ANNABELL ZANDER

EUROPEAN MESOLITHIC SITES WITH ANTLER HEADDRESSES: A BRIEF OVERVIEW

Abstract

The discovery of 21 red deer antler headdresses by Grahame Clark at Star Carr has focused this site at the centre of debate of Mesolithic research in Britain for more than half a century. Despite these special artefacts, Star Carr is often presented as an Early Mesolithic "type site". However, recent excavations at Star Carr have revealed the complex history of the site which only finds parallels in a small number of Mesolithic sites in northern Europe. In investigating these sites, this chapter moves beyond the antler frontlets as proposed common artefacts. It focuses on the faunal and lithic assemblages in order to establish further similarities between the sites while evaluating the significance of each site in its respective regional context.

Keywords

Early Mesolithic, antler frontlets, faunal and lithic investigation

INTRODUCTION

The Early Mesolithic site of Star Carr has been at the centre of debate of Mesolithic research in Britain for more than half a century (Clark, 1954; Noe-Nyaard, 1975; Legge and Rowley-Conwy, 1988). The special character of Star Carr is often associated with the discovery of 21 red deer crania in the 1950s (Clark, 1954), which Grahame Clark interpreted as antler headdresses. This discovery had a significant impact on Mesolithic research in Europe: in the subsequent decade after Clark's (1954) publication several artefacts from the German sites of Hohen Viecheln, Berlin-Biesdorf and Plau were interpreted as possible antler headdresses (Schuldt, 1961; Reinbacher, 1956: 148; Schoknecht, 1961: 173). Moreover, in the late 1980s Martin Street (1989) referred to Clark's interpretation of the artefacts, when he uncovered two antler headdresses at the early Mesolithic site of Bedburg-Königshoven (**Fig. 1**).

However, the majority of published material and site reports of these finds were written in German exacerbating any detailed comparison between the sites (cf. Reinbacher, 1956; Schuldt, 1961; Schoknecht, 1961). In the 1990s Street published various international papers on Bedburg-Königshoven which therefore enabled a meaningful exchange of these important sites (Street, 1991; 1998). The recent investigations at Star Carr (Milner et al., 2018a, 2018b) and the re-evaluation of the Hohen Viecheln assemblage (Groß et al., 2019) both with detailed international publications allow a more extensive discussion of the Mesolithic sites with antler headdresses. The aim of this paper is to move beyond the antler frontlets as proposed common artefacts by investigating the assemblages of the sites. For the scope of this paper, the focus will lie on the faunal and lithic assemblages in order to establish further similarities between the sites while evaluating the significance of each site in its respective regional context.

In: S. Gaudzinski-Windheuser · O. Jöris (Eds.), The Beef behind all Possible Pasts. The Tandem-*Festschrift* in Honour of Elaine Turner and Martin Street. Monographien des RGZM 157 (Mainz 2021). DOI: 10.11588/propylaeum.950.c12586

INTRODUCING THE SITES

Star Carr

Star Carr is arguably the most famous and most investigated Early Mesolithic site in north-western Europe (Clark, 1954; Milner et al., 2018a). The site was located at the north-western shore of a palaeolake, Lake Flixton, in the Vale of Pickering, North Yorkshire. After the discovery of the site by John Moore in the late 1940s, Grahame Clark excavated Star Carr over three seasons between 1949 and 1951. The results of Clark's excavations were magnificent: the waterlogged areas yielded an unusual assemblage, including 220 finished antler artefacts, over 100 fragments of discarded red deer antler and 191 barbed points. Furthermore, the organic deposits were associated with a large flint assemblage, including burins, scrapers and over 14,000 waste flakes (Clark, 1954).

The quality of the archaeological remains encouraged the re-excavation and re-interpretation of the site. Since the mid-1980s several research projects have been conducted in the Vale of Pickering, leading to the identification of 24 additional (mostly Early Mesolithic) sites around Lake Flixton, including Seamer Carr to the north of Star Carr and the island sites of Flixton Island and No Name Hill (Conneller and Overton, 2018). Between 2004 and 2015 Star Carr was further investigated leading to the discovery of 12 additional red deer antler frontlets, a further 36 barbed points and a large flint assemblage of more than 24,000 pieces (**Fig. 2**) (Milner et al., 2018b). The excavations also demonstrated that this was a much larger site than previously assumed where people repeatedly returned and invested a significant amount of time and labour in building timber platforms and dwelling structures (Taylor et al., 2010).

Hohen Viecheln

Another Mesolithic site which shows parallels to Star Carr is situated on a sandy terrace in the north bay of the Lake of Schwerin, in Mecklenburg-Vorpommern (Gehl, 1961a: 9). In 1952 a barbed point was discovered on the edge of the *Wallensteingraben*, the artificial northern drainage of the Lake of Schwerin which

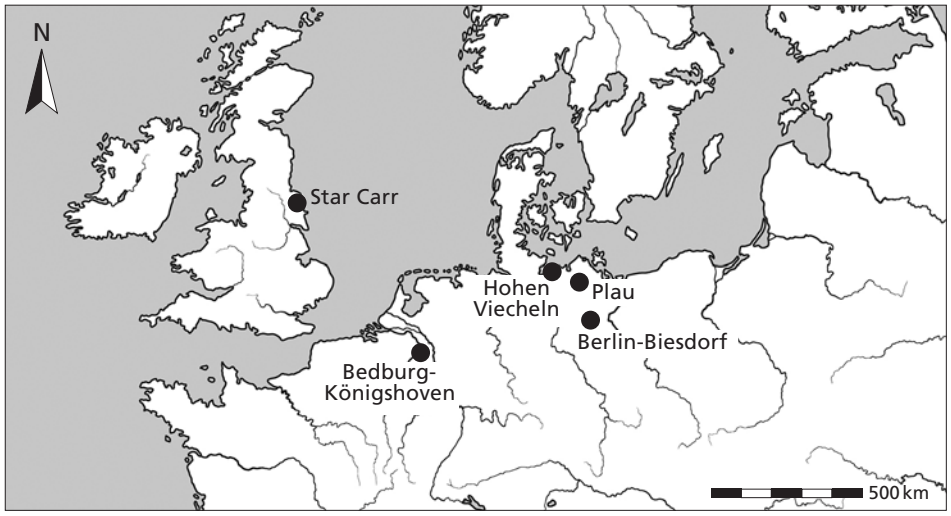

Fig. 1 Location of the Mesolithic sites with antler "frontlets" discussed in this work.

was created in the 16th century AD (Schuldt, 1961: 76). The subsequent excavation of the site during 1953-1955 yielded an extraordinary amount of organic material, including a total of 316 bone points and 680 deer bone fragments. However, it soon became clear that the site had suffered several disturbances during the millennia. The density of finds revealed that the *Wallensteingraben* with its sluice had destroyed the main occupational area of the site.
According to Schuldt (1961) the stratigraphy of the site suggests a repeated occupation. Among the finds of the early occupation were two well-preserved red deer crania with fragments of the antlers still attached (**Fig. 3**). Schuldt interpreted these artefacts as antler frontlets due to their resemblance with the examples from Star Carr (Schuldt, 1961: 28-29). However, Schuldt's investigations of the site have been subject to criticism since shortly after the publication of his monograph, including his coarse excavation methods and his suggested chronology (Schüle, 1962; Gramsch, 1964; Pratsch, 2006). The complex stratigraphy of the site has recently been re-evaluated with a focus on providing an absolute chronological framework for individual artefacts (Groß et al., 2019) (see: Chronology of the sites).

Bedburg-Königshoven

A further site with antler frontlets is situated at Bedburg-Königshoven. The site lay in the valley of the River Erft, approximately 20 km to the south-east of Mönchengladbach, near Düsseldorf (Street, 1989). Here, in the centre of the opencast lignite mine of Garzweiler a small "island" was left intact by quarrying which produced numerous Early Holocene finds, including antler tines and parts of a cranium *in situ* (**Fig. 4**). Street identified this find as an antler frontlet due to its similarities with the Star Carr and Hohen Viecheln specimens.
The excavation in 1988 produced well-preserved organic material, including one bone point, a bone chisel and red deer and aurochs bones. Among the finds another well-preserved red deer antler frontlet was discovered (Street, 1989: 17). Environmental investigations revealed that the site was originally situated within the northern end of a former meander of the River Erft. The excavation of such a large area could demonstrate that the excavated parts represent a peripheral zone of the site where the remains had been deposited into the water and that the terrestrial deposits which probably comprised the main settlement area suffered destruction.

Additional finds of antler frontlets

Besides these three Mesolithic sites, a possible antler frontlet was discovered at Berlin-Biesdorf. In spring 1953 a worked red deer antler skull was taken to the Department of Prehistory at the Deutsche Akademie der Wissenschaften in Berlin. The find derived from mechanical digging works by the River Wuhle. After the publication of Clark (1954), Erwin Reinbacher could identify certain similarities between the antler frontlets at Star Carr and the red deer skull from Berlin-Biesdorf (Reinbacher, 1956: 148). Unfortunately, the area of discovery had already been backfilled when the archaeologists arrived at the site preventing any additional investigations.
A further possible antler frontlet was discovered at Plau, in Mecklenburg-Western Pomerania. In 1933 a collection of antler, bone and lithic artefacts were taken to the Museum of Waren (Schoknecht, 1961: 169-170). The finds were uncovered during mechanical digging works to straighten the course of the River Elde near the village Plau. However, due to the circumstances of their discovery the context of the artefacts

Fig. 2 One of the 12 antler headdresses recovered from the recent excavations at Star Carr. – (Copyright: Neil Gevaux, CC BY-NC 4.0; Elliott et al., 2018. Material is available under Public License: https://universitypress.whiterose.ac.uk/site/books/e/10.22599/book1/).

Fig. 3 One of the antler headdresses from Hohen Viecheln. – (Photo: M. Wild; Wild, 2019).

remains unknown (Schoknecht, 1961: 169-170). Among the finds was a red deer cranium with parts of the antlers still attached (Schoknecht, 1961: 169-170). This cranium was only recognised as a possible antler frontlet by Ulrich Schoknecht following the publications of Clark (1954), Schuldt (1961) and Reinbacher (1956). Unfortunately, all the artefacts of the assemblage were damaged during a fire at the end of World War II and the flint artefacts were lost (Schoknecht, 1961: 172). Due to the lack of context of the finds from Berlin-Biesdorf and Plau the sites are excluded from the discussions in this paper.

THE ANTLER HEADDRESSES

Defining the headdresses

When discussing the antler headdresses it is important to ask: What sets the proposed antler frontlets apart from mere deer skulls? Potential key defining criteria for the headdresses have been discussed in recent publications and will only be mentioned briefly (cf. Street and Wild, 2015; Elliott et al., 2018).
Two different approaches to define the headdresses have come into focus:

1.) Street and Wild (2015) argue that the presence of artificial perforations through the parietal bone should be seen as the key to define Mesolithic headdresses. Only 9 of the 33 antler frontlets from Star Carr, one example from Hohen Viecheln and both frontlets from Bedburg-Königshoven feature these lateral perforations.
2.) On the basis of the excellent preservation conditions and contextual data at Star Carr, Elliott and colleagues (2018; see also Little et al., 2016) were able to analyse the frontlets using a technological approach. The results reveal a similar *châine opératoire* of the artefacts at Star Carr characterising them as a distinct group of artefacts. This broader definition of the frontlets based on technological studies therefore includes a much larger number of artefacts into this group than the single typological feature of the perforations.

The function of the headdresses

Since their discoveries, the antler headdresses have sparked numerous debates among scholars, specifically revolving around their function. Clark had offered two interpretations for the use of these unusual artefacts: Citing ethnographic studies from the Eskimos, he argued the antler frontlets were either used as hunting aids, allowing the hunters to stalk the prey at a close range, or as head-dresses during "ritual dances" (Clark, 1954: 170). Furthermore, Clark used Nicholas Witsen's (1705: 693) depiction of a Siberian Tungus shaman wearing a reindeer antler head-dress as a modern analogy to explain the Mesolithic antler frontlets (**Fig. 5**) (Clark, 1954: 171). The majority of subsequent interpretations of the antler headdresses remain within the realm of Clark's "either/or" argument with the German terminology for the antler frontlets (*Hirschgeweihmasken; Deer antler masks*) already assuming an interpretation due to its clear connotation of disguise (Reinbacher, 1956: 149-150; Schuldt, 1961: 130; Schoknecht, 1961: 172-173).
In more recent years, Chantal Conneller (2004: 37) has pointed at the impasse Clark's dichotomous interpretations of the antler frontlets have produced. She argues that Clark's interpretations of the frontlet as a form of disguise are based on several general dichotomies of the Western world. In contrast to Clark's division between an "economic" or "ritual" function of the frontlets, in modern hunter-gatherer societies economic

activities and cosmological beliefs are rarely separated (Ingold, 1987: 153). The more recent interpretations are within the realms of this more holistic perspective on the use of the headdresses. This includes the association of the frontlets with modern ethnographic analogies of Northern Europe, thereby suggesting they were probably used in ritual dances and ceremonies (cf. Street, 1989: 49; Elliott et al., 2018; Wild, 2019) or, more specifically, as part of Shamanic costumes (cf. Little et al., 2016).

THE FAUNAL ASSEMBLAGES

Comparing the faunal assemblages

An investigation of the faunal assemblages of Star Carr, Bedburg-Königshoven and Hohen Viecheln reveals further similarities beyond the antler frontlets as a common artefact group. All three sites feature a wide range of identified species (**Tab. 1**; **Fig. 6**). At Star Carr, the vast majority of the faunal assemblage consists of red deer remains, followed by an abundant representation of elk, aurochs and roe deer. Besides these large mammals, the faunal assemblage of Star Carr comprises of smaller mammals, including domesticated dog, fox, beaver and wild pig (Fraser and King, 1954; Knight et al., 2018). In addition, several bird remains were discovered, such as the red-breasted merganser and the great crested grebe (Fraser and King, 1954;

Fig. 4 One of the antler headdresses found during the excavations between 1987 and 1988. – (Photo: M. Street).

Fig. 5 Witsen's depiction of a *Tungus* Shaman wearing a reindeer antler head-dress from 1692.

Knight et al., 2018). The recent investigations at Star Carr have also recovered 21 fish remains, including northern pike and European perch (Knight et al., 2018).

Legge and Rowley-Conwy (1988) convincingly argue that red deer and roe deer antlers should be excluded from the count of the minimum number of individuals (MNI) as they may not represent killed animals but collected antlers (see also Knight et al., 2018). Despite the exclusion of antlers from the count, red deer remains the dominant species with an MNI of 35, followed by roe deer with 23 and aurochs with 19 (**Fig. 6**).

At Bedburg-Königshoven 29 species were identified, consisting mainly of large mammals but also smaller mammals, birds and fish were recovered from the site. The assemblage mainly consists of aurochs remains, followed by an abundant representation of roe deer, red deer and horse (**Tab. 1**; **Fig. 6**). This abundant record of aurochs in the Bedburg assemblage stands in contrast to the focus on red deer at Star Carr. The faunal assemblage of Hohen Viecheln comprises large quantities of animal remains of various different species, in sum 41 species. The majority of remains could be identified as roe deer and red deer remains (**Tab. 1**; **Fig. 6**). In addition, the assemblage consists of elk, aurochs and domesticated dog bones and smaller mammal remains, such as fox, badger and bear (Gehl, 1961b).

The regional context

The quality and size of the faunal assemblage at Star Carr stands in strong contrast to the fragmentary nature and small size of the faunal assemblages of the surrounding sites which appear to represent small-scale activities. The assemblages of sites Seamer K and C consist of approximately 100 bone fragments, including red deer, elk, aurochs and horse (Schadla-Hall, 1989; Conneller and Overton, 2018). The record of horse is particularly interesting considering its complete absence from Star Carr.

Species	Star Carr	Bedburg-Königshoven	Hohen Viecheln
Horse		×	×
Dog	×	×	×
Wild boar	×	×	×
Elk	×		×
Red deer	×	×	×
Roe deer	×	×	×
Aurochs	×	×	×
Bear	×		×
Beaver	×	×	×
Badger	×	×	×
Σ N species	26	29	41
Source	Knight et al., 2018	Street, 1989	Schuldt, 1961

Tab. 1 Representations of the main identified species from Star Carr, Bedburg-Königshoven and Hohen Viecheln.

Unfortunately, it is difficult to assess the faunal assemblage of Bedburg-Königshoven in its regional context since only few organic finds were discovered at other Preboreal sites, marking Bedburg as a special site concerning its preservation. The recently excavated Preboreal site of Mönchengladbach-Geneicken which lay approximately 20 km north of Bedburg-Königshoven produced 150 well-preserved bones of a single aurochs (Heinen, 2015: 300). The discovery of this skeleton represents almost 80 % of the entire skeleton marking this find as the most complete archaeological skeleton of an aurochs in Germany. It is difficult to determine the importance of the faunal assemblage of Hohen Viecheln in its regional context as no other Mesolithic organic finds were discovered around the Lake of Schwerin, characterising Hohen Viecheln as a unique site concerning its preservation.

Issues with seasonality and site function

According to Milner (1999: 51) one of the major problems concerning studies of seasonality is the "lack of understanding" of animal behaviour, as can be seen, for example, in the various interpretations of the seasonality of Star Carr. Clark (1954: 10-17) initially interpreted Star Carr as a seasonal home base of a community of hunter-fishers. Furthermore, he suggested a winter and possible spring occupation of the site according to the regular annual cycle of the growth and shedding of antlers. Subsequent seasonal interpretations of Star Carr ranged from the proposal that the site had been used as a "specialised industrial complex" (Pitts, 1979: 33); a hunting and butchering site which was used throughout most of the year (Legge and Rowley-Conwy, 1988); and a base camp which was repeatedly occupied for more than one season (Price, 1982: 4-7). However, the large number of re-interpretations of Star Carr probably rather reflect the long-term repeated use of the site which may represent different activities throughout the centuries of occupation. The recent investigations at Star Carr have also revealed that there is now evidence for animals that have been killed in all four seasons (Knight et al., 2018). According to Conneller and colleagues (2009: 80) Star Carr is one element of an entire system that should be fitted into its wider regional context and should not be reduced to "a single component of an idealised yearly round".

It is difficult to assess the assemblage of Bedburg-Königshoven since it only represents the peripheral parts of a larger site. Street investigated the representation of anatomical elements of aurochs at the site and

concluded that the assemblage represents the majority of body parts suggesting that the animals were killed in the immediate vicinity of the site (**Fig. 7**). According to Street the entire butchering process was then carried out at the site (Street, 1990: 31-32). On the basis of the discovery of three aurochs which were killed in spring and the presence of white stork which is a summer visitor to Europe Street argues for a potential spring or summer occupation of the site (Street, 1991).
At Hohen Viecheln, Gehl (1961b: 44) suggests a spring or early summer use of the site on the basis of roe deer mandibles with erupting teeth. When comparing the faunal assemblage of Hohen Viecheln with the assemblage of Star Carr and Bedburg-Königshoven several similarities can be observed. The majority of anatomical elements were found at the site indicating that animals were probably butchered and processed at or near the site.

Bone and antler points

Besides the antler frontlets, the most distinctive artefacts of the three Mesolithic sites are the bone and antler points which were probably hafted as hunting weapons. No other sites in the regional context of Bedburg-Königshoven and Hohen Viecheln produced these points and only two more barbed antler points were found in the Vale of Pickering, on the shores of the island of No Name Hill and at Flixton Island I (Clark, 1954; Elliott and Milner, 2010). In sum 227 uniserial barbed points have been recovered from Star Carr, which represents 92 % of the total number of bone and antler uniserial barbed points associated with the British Mesolithic (Elliott and Little, 2018).
The selection of the material for the point production appears to have been crucial: of the 191 barbed points recovered from Clark's excavation at Star Carr, 189 were made of red deer antler (Clark, 1954; Elliott and Milner, 2010). The 2004-2015 excavations produced evidence for the use of animal bone for the production of a very small number of barbed points (cf. Elliott and Little, 2018: see point <116710>). In terms of production technique, the Star Carr barbed points show a "high level of typological variation, but a low level of technological variation" meaning the points were produced using a similar *chaîne opératoire* to manufacture a variety of different forms (Elliott and Little, 2018). The Bedburg-Königshoven and Hohen Viecheln points were made of bone rather than antler. In the case of Bedburg, the single example of a smooth bone point was made of metapodial bone from aurochs (Street, 1989: 38). Similar to Star Carr, at Hohen Viecheln the selection of raw material for the production of the points seems to have been important: The majority of the 316 bone points at Hohen Viecheln were produced from metapodials of red deer (Schuldt, 1955: 113-125).

THE LITHIC ASSEMBLAGES

Comparing the lithic assemblages

Star Carr comprises a very large flint assemblage of 41,820 pieces (combined sums of Clark, 1954; Conneller et al., 2018a, 2018b). The majority of artefacts were made of local/regional till flint of varying quality, mostly obtained as beach pebbles. The predominant use of this flint source limited the possibilities for the types of reduction sequences. The majority of cores were single platform cores reduced part way round (34.1 %), followed by opposed platform cores (27.5 %). Debitage was focused on the manufacture of

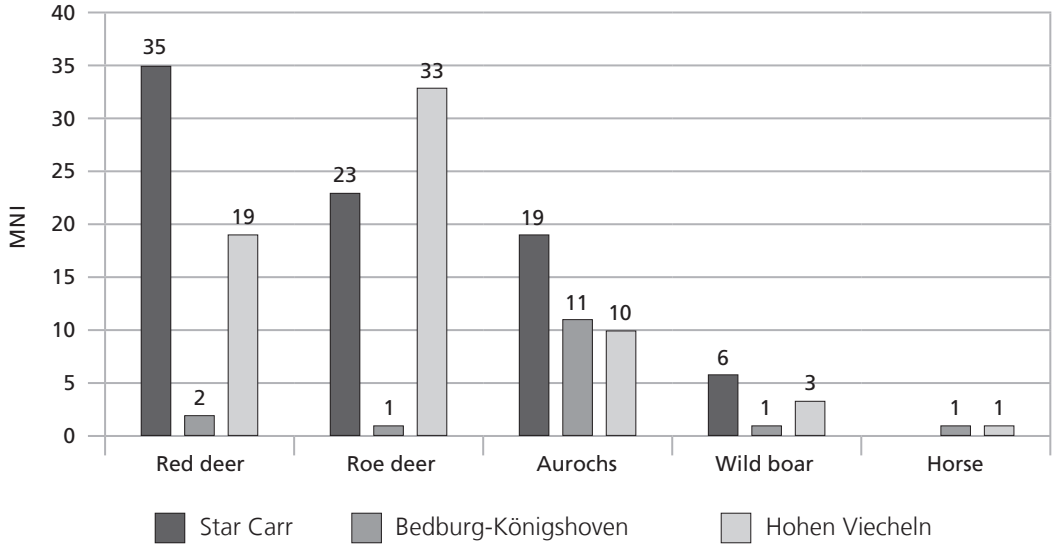

Fig. 6 Comparison of Minimal Number of Individuals (MNI) of large mammal species from Star Carr, Bedburg-Königshoven and Hohen Viecheln. MNI of Star Carr large mammals based on the bone assemblage and excluding antler remains (cf. Legge and Rowley-Conwy, 1988). – (Data: Knight et al., 2018; Street, 1989; Gehl, 1961b).

bladelets and narrows flakes. 3,690 artefacts show evidence of retouch, including 668 scrapers, 566 burins, 560 microliths and 28 axes (**Tab. 2**). Since the Star Carr assemblage represents a palimpsest of repeated occupation over centuries it is difficult to assess any meaningful tool ratios or frequencies.

The recent investigations of the site could reveal spatial patterning at the site. As such, there is a distinct contrast between lithics from the dryland and wetland areas of the site. On the dryland activities were very varied with evidence of different flint knapping scatters, frequently focused on hearths. In contrast in the wetland area the majority of lithic materials consisted of used and discarded tools with a high tool frequency of between 16.95 - 49.8 % (Conneller et al., 2018a).

Only a fraction of the lithic assemblage of Bedburg could be recovered with 196 stone artefacts which had been discarded into the water (Street, 1998: 167). In accordance with studies on lithic distribution on other Mesolithic sites, the major part of the lithic assemblage of the site would have been located on the drier parts to the north of the surviving section (Henriksen, 1976: 26-27). Despite the small size of the assemblage 15 different raw materials could be identified, including a fine-grained quartzite and two different *Kieselschiefer* (lydite) (Street, 1989: 33; Street, 1998: 167).

45 of the 196 lithic artefacts show evidence of retouch while eight tools of the assemblage (4.1 %) can be defined typologically. These tools consist of five scrapers and three oblique-retouched microlithic points made on narrow bladelets. The large proportion of cortex flakes in combination with 15 cores suggests the primary production of artefacts at the site. The flint-knapping technology at Bedburg seems to have been focused on the production of large laminar forms (Street, 1989, pers. comm.).

The relatively small number of waste flakes should not be surprising considering the proposed nature of the excavated area as a peripheral zone of the site (Street, 1998: 172). According to Street the entire butchering process was carried out at Bedburg-Königshoven (Street, 1990: 31-32). Besides the metapodia, phalanges and mandibles, the bones of the meat-bearing upper-limbs were also exploited for their marrow. This emphasis may suggest that the lithic items were deliberately selected from the debitage to conduct butchering tasks near the water's edge. Flakes and blades used in butchering do not need to exhibit any common features beyond a certain size and stability.

Hohen Viecheln comprises a large lithic assemblage of almost 11,000 lithics which is comparable to the assemblage of Star Carr (Schuldt, 1961: 102). All artefacts were made of a local grey flint from the shores. Of the 10,809 lithics 659 (6.1 %) artefacts can be classified as tools (Schuldt, 1961: 102). The presence of such a large amount of debris suggests that flint-knapping was carried out on the actual site. Like Star Carr and Bedburg, the lithic technology at Hohen Viecheln appears to have been focused on the production of blades with a sum of 2,247 blade forms of which only a few were worked into tools, including 10 microliths and 151 core and flake axes (Schuldt, 1961: 91). The relatively low number of microliths is not surprising given the coarse excavation methods in the 1950s.

The regional context

The scatters in the Vale of Pickering surrounding Star Carr are highly variable in terms of source and quality of raw material and in terms of scale, intensity and nature of flint-knapping activities at the sites. Compared to Star Carr, the other sites in the Vale of Pickering seem to represent short-term activity areas which were either abandoned or re-occupied for different activities. Star Carr therefore emerges as a unique site in its regional context due to its repeated re-occupation for a similar purpose (Conneller and Overton, 2018).
No comparable assemblages were found near the site of Bedburg which may be due to the history of mining in this region. An extensive accumulation of flint scatters was found on the north-east shore of the Lake of Schwerin, approximately 2 km from Hohen Viecheln, close to the village of Flessenow (Schuldt, 1959: 7). Of the 12,159 lithic artefacts recovered from the site 541 (4.4 %) lithics can be classified as tools, including core axes, borers and microliths. The 116 microliths are a predominant feature of the assemblage, making up 21.4 % of the tools and thereby contrasting the lithic assemblage of Hohen Viecheln (Schuldt, 1959: 9-10).

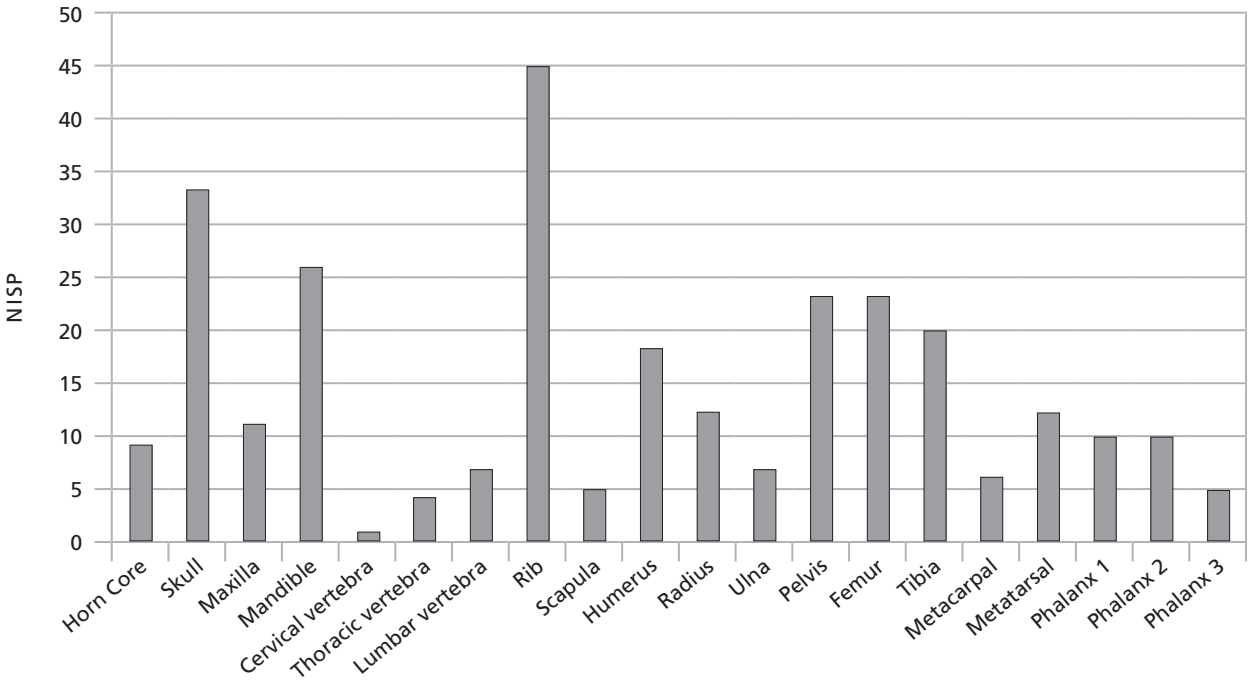

Fig. 7 Representation of the anatomical elements (NISP Number of Identified Specimens) of aurochs in the Bedburg-Königshoven assemblage. – (Data: Street, 1989).

Lithic category	Star Carr	Bedburg-Königshoven	Hohen Viecheln
cores	541	15	NA
tools	3,690	45	659
microliths	560	3	10
core/flake axes	28	0	151
scrapers	668	5	72
burins	566	0	23
Σ N lithic artefacts	41,820	196	10,809
Source	Clark, 1954; Conneller et al., 2018b	Street, 1989; Street, pers. comm.	Schuldt, 1961

Tab. 2 Representation of the main lithic artefact categories of the assemblages from Star Carr, Bedburg-Königshoven and Hohen Viecheln.

CHRONOLOGY OF THE SITES

All three sites discussed in this paper have recently been re-evaluated regarding their chronology. It is beyond the scope of this paper to include a list of all available radiocarbon dates which can be found in other publications (Star Carr: Milner et al., 2018a, 2018b; Bedburg-Königshoven: Street et al., 2019; Hohen Viecheln: Groß et al., 2019). In the following part the general chronology of the sites will be discussed to allow a comparison between the sites.

Star Carr and Bedburg-Königshoven represent some of the oldest Mesolithic sites in Europe. Bedburg was initially dated to the Middle Preboreal (Street, 1991). However, recent radiocarbon dates on aurochs remains confirm an early Mesolithic date for this site at the Younger Dryas/early Preboreal transition between 9,500-9,700 cal BC (Street et al., 2019). For the complex occupation at Star Carr, a total of 223 radiocarbon dates are available (Milner et al., 2018b: chapter 17). This site represents a persistent place in a rapidly fluctuating environment. According to Blockley et al. (2018) the hunter-gatherers at Star Carr demonstrated a significant degree of resilience to the climate change of the early Holocene with a repeated occupation of the site for over 800 years starting in circa 9,300 cal BC. The recent re-evaluation of the Hohen Viecheln chronology revealed that the first occupation at the site dates to the late Preboreal while the main find layers date to the Boreal. This indicates that Schuldt's original chronological classification was generally correct, although he had "simplified the chronological range" (Groß et al., 2019: 59).

A ritual deposition of artefacts?

The recent investigations at Star Carr have identified the complex history of the site where Mesolithic hunter-gatherers continuously deposited worked wood, bone and flint tools into the waters of the lake, often in similar ways over centuries (Milner et al., 2018a). During the main phase of occupation large timber platforms were built on the lake edge, dwelling-structures were erected on the dryland and the deposition of bones, antler frontlets and other artefacts was continued in the wetland areas of the site. According to Elliott and Little (2018) the fragmentary nature of the barbed point assemblage from Star Carr and evidence that a number of barbed points had been de-hafted after their use, potentially elsewhere in the landscape, suggests that the barbed points seem to have been returned to Star Carr for deposition. The results of the

recent investigations at Star Carr also demonstrate the *ad hoc* loss of material alongside a potential ritual deposition of artefacts. As discussed in the previous section on the antler headdresses, this suggests that ritual behaviour was part of the daily lives of the people at Star Carr (Taylor et al., 2017).
The peripheral nature of the Bedburg assemblage makes it difficult to analyse any spatial patterning. According to Street the bones recovered from the excavated area at Bedburg probably reflect the importance of butchering activities near the water's edge. The coarse excavation methods at Hohen Viecheln (for a discussion see Groß et al., 2019) and the complex stratigraphy do not allow a detailed investigation of the spatial patterning of the finds. Therefore, the question of a potential ritual deposition of artefacts remains unanswered for this site.

DISCUSSION

The apparent similarities between the faunal and lithic assemblages of Star Carr, Bedburg-Königshoven and Hohen Viecheln demonstrate that Britain should not be viewed as isolated from the rest of Europe. During the occupation of Star Carr Britain was connected to the continental mainland by a stretch of lowland which now lies under the North Sea and the English Channel. Clark (1954: 179) already noted a "cultural homogeneity" across Early Mesolithic northern Europe which has been termed the "Maglemose Culture". The technological equipment of these Maglemosian communities comprised a developed bone and antler industry and a new lithic tool type, the stone axe (Zvelebil, 2008: 27). Similar to the assemblages discussed in this chapter, several Maglemosian sites show selective treatment and deposition of animal remains (cf. David, 2005).
Hunter-gatherer groups across north-western Europe clearly shared common ideas regarding the deposition and shape of their hunting equipment. However, these groups seem to have made different choices regarding the materials used for the production of the points as well as the production processes which varied considerably (Elliott et al., 2018). As demonstrated in this chapter we cannot assume simplistic interpretations for the Mesolithic sites with antler headdresses. These sites represent special places in their respective landscapes which have yielded unusually large and well-preserved assemblages reflecting repeated occupations of a larger group of people. The assemblage from Bedburg represents this on a smaller scale as it probably reflects only the peripheral zone of a much larger site.

Acknowledgements

I would like to thank Dr Martin Street for many inspiring discussions revolving around the sites mentioned in this paper. As demonstrated in this chapter, his contributions have opened up an international exchange about the complex topic of human responses to climate change during the Pleistocene-Holocene transition. Martin has been a source of invaluable support and guidance to me over the last eight years and has helped to inspire my path in investigating this transition. I would also like to thank Dr Elaine Turner for her valuable feedback on my research and for her and Martin's warm welcome when I visited MONREPOS on several occasions.

I am grateful to the editors for inviting me to contribute to this volume in honour of Martin and Elaine. Parts of this paper derive from my undergraduate thesis which was completed at the University of Nottingham in 2013. Special thanks go to Prof Mark Pearce (University of Nottingham) for all his support during my undergraduate studies and beyond and to Prof Nicky Milner (University of York) and the Star Carr Archaeology Project for giving me the opportunity to participate in the excavations and research in the Vale of Pickering as well as for Nicky's continuous support and advice. I would also like to express my gratitude to my funders, the *Studienstiftung des deutschen Volkes* and *White Rose College of the Arts and Humanities* (AHRC).

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Annabell Zander
University of York
Department of Archaeology
The King's Manor
GB - YO1 7EP York
az661@york.ac.uk