to write an account of life at the site that was, essentially, historical.

In addition, the sediments that had accumulated within the lake still held considerable potential for the reconstruction of the environmental and climatic conditions contemporary with human activity at Star Carr. Previous work had already shown that the local environment had changed during the time the site was inhabited (Dark 1998a). Further work, carried out in conjunction with new excavations, could tie down more precisely the environmental conditions within which activity was taking place and explore the relationship between people and their changing environments more closely. What is more, the sediments that formed in the deeper part of the lake provide a record of the changing climatic conditions from the later stages of the last Late Glacial cold period into the Early Mesolithic. Relating this to precisely dated episodes of human activity would provide one of the first detailed studies of the relationship between early prehistoric people and their contemporary climate.

A further reason for returning to Star Carr came from our increased understanding of the local context of the site. Three decades of work by Tim Schadla-Hall and the Vale of Pickering Research Trust from the mid-1970s onwards revealed that Star Carr was one of a series of Early Mesolithic sites located on the shore of Lake Flixton. However, the nature of the archaeology from these sites was rather different. First, they seemed rather smaller in size and less dense, often made up of clusters of material deriving from occupations of different dates. They also lacked the range of material from Star Carr, including many of the iconic artefacts that had made the site so famous. Only three additional barbed points have been found (two at No Name Hill, the other at Flixton Island) and no further antler frontlets were recorded. Even animal bone tended to be more heavily fragmented than that in collections from Star Carr. This led to suggestions that Star Carr was a special site within the landscape (Conneller and Schadla-Hall 2003), perhaps a ritual site, where animal remains were formally deposited into the lake waters (Chatterton 2003). While we believed any mono-causal interpretation of such a large site that was repeatedly visited over such a long period of time was likely to be inadequate, the new fieldwork and interpretations offered new directions for research at the site. These also necessitated a high-resolution approach to understanding the spatial and temporal dimensions of activities in conjunction with a detailed knowledge of the timing of the development of the lake edge palaeoenvironment.

Finally, it had also become evident that the levels of organic preservation at the site were deteriorating. Visitors noted that the peat appeared to be drying out and shrinking at the site and that what had once been a flat



Figure 1.3: The field had been flat in the 1980s but deterioration of the deposits resulted in peat shrinkage and the topography of the field became evident, as shown here (Copyright Dominic Powlesland, CC BY-NC 4.0).

field in the 1980s was sloping and had begun to show undulations (Figure 1.3). Confirmation that the deposits were drying out to the detriment of the archaeology came in the early years of the project. Small-scale excavation within the wetland areas showed that the local water table had fallen below the level of the main artefact horizons and that organic material, such as bone and antler, was now very poorly preserved (Milner 2007).

In order to determine the best way to protect the archaeological potential of the site, Historic England (formerly English Heritage) organised two seminars where the results of these excavations and the state of organic deterioration were presented (Last et al. 2009); the first was held at the University of York in November 2008 and the second at the University of Cambridge in May 2010. These led to approval of an excavation in 2010 to assess the rate of deterioration, work that was funded by the Natural Environment Research Council (NERC) and English Heritage/Historic England. From this, a Management Strategy (Milner 2012) was developed to understand the full implications of securing and managing the evidential value of the site. This concluded that the deterioration was irreversible and full excavation was therefore necessary.

Shortly after this excavation, in November 2011, Star Carr was designated as a Scheduled Monument by the Department of Culture Media and Sport, which defined the site as being ‘Nationally Important’ under the provisions of the 1979 Ancient Monuments and Archaeological Areas Act. Funding from the European Research Council (ERC), granted in 2012, enabled large-scale excavations at Star Carr and forensic-scale research on activities in conjunction with high-resolution palaeoclimate modelling, based on multi-proxy evidence from Lake Flixton. The same year, Scheduled Monument Consent was granted by the Secretary of State, as advised by English Heritage/Historic England, allowing large-scale excavations to take place between 2013 and 2015.

Like Clark, our work at Star Carr has taken an interdisciplinary approach, integrating forensic-scale research with high-resolution palaeoclimate modelling, based on multi-proxy evidence from Lake Flixton. Open-area excavations were carried out in the wetland deposits in order to establish the character, phasing and spatial extents of human activity in these areas, whilst palaeoenvironmental studies established the contexts within which this activity took place. Large-scale excavations on the dryland parts of the site, coupled with geochemical analysis and palaeobotanical studies, were also undertaken to determine the nature of occupation on the adjacent, terrestrial landscape. At the same time, work was carried out in the deeper parts of the basin to establish the climatic conditions prevalent throughout the time that Star Carr was inhabited. We have also been very fortunate to collaborate with Alex Bayliss on a programme of dating and Bayesian modelling, funded by English Heritage/Historic England, which has provided a temporal resolution never before seen for a Mesolithic site. Drawing this work together we have sought to produce a detailed account of the lives of people who inhabited Star Carr in the early centuries of the Mesolithic.

Finally, we have also sought to use the work at Star Carr as a platform for promoting a better understanding of the Mesolithic to a wider, non-academic audience. The closest and most engaged audience has been the local volunteers and others who have been kept informed about our work through the Friends of Star Carr email list, Facebook page and our website (www.starcarr.com). In addition, a nearby primary school brought children to visit the excavations. Various members of the team have given talks to over 50 societies in the local area and farther afield. Interaction with the news media has come about through various discoveries made during the project, especially the first building to be identified at the site reported as ‘Britain’s oldest house’

and the project has featured twice on *Digging for Britain* on BBC television. The project team also published a book aimed at a popular readership, *Star Carr: Life in Britain after the Ice Age* (Council for British Archaeology) and various articles about the site have appeared in popular magazines such as *British Archaeology* and *Current Archaeology*.

We have been particularly pleased that two local museums, The Rotunda (Scarborough) and The Yorkshire Museum (York), have created displays about the site, with cooperation and involvement of the project team. The team have also organised events for the public in both towns as part of wider festivals and events, such as the Scarborough Prehistory Festival and the YorNights Festivals run by the University of York. A more far-flung item of outreach was taking part in a large prehistory festival in Jeongok in South Korea which brought the site to several thousand people over three days. The project team was keen that there should be a longer-lasting legacy for public engagement and a major resource for use by schools is now available online which supports teaching about the Mesolithic as part of the school curriculum in England (<http://www.star carr.com/schools.html>).

Structure of the volumes

The main results of our work are contained in these two volumes. This is supplemented by the digital archive, which is stored with the Archaeology Data Service (ADS) and allows access to the full set of records and specialist reports (<https://doi.org/10.5284/1041580>). The physical archive will be curated in The Yorkshire Museum.

The structure of these two volumes pays homage to Grahame Clark, who opened his 1954 publication with an interpretation of Star Carr, followed by the various specialist chapters. Following this format our first volume provides an interpretation of the site. Within Part 1 we also include a brief history of excavation and an overview of each season of our excavations. Part 2 presents an overview of the changing climatic and environmental conditions from the development of Lake Flixton through to the end of occupation at Star Carr. Part 3 provides key data on the spatial patterning of activity across the site in terms of dryland structures, wooden structures in the lake, faunal remains and flint. For Part 4, this evidence is then integrated with the radiocarbon dating in order to produce a narrative of activities through time and space, followed by a discussion of human lifeways at Star Carr. Part 5 provides the wider context to the site, with the British Mesolithic context, the European context and public engagement with the site and the Mesolithic. Part 6 provides a conclusion to Volume 1. Overall, we hope that this volume provides a thorough explanation of the nature of human activity at Star Carr throughout the period it was inhabited and how people responded to the changing environment and climate.

Volume 2 provides detail on the specific areas of research carried out as part of the recent programme of work at Star Carr. Much of this research has been brought together to provide the interpretations presented in Volume 1. The volume has been divided into six sections, reflecting (broadly) the nature of the material under discussion. The first three describe the work on which our understanding of both the context and chronology of the archaeology is based. These begin with Part 7, which outlines the aims, objectives and methods for the project and the geophysical survey carried out on the site. Part 8 provides a detailed discussion of the dating of the site, the climate reconstruction and the palaeoenvironmental analysis. Part 9 deals with the research undertaken on sediments, starting with an overview of the site stratigraphy, the soil geochemistry, and the research on the deterioration on the site and conservation of the artefacts. The final three sections describe the analyses of the main archaeological material from the site, divided into animal, vegetable and mineral (again following Clark). Part 10 focuses on the animal remains and the ways in which they were utilised, starting with the faunal analysis and the osseous technology, followed by the analysis of the barbed points, and antler frontlets, and concluding with a discussion of animals within the broader context of the European Mesolithic. Part 11 deals with the use of plant material, beginning with woodworking technology and evidence for possible plant management, the wooden artefacts, birch bark, fungi and the palaeoethnobotanical evidence in the form of charcoal and phytoliths. Part 12 covers the mineral finds: beads, including an engraved shale pendant, utilised stones and flint.

