

PART 4

Interpretation

‘...the need was no longer to excavate and classify flint implements or rely upon fortuitous discoveries of loose objects of bone or antler, but to excavate a site capable of yielding direct information about the way of life of Maglemosian man and about the character of his immediate environment.’

(Clark 1954)



CHAPTER 9

Interpretative Narrative of the History of Occupation

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Introduction

There has been a long tradition in archaeological and anthropological research of viewing hunter-gatherers as people without history. Past interpretations of the Mesolithic have followed suit, with Star Carr seen as representing the basecamp or hunting camp of an endlessly repeating seasonal round (e.g. Clark 1972; Jacobi 1978; Legge and Rowley-Conwy 1988; see Conneller 2005 for a review and Chapter 11, this volume). Though Clark established the date of Star Carr, both through the system of pollen zonation and through radiocarbon dating (Clark 1954, 12, and see Chapter 17), and noted that it had been occupied on at least two occasions (Clark 1954, 9), he made no reference to potential changes in forms of activity at the site during the time it was inhabited.

It was only with renewed palaeo-environmental work at the site that evidence for long-term, repeated occupation became evident (Dark 1998a). Microcharcoal evidence was used to demonstrate intermittent occupation over several hundred years, interspersed with periods of abandonment (see Chapter 17). While this advanced our knowledge of the *chronology* of occupation of Star Carr far beyond what was known for other British Mesolithic sites at that time, human activities (beyond burning) could not be tied into this sequence, thus its *history* remained unaddressed. One of our motivations for returning to the site was to link the periodicity of occupation (as represented by the microcharcoal evidence) to the activities represented by the artefacts, and from this to understand the history and development of human occupation of the site. Opening up trenches on a large scale, focusing on stratigraphy in conjunction with 3D recording (Chapter 15), and a large-scale programme of radiocarbon dating (Chapter 17) has enabled us to develop a much more detailed understanding of the history of occupation.

Our understanding of the chronologies of the environment around the lake edge, and human activity within it, is based on the twin planks of the archaeological and palaeo-environmental stratigraphy, and the suite of 223 radiocarbon measurements from the site. These different forms of evidence have been combined using formal statistical methodology to provide quantitative date estimates for transitions in the environment and human activities within it. This Bayesian chronological modelling is reported in detail in Chapter 17. Formal

Figure 9 (page 223): A reconstruction of the lakeshore with a reed bed, fish drying rack and structure (Copyright Marcus Abbott, CC BY-NC 4.0).

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date estimates provided by this model are presented in *italics* with a reference to the relevant parameter name and the figure on which it can be found. However, this is ultimately an interpretative narrative. The lack of stratigraphy within the dryland areas, coupled with the presence of a plateau on the radiocarbon calibration curve between c. 9100 and c. 8800 cal BC, renders the chronological position of even those dryland structures that have produced coherent groups of radiocarbon measurements uncertain. Other lithic scatters and areas of activity on the dryland lack radiocarbon dates entirely. Here our chronological placing of these is based on archaeological reasoning, and techniques such as refitting. Where uncertainty is present this is stated in the narrative.

A history of occupation

In the beginning, there were beavers. Gnawed wood at the bottom of the brushwood sequence shows that before Mesolithic groups came to the lake, other beings lived there (Chapter 28). These animals inhabited a landscape that was changing rapidly in response to the sharp rise in temperature at the start of the Holocene. Aquatic plants were colonising the lake, creating colonies of water-lily, pondweed, and rafts of the floating plant water-milfoil as well as beds of the aquatic algae stonewort (Dark 1998a). Bulrush and other emergent plants were becoming established in the shallower water at the edge of the lake, creating a narrow fringe of wetland vegetation, whilst across the dry ground, areas of open grassland were being replaced by scrub vegetation and birch.

Even then it was a landscape that may have contained visible traces of past human activity. At the start of the Holocene, Final Palaeolithic Long Blade groups had visited Lake Flixton, leaving evidence for substantial activity on its northern shore at Seamer C, and more ephemeral traces at both Seamer L and Flixton Island (Conneller 2007). Star Carr may also have been a focus for Long Blade activity. A possible bruised blade was found in upcast from cleaning out the Hertford Cut (the canalised River Hertford) which truncates the northern part of the site, and a couple of large faceted blades derive from the western part of the site.

At Star Carr, contemporary with the other Long Blade activity around Lake Flixton, is worked timber <110553>, which was found within the western area of the detrital wood scatter. This timber was found within the organic sand (320), representing one of the lowest elements of this scatter of material. The timber is relatively large, measuring 650 × 62 × 25 mm and is a radial ⅓ split, with the split fading out at one end: this is highly unlikely to have occurred naturally. This radially split timber dates to 9745–9725 cal BC (1% probability; 110553; Figure 17.20) or 9670–9475 cal BC (94% probability), probably to 9660–9575 cal BC (65% probability) or 9525–9510 cal BC (3% probability). This is 125–395 years (95% probability; gap 110553/Star Carr; Figure 17.19), probably 230–365 years (68% probability) before the start of Mesolithic activity at Star Carr (start Star Carr; Figure 17.2) (Figure 9.1). Though the timber predates the earliest evidence for Mesolithic occupation by at least a century, its stratigraphic position suggests it was redeposited in the position from which it was recovered by Mesolithic people.

Organic sediments had begun to accumulate across the lake margins at Star Carr from 9635–9445 cal BC (94% probability; first EZ1; Figure 17.22) or 9435–9410 (1% probability), probably from 9580–9550 cal BC (14% probability) or 9535–9460 cal BC (54% probability). By the time that Mesolithic groups arrived at the site, beds of *Phragmites* reeds were growing in shallow water along the lake edge, with sedges, bur-reeds, stands of bulrush, and bogbean, creating a dense, rich swamp environment that extended at least 15 m from the shore. At the shore, willow, aspen and downy/white birch were growing on damp, waterlogged soils, amongst patches of nettles and ferns, whilst in the deeper water beyond the reedswamp, were species of water lily and pondweed (Figure 9.2).

Mesolithic groups first arrived at Star Carr in 9385–9260 cal BC (95% probability; start Star Carr; Figure 17.2), probably in 9335–9275 cal BC (68% probability) – within a generation of 9300 BC. This was probably after the amelioration in climate following the end of Abrupt Climate Event 1 (85% probable; *Isotopic event 1 end*; Blockley et al. 2018, Table S6; see also Chapter 4). There are three spatially distinct areas of activity at the site dating to the 93rd century cal BC (Figure 9.1). These are 1) the brushwood; 2) the accumulation of worked wood, bone and antler in the detrital wood scatter; and 3) possibly a structure on the dryland (Figure 9.1). Whilst it is not possible to determine the relative order of these (Table 17.8), they reflect a range of different activities that were taking place at Star Carr during this time.

Figure 9.2 (page 227): Bulrush (left) and willow and sedge (right) growing in lake edge environments (Blakemere Moss and Christleton, Cheshire) (Copyright Barry Taylor, CC BY-NC 4.0).

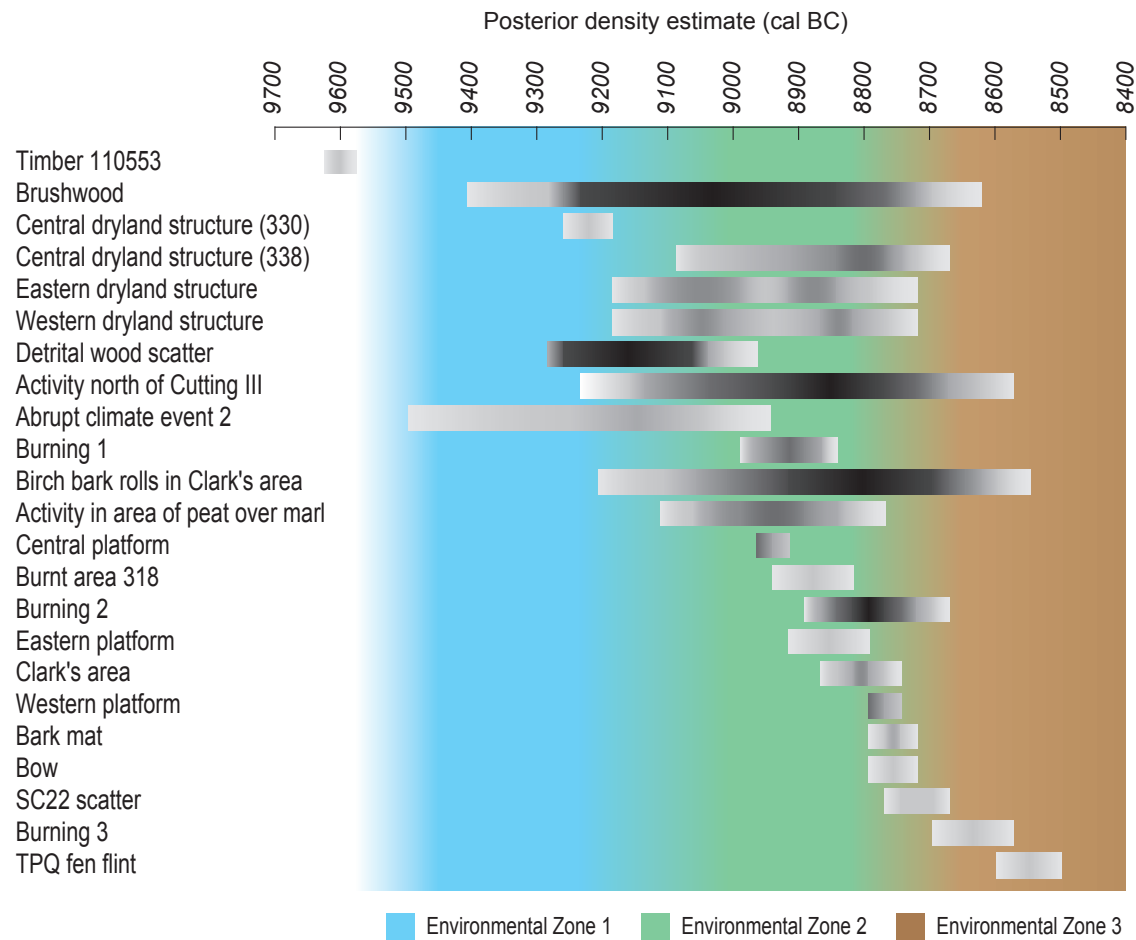


Figure 9.1: Schematic diagram showing the periods of different activities at Star Carr, the contemporary lake-edge environment (described in Chapter 19), and Abrupt Climate Event 2 (described in Chapter 4). The darker the shading the more probable that an element was present in a particular 25-year period (derived from the models defined in Appendix 17.1 and described in Chapter 17 and Blockley et al. 2018, *star_carr_climate_B_C_to_Vedde.oxcal*) (Copyright Star Carr Project, CC BY-NC 4.0).



In the western part of the site, people undertook tasks at the water's edge that resulted in the deposition of small quantities of worked wood into shallow water (Chapter 29), from 9340–9190 *cal BC* (95% probability; *start brushwood*; Figure 17.10), probably from 9295–9235 *cal BC* (68% probability). This material accumulated along with branches fallen from trees growing along the shore, into what has been termed the 'brushwood' (Chapter 6). No flint artefacts or animal bone relate to this early stage of brushwood accumulation, and it seems that tasks here were focused on woodworking only.

People continued to deposit artefacts in the area of brushwood close to the shore throughout the 93rd and 92nd centuries *cal BC* (Figures 17.7 and 17.10), including following the transition to reed peat in this area, which occurred in 9145–9045 *cal BC* (95% probability; *base of reed peat* 3178; Fig. 17.6), probably in 9135–9095 *cal BC* (61% probability) or 9085–9070 *cal BC* (7% probability). It may be during this time that the left femur of an adult domestic dog excavated by Clark was deposited, although this is uncertain and may have been slightly later as the probability distribution of the radiocarbon date provides several possibilities (OxA-V-994-33; Figure 17.17).¹

Although much of the material deposited into the wetlands probably derived from tasks undertaken on the dry ground, our datable evidence from this part of the site is limited to two fragments of charcoal from the upper fill of the hollow [330] of the central dryland structure (1955d and SUERC-65239; Figure 17.18). This hollow was surrounded by postholes, though half of it has been truncated by earlier excavations (Chapter 5). In addition, a large number of other postholes were found in this area, which are likely to relate to other structures. As described in Chapter 17, we have interpreted these samples as providing the best indication of the time when the central dryland structure was in use, and so it was probably contemporary with deposition in the area of brushwood and the detrital wood scatter in the later part of the 93rd century *cal BC* (Figure 9.1).

Two other structures were found in the dryland part of the site, the eastern structure which is also a hollow surrounded by postholes; and the western structure which is composed of postholes and a very dense scatter of flint, much of which is burnt (Chapter 8). However, uncertainties arising from bimodal posterior distributions are encountered (see Chapter 17) when we consider the possible chronology for the structures recorded on the dryland. The date estimates for both the construction and disuse of the eastern and western dryland structures, and for posthole [338] from the central dryland structure are strongly bimodal (Figure 17.18). Estimates for the durations of the eastern and western structures, however, strongly suggest a short period of use (Figure 17.19; Table 17.5). This, along with the statistical consistency of all the radiocarbon measurements from the eastern and western structures (see Chapter 17), strongly suggests that these buildings were either constructed and used on the first peak of their distributions, or on the second. It is unlikely that they were constructed on the first and disused on the second as this would entail centuries of use, which is improbable based on the coherent assemblage of radiocarbon dates produced by each structure. The weight of probability in these parameters generally falls around 60% in the generations around 9100 *cal BC* and around 30% in the generations around 8800 *cal BC* (Table 17.4). We really don't know, therefore, whether these buildings were constructed and used briefly in this period of the site whilst the brushwood at the lake edge and the detrital wood scatter were being deposited – or whether they belong to the (we will argue) intense activity on the site in the decades around 8800 *cal BC*.

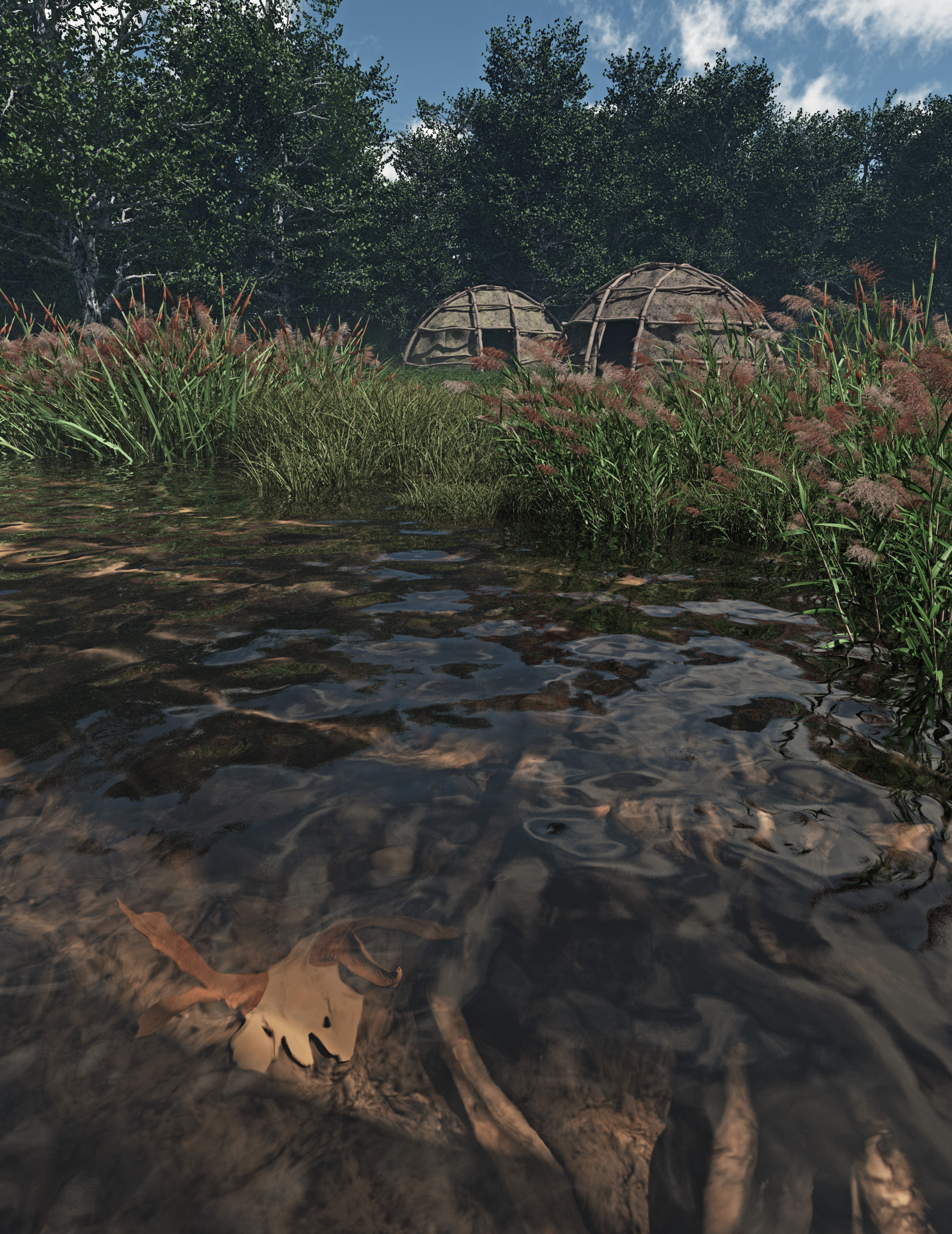
The majority of the evidence for the early occupation derives from the detrital wood scatter in the central part of the site (Figure 9.3; Chapter 6). Here people began to deposit large quantities of worked wood and woodworking debris, animal bones, antler working waste, and flint into shallow water from 9315–9245 *cal BC* (95% probability; *start wood scatter*; Figure 17.7), probably 9290–9255 *cal BC* (68% probability). This scatter was

¹ This measurement has only a 2% probability of being part of the concentrated period of activity in Clark's area (see below); either this dog is really an earlier episode of activity in this location, or the pretreatment of this sample failed to remove all the PVA contamination and the result is very slightly too old.

Figure 9.3 (page 229): Reconstruction of the detrital wood scatter (Copyright Marcus Abbott, CC BY-NC 4.0).

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made up of over 1300 pieces of wood, and extended over 30 m on a linear alignment from the shore through the wetlands. The material included timbers, roundwood, and entire trees, much of which had been worked. This included tangentially and radially split timbers, some with trimmed ends, roundwood that had been split or trimmed, woodchips and a number of artefacts including several dowels, a stake and the broken end of a digging stick (see Chapter 29). The scatter ran along the east side of the raised area of marl, perhaps at the boundary between the reedswamp and more open water to the west, and may have been laid down to stabilise the soft sediments so as to facilitate movement through the wetland.

Smaller quantities of animal bone (162 pieces), mostly red deer, but also elk, aurochs, roe deer, beaver and wild boar, as well as elk and red deer antler, were also deposited in this area, along with two worked red deer frontlets and several barbed antler points. A large proportion of this assemblage consisted of the remains of at least two red deer, which had been deposited whilst still in an articulated state into a gap on the south-west edge of the detrital wood scatter (Chapter 7). This material represents either the deposition of complete animal carcasses or large, articulated body parts into the wetland. One of the frontlets and several barbed points were also found in this area, and may have been deposited at the same time. Other unusual acts of deposition also occurred in this area. Two skulls, one from an elk and the other from an adult female red deer, were deposited onto the basal sediments to the south, and an elk cranium was deposited off the eastern edge of the scatter. The remainder of the assemblage was spread throughout the detrital wood scatter and was made up of smaller quantities of material, often exhibiting evidence for percussive breaks and spiral fractures. This appears to have been deposited following the butchery and processing of animal bodies, tasks probably carried out on the adjacent dryland.

Lithic artefacts are also present from the lowest levels of the detrital wood – albeit in low numbers (Chapter 8). All pieces in the lowest levels are blades with macroscopic edge damage. The presence of edge-damaged blades is a feature of the archaeology of the wetlands, and one that is found from their earliest use. In the upper parts of the detrital wood a greater range of lithic material is found, though it remains dominated by utilised pieces.

The deposition of material forming the detrital wood scatter ended during the 91st century cal BC. It ended in 9115–8915 cal BC (95% probability; *end wood scatter*; Figure 17.20), probably in 9095–9000 cal BC (68% probability). By comparing the posterior distributions for the beginning and ending of this scatter we can suggest that artefacts were deposited in this area over a period of 135–310 years (95% probability; *use wood scatter*; Figure 17.19), probably for a period of 160–250 years (68% probability).

Given the extended duration, representing some six to ten generations, we should consider how or why deposition was focused in this relatively discrete part of the lake edge wetlands. It is clear from the ages of those artefacts that have been dated that these cover the full span of this extended period (Figure 17.7). The demonstrably extended duration of this activity has implications for its intensity. The uncertainty in our estimate must be taken into account, but we must recognise that at most about 250 artefacts per generation were deposited at this location, and about 150 at least. Probably, a reasonable estimate can be obtained by using the median of the distribution of the duration of the scatter (eight generations) which would give us a deposition rate of 187 per generation (an average of 7 or 8 artefacts per year). However, it should also be noted that although the wood appears to be deposited through the sediments in this area, there is evidence for discrete episodes of deposition, notably the concentration of articulated red deer bones, and it is thus likely that there were intermittent periods of more intensive deposition.

Over this period, activity also continued in other parts of the lake edge, though as with the detrital wood scatter this was probably intermittent. In the brushwood area, people continued to undertake tasks that resulted in the deposition of worked wood into shallow water close to the shore, whilst the presence of charcoal in the north end of VP85A (CAR-930; Figure 17.13) could reflect ongoing activities on the adjacent dryland. We also have evidence for human activity in the form of the deposition of burnt birch bark rolls in the area to the north of Clark's cutting III (SUERC-66039 and OxA-33663; Figure 17.16). This is evidence for gradual expansion beyond the central area and presages more extensive use of the site in the ninth millennium BC.

At around the same time as the deposition of the brushwood and detrital wood scatter, and the use of the central structure hollow, there was a marked deterioration in the climate, with summer temperatures falling by

Figure 9.4 (page 231): Tussocks of wetland plants (in this case rush) growing in shallow water (Doolittle Mere, Delamere, Cheshire) (Copyright Barry Taylor, CC BY-NC 4.0).

1 to 1.5° (Abrupt Climate Event 2; Chapter 4). As a result, vegetation on the terrestrial landscape around the lake changed, as birch died back and open environments colonised by herbs and grasses became more expansive whilst soil instability caused sediments to wash into the basin (Chapter 18).

Throughout these centuries, organic sediments continued to accumulate within the lake margins, and whilst the lake level may have risen slightly, conditions would have gradually become shallower and boggy. From 9145–9010 *cal BC* (95% probability; first EZ2; Figure 17.22), probably from 9125–9055 *cal BC* (68% probability), conditions at the edge of the lake had become significantly shallower and were perhaps only seasonally submerged. In response, plants suited to shallower conditions, notably saw-sedge, began to grow on the peat (Figure 9.4). Initially, these may have been restricted to the areas closer to the shore but quickly expanded out to cover other parts of the site where they grew amongst the *Phragmites* reeds and other swamp plants. At the same time, reedswamp became more established over the area of marl, and wetland vegetation would have begun to expand further from the shore creating a more extensive reedswamp environment. Conditions at the lake edge remained wet and boggy, however, with pools of permanent standing water and an increasing depth of waterlogged sediment.

From the turn of the millennium, after the end of the climatic downturn (83% probable Abrupt Climate Event 2, Figure 9.1) there was a change of character, and perhaps intensity, in human activity within the wetlands. Quantities of macro-charcoal in Dark's profile M1 dramatically increase, suggesting more frequent (and perhaps more extensive) episodes of local burning within and perhaps around the edge of the wetlands. This period of burning (burning 1, Figure 9.1) began in 9070–8945 *cal BC* (95% probability; OxA-3349; Figure 17.12), probably in 9020–8965 *cal BC* (68% probability). It ended in 9015–8845 *cal BC* (95% probability; end of burning 1; Figure 17.12), probably in 8980–8895 *cal BC* (68% probability). It continued for a period of 1–130 years (95% probability; duration burning 1; Figure 17.19), probably for 10–85 years (68% probability). However, the shape of this distribution suggests that this activity continued for two or three generations rather than being a single episode (Figure 9.1).



There is also evidence of human activity in the 90th century cal BC in reed peat to the south of Clark's excavations, to the west of the brushwood, and in the area of the marl mound (Figure 9.1). To the west of the brushwood, this began in 9280–8845 cal BC (95% probability; *start reed peat in Clark area*; Figure 17.15), probably in 9135–8875 cal BC (68% probability); for example the birch bark rolls in Clark's area dated by SUERC-66048 and OxA-33667 were deposited at this time (Figure 17.15; Figure 9.1). In the area of peat over the marl this began in 9195–8855 cal BC (95% probability; *start peat over marl*; Figure 17.16), probably in 9090–8925 cal BC (68% probability). Though a number of finds are present here, perhaps the most significant is the dog skeleton (OxA-33678; Figure 17.16) (Chapter 23). The dog carcass was deposited into an area of very shallow, perhaps only seasonally flooded, reedswamp that had formed over the marl. It only lacks a few small bones and although it was found in two parts, this is likely to have been caused by post-depositional processes, as gently lapping water pulled the skeleton apart. The question remains as to whether this was a natural death in the water or represents deposition into the water. Given that for several centuries previously, animal bones including articulated bones had been deposited close by in the detrital wood scatter, it is possible that this was a purposeful deposition.

The first of a series of substantial timber platforms (the central platform) was constructed in the middle of the 90th century cal BC (Figure 9.5). This lay on the same alignment, and slightly to the north-east of the, by now long disused, detrital wood scatter (*end wood scatter/central platform*; Figure 17.19; Table 17.5), and consisted of three layers of large timbers and trees (Chapter 6). These lay directly on top of each other, with little or no intervening sediment, and so the platform appears to have been built in a single event. On this basis we can estimate that the central platform was constructed in 8985–8925 cal BC (95% probability; *central platform*; Figure 17.14), probably in 8970–8940 cal BC (68% probability). This is clearly later than both the start of the phase of burning (burning 1) evidenced in the macro charcoal in Dark's profile M1 (100% probable) and the end of the detrital wood scatter (91% probable) (Table 17.8) (Figure 9.1). It is also probable (66% probable), that the central platform was constructed before the end of this phase of burning (burning 1). Consequently it is plausible that at least one episode of this burning phase was carried out to clear vegetation ahead of the construction of the platform. The difference between our date estimates for the start of the first phase of burning and the construction of the central platform, however, strongly suggests that the burning began a generation or two before the platform was laid down (*start burning 1/central platform*; Figure 17.19).

Given the proximity and shared alignment of the central platform and the detrital wood scatter, their chronology is key to the interpretation of their relationship. The majority of deposition in the detrital wood scatter is clearly two or three centuries earlier than the construction of the central platform (Figure 17.7), but there is a small possibility that the final act of deposition occurred afterwards (9% probable). It is much more likely, however, that there was a gap between these events, one which lasted for –55–170 years (95% probability; *end wood scatter/central platform*; Figure 17.19), probably for 40–140 years (68% probability) (the negative value in this range reflects the possibility that there was an overlap between these activities rather than a gap). The balance of evidence suggests that there was probably a gap of at least one, and up to five or six human generations between the final deposition in the detrital wood scatter and the construction of the central platform.

Despite the chronological gap, the detrital wood scatter was probably still visible, in some form, by the time the central platform was laid down. As peat formed over the accumulation of wood and other materials it would have created a ridge of sediment, noticeably higher than the surrounding area. This is likely to have begun to form above the surface of the lake slightly earlier than the deposits around it, making it more visible even during periods of higher water, whilst reeds and other wetlands plants growing over it would have appeared taller than the neighbouring wetland vegetation.

The central platform ran from an area of boggy ground close to the shore, extending at least 17 m into the reedswamp. It was laid down onto the surface of the peat just after the deposits in this part of the site had begun to form close to (and perhaps seasonally above) the level of the lake. Conditions would have remained very wet, even during seasonally low water, and accessing this area would have involved wading through soft and relatively deep accumulations of partially decomposed vegetation and organic sediments.

Figure 9.5 (page 233): Reconstruction of the central platform (Copyright Marcus Abbott, CC BY-NC 4.0).

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The central platform is the only platform with reasonable quantities of associated artefactual material. While the majority of the platform was kept clean, a series of small clusters were found along the western edge. These may represent discrete dumps of lithic and faunal material deriving either from the dryland or from clearing out of boats using the lake. The associated faunal remains consist of antler and modified bone, which may represent the debris from tool production. On the southern part of the platform was the largest of these clusters, composed of flint, which seems to have been deposited onto a plank in a bag or basket (Chapter 8). This consists of exhausted cores and pieces used for animal processing. This may represent a personal toolkit that was lost or discarded because it was worn out, or even a collection of material that underwent special deposition due to its association with animal remains.

At the time the platform was constructed, in the 90th century cal BC, tasks leading to the deposition of lithic artefacts in the area of reedswamp over the marl and woodworking debris on the brushwood continued. Deposition in the area of peat over marl, however, ended in 9015–8650 cal BC (95% probability; end peat over marl; Figure 17.16), probably in 8955–8795 cal BC (68% probability).

Activity continued within the area of the central platform for two or three generations after its construction (*gap central platform/burnt area 318*; Figure 17.19), as peat began to form over the timbers. By this point the deposits in this area were probably only periodically flooded, though ground conditions remained wet, and herbaceous wetland plants (possibly reeds or sedges) were growing in the immediate area. The vertical spread of the flint scatter above the platform suggests that, although covered by peat, the platform persisted as a raised feature. On this raised area flintworking and tool use occurred, with the dumping of small spreads of material (as occurred on the platform) seemingly continuing. In situ knapping in this area focused on manufacture, reworking and resharpening of at least eight tranchet axes (Chapter 8). Two of these were missing but the remainder were recovered from the area and are either minimally used or unused. A wide variety of other tools were also recovered, indicating this area was used for a range of tasks. Burins are the most common, and are likely to be related to the working of the antler also found in this area. This range of activities was associated, spatially, with a discrete spread of carbonised wood which probably represents a single burning event in the wetlands (318) (Chapter 32). This occurred in 8965–8820 cal BC (95% probability; *burnt area 318*; Figure 17.17) probably in 8940–8910 cal BC (22% probability) or 8905–8845 cal BC (46% probability). This burning patch was found immediately overlying a refitting axe sequence (Chapter 8).

The episode of axe production and repair seems to have occurred in a landscape in which burning events were much less frequent than they had been just a few generations earlier. It is 79% probable that the first burning phase had ended, and 82% probable that the second burning phase had yet to begin when the burnt area was created (Table 17.8). The second phase of burning apparent from the macro-charcoal in Dark's (1998b) environmental Profile M1 began in 8915–8785 cal BC (95% probability; *start of burning 2*; Figure 17.12), probably in 8880–8815 cal BC (68% probability). There was thus a gap of 25–155 years (95% probability; *gap end burning 1/start burning 2*; Figure 17.19), probably a gap of 55–120 years (68% probability) between the end of the first phase of burning and the start of the second. This period of three or four human generations appears, broadly, to reflect the interval between the construction of the central and eastern platforms.

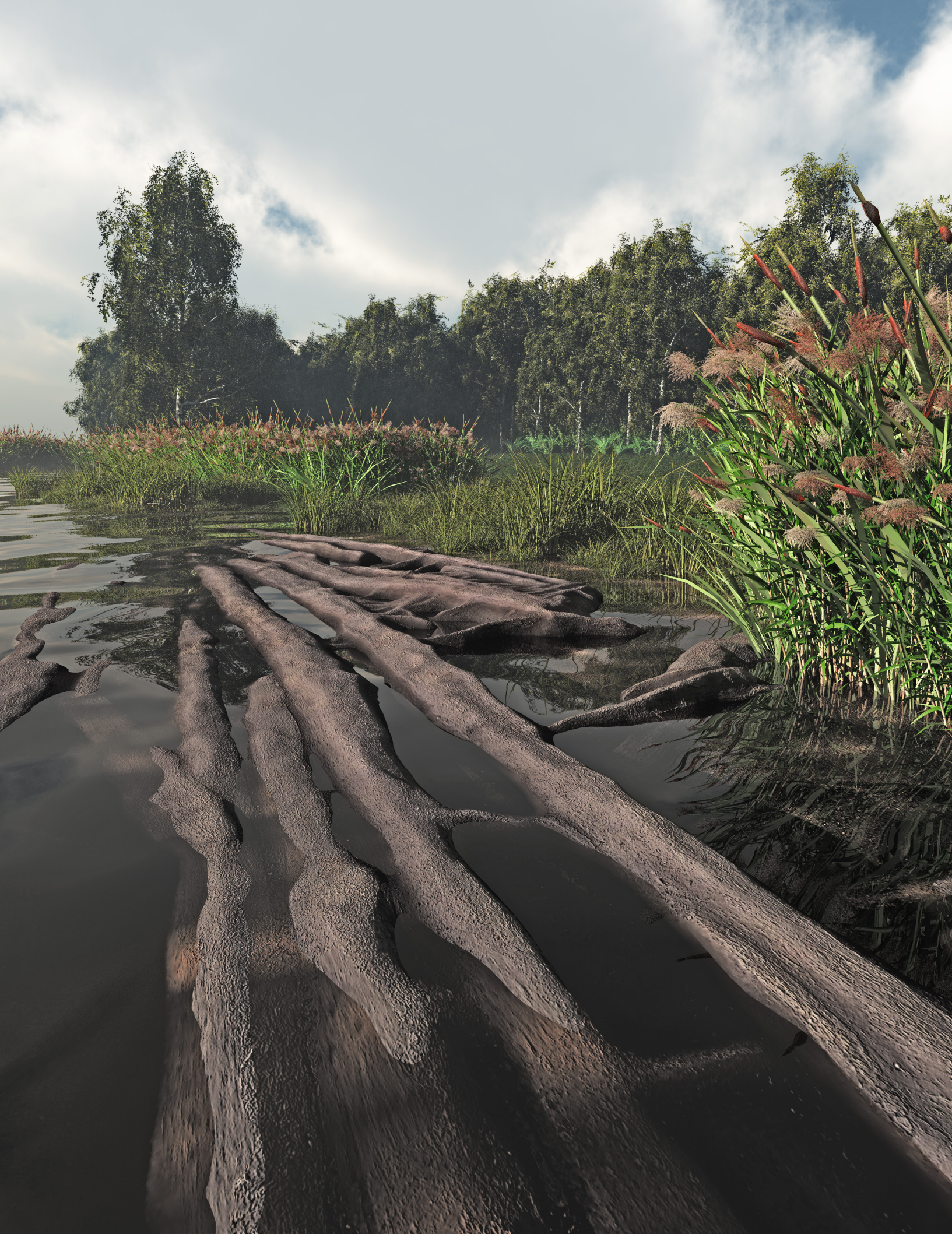
The eastern platform consists of a single layer of split timbers and trees, and runs for 11 m on a slight diagonal from the lake shore (Chapter 6; Figure 9.6). As with the central platform, it was laid down onto the peat after conditions were becoming shallower, or only seasonally flooded, within an environment of *Phragmites* reeds and other wetland plants. Our dating for the eastern platform is the least secure of our chronologies for the construction of the timber platforms as it is based on very few dated samples (see Chapter 17). On the basis of current evidence, however, it is clear (97% probable) that the eastern platform was constructed after the central platform. It was laid down in 8945–8760 cal BC (95% probability; *OxA-33662*; Figure 17.14), probably in 8915–8895 cal BC (9% probability) or 8880–8795 cal BC (59% probability).

The eastern platform was constructed –5–205 years (95% probability; *gap central/eastern platforms*; Figure 17.19) after the central platform, probably 55–165 years (68% probability) afterwards. The date estimates for the construction of the eastern platform and the date estimates for the start of the second phase of

Figure 9.6 (page 235): Reconstruction of the eastern platform (Copyright Marcus Abbott, CC BY-NC 4.0).

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burning are very similar, and it is not possible to determine which came first. It is certainly possible, however, that the start of the second phase of burning could include an episode of clearance before the construction of this platform. It is 76% *probable* (Table 17.8) that the eastern platform was constructed after the flintworking activity around burnt area 318. Since the eastern platform was covered by a fallen tree only a few decades after its initial construction (*gap eastern platform/fallen tree*; Figure 17.19), its use cannot have been prolonged. This is reflected in the artefact assemblage associated – only 10 pieces of flint, indicating few activities using lithics in this area, or that the platform was kept deliberately clean.

At this time, during the 89th century cal BC, activity that led to the deposition of worked wood amongst the brushwood further to the west continued.

As discussed above, the place of the structures on the dry ground in this narrative is uncertain because of the bimodal nature of the posterior distributions of the eastern and western structures (Figure 17.18). We have argued in Chapter 17 that the central dryland structure may be the earliest, though there is also evidence from one of its postholes that there may have been later activity, contemporary with the other two dryland structures, in this area (Figure 9.1). The eastern and western structures have coherent (though bimodal) dates and though they could belong in the 91st century cal BC, there is a good chance that they date to the generations around 8800 cal BC, part of the intense activity on site at this time.

The eastern structure consists of a lenticular pit around 3 m in diameter, surrounded by a ring of posts, around 4 m in diameter (Chapter 5). The fill of the pit was dark and organic, a result of decomposed vegetal matter, possibly reeds or bark which served as a floor. The pit and area within the posthole was dense with lithic artefacts, including burnt flint (the remnants of a hearth). Though the structure probably underwent clearance during its lifetime, the later levels of occupation seem well preserved. They indicate short episodes of core reduction, the production of tools (often burins), and the use of tools in various craft activities, particularly hideworking, but also plant and woodworking. Antler suggests that organic tools were also made here. There is also evidence for curated personal tools being taken to the structure for repair or storage. Cooking also took place in the structure, with burnt fish bones, and burnt and highly fragmented remains of red deer, aurochs and pig recovered (Chapter 7).

The structure appears linked, either functionally or through refits, with many of the lithic scatters that surround it (Chapter 8). Scatter 4, a knapping scatter and area of tool use, in particular burin work, is closely linked to the structure through refits, and its large quantity of burnt flint may represent material cleared from the structure. Scatter 2 also appears to be linked through the structure as activities represented in the two areas are similar and refits also connect the two areas. Scatter 2 is focused on animal (and fish) processing, and the production of burins. It may well represent material cleared out from the structure and deposited in this area.

The western structure is of similar date to the eastern one, but rather different in nature (Chapter 5). No central pit was recorded, instead there was a semi-circle of possible post-holes which enclosed the inner part of an extremely dense spread of lithic material and animal bone. Much of this material is burnt; over a third of the flint displays traces of burning. While it may have had some use as a structure, the general character of the material remains – high quantities of burnt flint, exhausted pieces and lack of spatial patterning – suggest this area was used as a midden. This midden was used for the deposition of burnt waste, knapping material and used tools. The tools deposited on the midden had been mainly used in craft activities, the working of plants, wood, hide and bone. Immediately to the east was a butchery area, which may well represent in situ activities, and surrounding the midden was a low-density scatter of knapping debris and tools that also seem to mainly have been used in craft activities, including bead working.

To the south-west of the western dryland structure these generations also saw the deposition of the large assemblage of bone, antler, wood and flint into the reedswamp environments forming at the lake edge further to the west of Star Carr, as initially found by Clark (Figure 9.7). A small area of this had been preserved within a section of Clark's baulk and the excavation of this in 2015 revealed just how remarkably dense this material was. The wood tended to be small pieces of roundwood, which Clark labelled as the 'birch brushwood platform'

Figure 9.7 (page 237): Reconstruction of Clark's area (Copyright Marcus Abbott, CC BY-NC 4.0).

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in his figure 2 (Clark 1954, 3; though see Chapter 6) and wooden artefacts. Amongst the wood was a large and diverse assemblage of flint, bone and antler. This includes many of the iconic artefact types from the site such as the antler frontlets and barbed points.

Contrary to Clark (1954) and subsequently Mellars (2009), this assemblage does not reflect an episode of settlement activity within the lake edge reedswamp, rather it represents material that has been deposited in this area. At the time of deposition the area would have been at least periodically submerged and possibly permanently under shallow water, whilst the sediments would have been waterlogged and boggy. There is no evidence that the wood found within the assemblage had been laid down to form an occupation surface, and the dating of the material itself show that it had rapidly sunk into the underlying sediments, eventually coming to rest on, or just above the basal sands and gravels (Figures 17.15 and 17.22).

This activity began in 9125–9090 cal BC (4% probability; *start Clark area*; Figure 17.15) or 8915–8775 cal BC (91% probability), probably in 8850–8800 cal BC (68% probability). This episode ended in 9100–9075 cal BC (3% probability; *end Clark area*; Figure 17.15) or 8830–8710 (92% probability), probably in 8810–8755 cal BC (68% probability). Overall, items were added over a period of 1–145 years (95% probability; *use Clark area*; Figure 17.19), probably for a period of 1–65 years (68% probability). The shape of this distribution, along with the statistical coherence of the assemblage of radiocarbon results (see Chapter 17), strongly suggest a very short duration for this deposit.

At the beginning of the 88th century cal BC, the third (western) platform was laid down into the wetlands forming at the lake shore just to the east of this large assemblage of bone and antler artefacts (Chapter 6; Figure 9.8). This was made up of three layers of wood (split and unconverted timber, and trees) and ran for at least 14.5 m at a slight angle from the lake shore. Some unusual objects appear associated with its construction. To the east a wild boar mandible was laid down immediately under the timbers, yet visible between them, while in the north-central part two large flint nodules (110 and 160 mm in length) were placed in the same relationship with the platform. As with the other platforms it was laid down directly onto the peat, in an area of soft, boggy ground subjected to regular flooding where reeds and other wetland plants had been growing.

Again, based on the lack of sediment between the timbers of the western platform, we have modelled its chronology on the basis of the interpretation that it was constructed in one episode. This occurred in 8805–8755 cal BC (95% probability; *western platform*; Figure 17.14), probably in 8795–8765 cal BC (68% probability).

The western platform is very likely (95% probable) to post-date the eastern platform, and was laid down –25–170 years (95% probability; *gap eastern/western platforms*; Figure 17.19) after the eastern platform, probably 15–120 years (68% probability) later. In other words, two or three generations probably elapsed between their constructions. It is 60% probable that the first items were placed in Clark's area after the construction of the eastern platform, but 98% probable that they were deposited before the construction of the western platform. The estimated dates for the construction of this platform and the end of deposition in this area are too close for their relative sequence to be determined, but it is certainly possible that material continued to be placed into this area once the western platform had been constructed (Table 17.8).

There was clearly an intense period of activity in the seasonally flood reedswamp around the lake edge in the generations around 8800 cal BC. This saw the successive construction of two platforms, a concentrated deposition of artefactual material in Clark's area, and continued deposition of birch bark rolls and woodworking debris (and presumably other artefacts) along the shore, in the areas north of cutting III, in the reed peat in the locality of Clark's area, and in the area of the brushwood around the western platform itself (Figures 17.10, 17.15, and 17.17). The second period of burning also continued and, as discussed above, we argue that two of the structures on the dryland were used within these decades. The relative sequence of these activities is difficult to distinguish, given the resolution of the chronology presented here, as is their duration. However, there does seem to be intense activity at Star Carr at this time.

Like the central platform before it, the use of the western platform seems to have been relatively brief. Separated from it by an 0.15 m accumulation of peat, lay a birch bark mat which has been dated to 8800–8705 cal BC

Figure 9.8 (page 239): Reconstruction of the western platform (Copyright Marcus Abbott, CC BY-NC 4.0).

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(94% probability; SUERC-59177; Figure 17.17) or 8665–8655 cal BC (1% probability), probably to 8785–8745 cal BC (68% probability). This was laid down probably only a few decades after the construction of the western platform (*gap western platform/bark mat*; Figure 17.19). It was probably at about this time that a bow (SUERC-25240; Figure 17.17) was deposited on the southern periphery of Clark's area (it is possible that episodic, low-level deposition continued in this area after the main concentrated phase of deposition here (e.g. 115876; Figure 17.17)).

Two episodes of flint working probably fall in the 88th century cal BC. An assemblage of worked flint, mainly tools and blades related to antler working, was recovered on the interface between reed and wood peat at the easternmost part of the excavated area in trench SC22 (Figure 9.1). Although the date on a fragment of worked antler that may have been associated with this activity produced an anomalous radiocarbon measurement for technical reasons (OxA-16809; see Chapter 17), the stratigraphic position of this scatter allows us to estimate from the encircling radiocarbon dates that it was deposited in 8775–8665 cal BC (95% probability; SC22 scatter; Figure 17.20), probably in 8755–8705 cal BC (68% probability).

Flint working probably relating to the manufacture of shale beads has been recovered from the western part of the excavated area to the north of Clark's cutting III. A date on a birch bark roll from this area, from a similar height to the top of the main concentration of flint (SUERC-66043; Figure 17.16), may also place this activity in the 88th century cal BC. However, it may have begun rather earlier, as the worked flint is distributed vertically through c.120 mm of the peat sequence. Dates on birch bark rolls from the base of the flint concentration (SUERC-66039 and OxA-33663) have bimodal distributions, and date this horizon to either the centuries immediately prior to c. 9000 cal BC or just after (Figure 17.6). However, whether the vertical distribution of the flint reflects the gradual accumulation of material over time or the results of taphonomic processes that have caused some of the flint to sink is impossible to determine.

The second phase of burning identified by macro-charcoal in Dark's (1998b) environmental Profile M1 ended in 8805–8630 cal BC (95% probability; *end of burning 2*; Figure 17.12), probably in 8770–8675 cal BC (68% probability). This period of activity had lasted 45–215 years (95% probability; *duration burning 2*; Figure 17.19), probably for 80–165 years (68% probability).

The deposition of worked timber at the lake edge in the area of brushwood (which had continued in the face of the construction and demise of the western platform) finally came to an end in 9090–8920 cal BC (12% probability; *end brushwood*; Figure 17.10) or 8820–8510 cal BC (83% probability), probably in 8785–8630 cal BC (68% probability). This ended an activity in this space that had been carried out for numerous generations – for a period of 160–360 years (12% probability; *use brushwood*; Figure 17.19) or 410–765 years (83% probability), probably for 470–655 years (68% probability).

From 8795–8605 cal BC (95% probability; *first EZ3*; Figure 17.22), probably from 8750–8655 cal BC (68% probability), fen/carr began to develop around the lake edge at Star Carr (Figure 9.9). Preservation in these upper deposits is much poorer (Chapter 19), and so it is much harder to find datable material. Human activity on the site is, however, clearly demonstrated by flint assemblages within the wood peat, particularly along the eastern edge of Clark's cutting II.

In the 87th century cal BC, after an interval of 20–135 years (95% probability; *gap end burning 2/burning 3*), probably after an interval of 65–110 years (68% probability), a marked but discrete peak of macro-charcoal is found in Dark's (1998a) environmental Profile M1. This occurred in 8735–8535 cal BC (95% probability; *burning 3*; Figure 17.12), probably in 8685–8580 cal BC (68% probability).

Otherwise, activity in the 87th and 86th centuries cal BC at Star Carr has only been dated by measurements on a resin cake and a dog cranium from unknown locations in Clark's excavations (OxA-2343 and KIA-307034; Figure 17.17), and by measurements on bulk sediment surrounding artefacts (CAR-922 and CAR-925), and in one case an artefact (OxA-1154; Figure 17.13) from VP85A. A *terminus post quem* can be calculated for the deposition of a large scatter of flint by its stratigraphic position in the age-depth model for environmental Profile CII 2010. This deposit was made in or after 8670–8475 cal BC (95% probability; *TPQ fen flint*; Figure 17.9), probably in or after 8605–8515 cal BC (68% probability). The fen flint seems to consist of a contiguous series of small scatters of knapping and tool use that extend into the Clark area (both into cutting II and Clark's eastern 1951 trench), suggesting that much of the material in this zone in the eastern part of Clark's trench may be relatively late. Evidence from Clark's western trench suggests they may be associated with small hearths. Most notable amongst the evidence from the current excavations is a cluster of five awls, all the same idiosyncratic shape, within the space of less than a metre. Beads were found not far away in Clark's



Figure 9.9: Reeds and willow growing on lake edge peat (Rostherne Mere, Cheshire) (Copyright Barry Taylor, CC BY-NC 4.0).

western trench. Burins are also common in this area, and the only faunal remains consisted of several pieces of antler. Utilised blades are also very common. All indications are that this is a craft area and suggests that the site continued to have a domestic focus late in its history. A refit between this area and a discrete knapping scatter to the south of the eastern structure suggests this craft area is connected to activities elsewhere on site which have not been dated. A specialist craft focus might suggest associated structures which are as yet undated or not yet excavated.

Human activity may also have taken place on the dryland in the 86th century cal BC, this being the date of the latest of the fragments of charcoal dated from the top fill of the hollow of the central dryland structure (SUERC-65238; Figure 17.18). This may be associated with either or both of two small knapping scatters, one to the east and one to the west of the structure, that high refitting success rates suggest these have seen relatively little subsequent disturbance. A final scatter that appears relatively undisturbed, and is thus more likely to derive from the later phases of the site, is scatter 3, located to the east of the eastern structure, which seems associated with animal-focused craft activities. A refit between this scatter and a blade found towards the top of the wetland sequence supports this suggestion.

Given the difficulties of obtaining a representative sample of datable material from the latest horizons at Star Carr, we must regard the estimated date for when Mesolithic activity on the site ended with some caution. However, based on the evidence available, this ended in 8555–8380 cal BC (95% probability; end Star Carr; Figure 17.2), probably in 8525–8440 cal BC (68% probability). Mesolithic occupation at Star Carr probably ended before the reedswamp had entirely disappeared (95% probable; Table 17.8).

Discussion

The earliest occupation of Star Carr, before 9000 cal BC, appears to have consisted of relatively discrete, but repeated episodes of activity that were focused largely on the central area of the site in the form of the detrital wood scatter and the central dryland structure. During this time people were felling larger trees, possibly modifying an existing clearing to create space for the initial occupation and collecting coppiced stems from trees on the margins of the clearing, at the water's edge, probably close to the brushwood to the west of the site. Some of the wood was worked into dowels, or artefacts, but the wood was probably also used to construct the central dryland structure and possibly other structures related to the large number of postholes in this area. To make the central structure people dug out a large central hollow which was surrounded with a framework of timbers, probably covered with plant material or animal skins. We know relatively little about the activities that went on within this structure as it either involved relatively little flintworking, or was thoroughly cleaned out at some point in its history.

Throughout the early history of the site, people deposited woodworking debris, roundwood, and in some cases entire trees, along with several wooden artefacts, into an area of shallow standing water to the south of the site, probably to reinforce the basal sediments and allow access into the deeper water further from the shore. In this detrital wood scatter they deposited the skulls of elk and red deer, and two red deer antler frontlets, articulating parts (or potentially entire carcasses) of red deer, and curated butchered elements, into an area of standing water roughly half a metre deep. Over time, these deposits created a substantial accumulation of worked wood, animal bone, antler and flint that extended at least 18 m from the shore.

The deposition of cervid heads, intact, partially modified, or as masks, is a key feature of the archaeology of the wetland at Star Carr, and it is worthy of note that it commences as soon as the site is occupied. The earliest date for animal deposition derives from an elk skull, which was deposited in the first half of the 93rd century BC (<108941>; Fig 17.7). This predates the earliest evidence for the deposition of red deer skulls by nearly a century (e.g. OxA-33673; Fig. 17.7). The patterned deposition of elk remains into water is a feature of the Early Mesolithic archaeology of Southern Scandinavia (see Chapter 12), and this evidence (albeit with few examples dated), might suggest the earliest occupiers of Star Carr were similarly focused on elk, with their preoccupation with red deer developing slightly later, though still relatively early, in the history of the site.

The detrital wood scatter also provides evidence for structure within wetland depositional practices, with a focus on relatively complete faunal remains, modified animal heads, stone tools (rather than knapping debris) and bone, antler and wooden artefacts. It also provides evidence for the earliest antler frontlet from the site. The deposition of these important artefacts, one associated with articulated red deer body parts, the other on a flat piece of wood, can be argued to represent some form of special deposition.

During this early occupation, a clear downturn in climate occurred (Abrupt Climate Event 2; Figure 9.1), similar in scale to the 8.2 ka BP (c. 6200 BC) event (Chapter 4). Despite the occurrence of such a severe event, which impacted on both climate and ecosystems, the communities at Star Carr not only endured these changes but the same forms of cultural activities that characterise the site persisted unchanged.

After 9000 cal BC, it is clear that there was a broadening of the spatial focus and intensity of activities in comparison with the scale of events in the preceding three centuries. New areas have evidence for occupation for the first time: with the wetland area to the south of Clark's excavations initially used from the 90th century, a large midden developing in the north-west part of the dryland, and the eastern dryland area also revealing the first evidence of use. Activity still appears episodic, but there were periods where certain areas were intense foci of activity. One such area is Clark's area, where large quantities of animal bone, organic artefacts and worked flint were deposited in the decades around 8800 cal BC.

At the same time there are features indicating greater investment in place. The first of three timber platforms was assembled in the middle of the 90th century cal BC, with two further platforms placed on the edge of the lake over the following two centuries. Site maintenance activities, long considered an indicator of increased permanence, also increased during this time. The large and dense midden on the western part of the dryland indicates aggregation of material, as does the clearance and dumping of material from the eastern structure.

Archaeologically, the most visible sign of this increased intensity and scale of activity are the three timber platforms successively erected on the shoreline over a period of around 175 years. All are large structures which have been composed of large trees and in some cases split timbers, for example at the base of the central

platform. However, there is no other structural evidence, e.g. posts to keep them in place. The eastern and western platforms are similar in construction even though they are not contemporary and they are more or less parallel to the shore. The central platform is at a roughly 45 degree angle to the shore, and the end of it is truncated (no further excavation could be carried out due to a land drain at this point).

The function of the platforms remains enigmatic. It seems unlikely they acted as working surfaces as very little artefactual material has been found either adjacent to or between the timbers. Even if the platforms were regularly cleaned, we might expect to find small pieces of flint and other materials in the gaps between the timbers, or accumulations of material to one side of the platform. The exceptions are several small, discrete deposits of artefacts that have been placed immediately under, within or adjacent to the timbers in the central and the western platforms. In the case of the western platform in particular, the presence of these deposits contrasts with the overall paucity of finds, either on or adjacent to the timbers, which would suggest that these are intentional acts of deposition as opposed to casual, ad-hoc disposals.

Though less archaeologically impressive, the post-built structures that were constructed on the dryland are also a clear sign of heightened scale of activity at the site. Large and relatively substantial structures can be constructed using plant materials or animal hides without the need for post-holes. The fact that the Star Carr structures were built on a wooden frame set into the ground suggests that their builders intended them to last. That the structure and the midden are both associated with intensive and repeated bouts of activity, probably occurring over a restricted period of time, further reinforces the impression of a greater intensity of occupation at this time.

As we have argued elsewhere (Conneller et al. 2012), the construction of the timber platforms and post-built structures suggests a scale of activity not usually associated with the very Early Mesolithic. This increased focus of Mesolithic people at Star Carr may have been born of an understanding of the past history of the site. It is likely to be no coincidence that the first timber platform was erected in the central part of the site, the area that had been the focus of the initial occupation, and no coincidence that spatially it respects the area of the detrital wood scatter. Even though this area appears to have been disused for several generations before the platform was built, it may, as we have argued, have persisted as a visible raised area, and in people's memory as a result of the depositional acts that marked it as important. This platform marked this area and formalised a route down into the wetlands that had been undertaken by past generations. A similar relationship can be noted between Clark's area and the western platform. The intense deposition of artefacts and faunal remains in Clark's area was followed by the building of the western platform which abuts its eastern end. The temporal gap between the deposition and the platform in this case is shorter. Though the first artefacts entered the waters of the lake before the platform was built, later acts of deposition may be contemporary.

Depositional practices also show continuity with the earlier occupation of the site. Although the scale and intensity of deposition within Clark's area is greater, people selected the same sorts of material as they had done centuries before as they deposited artefacts around the detrital wood scatter. This included the butchered remains of animals, skulls, flint tools and utilised blades, and objects made from the remains of animals, including the red deer antler frontlets. They also continued to deposit such objects at other points along the lake shore, along with caches of material such as worked flint. This similarity in the choices of materials to be deposited suggests the persistence of cultural traditions, knowledge of appropriate ways to act in the world, presumably passed on from generation to generation.

These ongoing acts of deposition took place within the wider context of the habitual, routine practices of people's lives. Throughout these centuries people continued to harvest roundwood from trees at the water's edge, discarding waste material on the shore where it worked its way into the adjacent reedswamp, and working the wood into objects. They felled trees, using these as materials for the platforms but also, perhaps, for the post-built structures. People worked antler, discarding the waste material into standing water close to the shore, carried out tasks within the reedswamp that involved the use of flint tools, and worked wood and other plant materials as they sat around the eastern structure. They fished at the water's edge and hunted animals in the surrounding landscape, bringing the carcasses back to the site where they were butchered and skinned. Meat was cut from the bones, which were then broken to extract marrow, or worked into objects using flint tools. Waste was gathered up and deposited in the midden, whilst some materials were selected for deposition at particular places within the reedswamp. Throughout this time the ongoing accumulation of organic sediments caused the character of the wetlands to change, and people began to use this area in different ways. As peat formed over the earlier central platform people used this area to work flint into axes, leaving scatters of

debitage over the surface of the swamp. Later, people worked antler within the wetlands to the east of the site, and around the same time they used flint tools to manufacture beads in swamp environments to the west. As the peat built up further, it began to form beyond the reach of the lake water and fen environment became established. Now people began to knap flint within the fen, perhaps around hearths, and use this to work antler and possibly shale for beads.

Conclusions

This evidence and dating programme has allowed us to produce an interpretation of activity at Star Carr through time. We can say that there was occupation, perhaps episodic and probably of varying intensity, throughout an 800-year period. We can track the history of human exploitation of the lake edge, and relate this to the changing wetland environment with some confidence. Comparatively intense deposition in the area of the detrital wood scatter occurred in the first centuries of human occupation at Star Carr, into shallow water at the base of which organic sediments were forming. This period of deposition ended as reedswamp began to encroach on the standing water, and a period followed when the lake edge continued to be utilised (brushwood continued to accumulate, the central platform was constructed), but deposition in the wetlands was less intense. The intensity of activity in the wetland increased, probably to a scale not previously seen at the site, during the generations around 8800 cal BC. Not only were the eastern and western platforms constructed, but large numbers of artefacts were placed in Clark's area in a restricted period of time. From the later 88th century cal BC activity around the lake edge perhaps reduced in intensity, but also changed in character as reedswamp made way for fen carr and flint working and bead manufacture could take place on the increasingly dry surface. The important limitation of this narrative is the uncertain position of the activity on the dryland. Did the coming of reedswamp in the early centuries of the ninth millennia lead not to a decrease in the intensity of activity at Star Carr, but rather a shift in focus to the dryland?

With the technologies for dating currently at our disposal, we cannot know. And this is a theoretical challenge, not only for integrating the story of the lake edge at Star Carr with the story of the adjacent dryland, but also for interpreting that narrative within the context of the British Mesolithic as a whole. How can we exploit a story narrated at a scale of centuries, and sometimes even human lifetimes, within a tale told across millennia? This is a new problem for Mesolithic archaeologists, but one that we are happy to face.