

## **Plants as persons: perceptions of the natural world in the North European Mesolithic**

Barry Taylor.

Department of History and Archaeology, University of Chester

### **Abstract**

*Amongst many hunter-gatherer communities, plants, animals and other aspects of the 'natural' environment, are bound up in, and gain significance and meaning from, specific cultural traditions. These traditions intricately bind the natural world into broader ontological understandings, which include concepts of animacy, the origins of the world, its structure and composition, and the behaviour of supernatural beings. Through these traditions, elements of the environment are imbued with an ontological significance that informs the way people perceive them, and how they interact with them through economic or ritual practice. There is a growing body of evidence that comparable traditions also structured the ways that hunter-gatherers interacted with their environment during the European Mesolithic. Much of the research has focused on the significance of animals, but this paper argues that plants were perceived in a similar way. Through a series of case studies from the North European Mesolithic, it shows how trees in particular were understood as powerful forces, playing active roles in people's lives, and how interactions with them were mediated through prescribed forms of social practice*

### **Keywords**

Mesolithic, Mesolithic beliefs, ritual, environment

## Introduction

*“Thank you, friend, that I have found you, for I have come here to hire you, friend, to work for me that you may be the deadfall of my trap for the landotter who is intelligent when he is being trapped. Now only take care and call the landotter to come under you and when you fall, fall behind the shoulder blades so that you kill him” Boas 1930, 198*

This prayer, documented by Franz Boas in his ethnology of the Kwakiutl (Kwakwaka'wakw), was recited when selecting the stems of western hemlock (*Tsuga heterophyll*) for the construction of a deadfall trap. In the prayer, the person making the trap asks the stem to correctly perform a particular function, in this case to act as the heavy weight of the deadfall and to call the landotter to it. Other prayers were said to the stems used as the supports and base of the trap, again asking that they act in the desired way, and to the completed trap when it had been set (Boas 1930). Similar prayers, in some cases accompanied by prescribed ritual acts, were recited during different interactions between Kwakiutl humans and their world. In some cases these were addressed to plants or animals, either requesting that they act in a particular way, or giving thanks to them for their role in tasks associated with hunting or gathering (e.g. Boas 1921, 1930). In others, the prayers were directed to supernatural beings, asking them to exert their influence over natural phenomena such as the wind or the state of the sea (e.g. Boas 1930).

These practices describe a way of understanding the world in which aspects of the natural environment, such as plants, animals, and the weather, behave in ways very different to those defined in western concepts such as botany, zoology or meteorology. For the

Kwakiutl, and many other hunter-gatherer communities in the northern hemisphere, the ways in which aspects of the environment are understood is bound up in wider ontological traditions that explain the world and the place of humans within it. In these traditions, plants, animals, topographic features, and meteorological processes can possess degrees of animacy and intentionality on a level comparable to humans, as well as affective properties (such as imparting good or bad luck, causing illness, or affecting the weather), that are understood as having a notable (even observable) influence on humans and other aspects of the world (e.g. Nelson 1983, Jordan 2003, Willerslev 2007). Cosmological associations can also mean that aspects of the environment are under the control of supernatural beings, or that they act as a medium through which it is possible to communicate with such beings (e.g. Jordan 2003, Vajda 2011, Ozheredov et al. 2014).

These ontological understandings inform the way that humans interact with their world. Economic practices can involve prescribed forms of behaviour intended to mediate relations with plants and animals that may be perceived as being animate or under the control of supernatural beings. These can determine the social composition of hunting parties, the types of technology used, and the ways in which animal (and sometimes plant) remains are disposed of (Nelson 1983). Plant and animal materials may be used selectively depending on the properties or associations they possess, with some materials understood as being suited to specific tasks while others may be considered dangerous and are actively avoided (Nelson 1983). And patterns of activity in the landscape may be structured by the presence of particularly benevolent trees (Nelson 1983) or places inhabited by supernatural entities (Jordan 2003).

There is now a significant body of evidence to suggest that broadly comparable traditions informed the ways in which hunter-gatherer communities understood their world during the North European Mesolithic (c. 9300-4000 cal BC). Animals appear to have been particularly significant, with evidence for the selective use of particular skeletal elements in mortuary practices and acts of deposition, and prescribed ways of disposing of their remains and objects made from them (e.g. Hansen 2003, Conneller 2004, Grünberg 2013, Mansrud 2017, Taylor et al. 2017, 2018). In some parts of northern Europe (notably northern Scandinavia and areas around the Baltic) animals are also depicted in a variety of artistic media, notably rock art, but also in a range of material culture (e.g. Iršėnas 2000, Kashina and Zhulnikiv 2011, Sognnes 2017, Fuglestad 2018, Kabaciński 2018).

A number of archaeologists have used this material to explore the cultural significance of animals, arguing that the depictions of them, and the ways of treating their bodies or objects made from them, reflects particular ways in which animals, and people's relationships with them, were understood. Some researchers have argued that certain animals, such as bear, elk and red deer played important roles in Mesolithic belief systems, and were involved in the transition of the human soul after death (e.g. Helskog 2012, Lahelma 2019, Lødøen 2019), or human fertility (e.g. Kashina and Zhulnikiv 2011). Others have argued that the prescribed ways of dealing with animal bodies, either through deposition in water, curation of elements, or burning, served to mediate relationships with animals, and provided a medium through which the affective properties of the remains could be harnessed or dealt with in an appropriate manner (e.g. Conneller 2004, Overton 2016, Mansrud 2017, Taylor et al 2017, Taylor and Overton 2018, Pedersen and Brinch Petersen 2019). In this way we have come to see animals as active constituents in the world

views of Mesolithic communities, bound up in people's cosmologies, and imbued with a significance that goes well beyond their role as a source of food or raw material.

This paper argues that trees were also significant features of Mesolithic ontologies, possessing qualities that went beyond their material or biological properties, and which guided the ways that humans interacted with them through forms of ritual practice. The paper will begin by briefly discussing the economic importance of plants in the European Mesolithic before moving on to consider how trees are perceived and understood by contemporary hunter-gatherer communities. Using the ethnography as a guide, the paper will then discuss the archaeological evidence, focusing on the role of trees, and materials derived from them, in depositional practices and mortuary rites. From there, it will consider how this treatment reflects the ways in which trees were perceived, before moving on to explore how they related to people's understanding of the world.

### **Plants and people in the North European Mesolithic**

The Mesolithic communities of Northern Europe inhabited a world rich in plant life. The forest environments that developed across the continent consisted of a suite of different tree species, initially dominated by birch and pine, and later by hazel, and then oak, elm, ash, and lime (e.g. Dark 1996, Bos et al. 2005, Giesecke 2005). Communities of smaller shrubs, ferns, grasses, and ground flora were also present in these forests, particularly in areas of more open canopy, and in the clearings created by tree falls and the actions of humans and animals (e.g. Bos et al. 2006, Ryan and Blackford 2010, Wacnik et al. 2020). High levels of floral diversity would also have characterised open environments

beyond the forests, and in the lakes and rivers, and marshes and fens, where species of floating and submerged aquatic plants, reeds, sedges, and mosses, formed communities in relation to variations in water depth and substrate (e.g. Taylor 2019).

To Mesolithic people these different plant species were a familiar part of the world, and one that they would have encountered and engaged with on a daily basis. Trees were used extensively in economic practices, with evidence for the use of a range of species (notably ash, aspen, birch, elm, hazel, larch, lime, mountain-ash, pine, and willow) to produce objects such as hafts and handles, containers, cord, torches, hunting equipment and weapons, watercraft and paddles, skis, portable and static fish traps, timber platforms, the frames and floors of buildings, and sculptures or idols (e.g. Burov 1990, Andersen 2013, Lozovskaya and Lozovski 2016, Taylor, M. 2018, Wacnik et al. 2020). Evidence for the use of non-tree species is more sparse but includes nettle, which was being used to produce cord, and siliceous plants (probably including reeds) (e.g. Andersen 2013, van Gijn and Little 2016). And a suite of different plants is known to have been collected for food, including yellow water-lily, reedmace, wild cherries, raspberries, and apples (e.g. Hamilton et al. 1985, Perry 1999, Larsson and Sjöström 2011, Bishop et al. 2014). An even wider range of plants is documented in the ethnographic record of contemporary hunter-gatherers, which describe the use of hundreds of species for an array of different functions, including as medicines, glues, dyes, insect repellents, clothing and even baby's nappies (e.g. Turner 2007). If we consider these records alongside the archaeological evidence then it is clear that plants would have provided the largest source of material, with the widest range of applications, that Mesolithic communities would have had access to.

In addition to their economic roles, there is evidence that plants, and particularly trees, were also utilised in forms of ritual practice during the Mesolithic. Wooden posts, for example, occur in association with human burials (e.g. Larsson 1989, Little et al. 2017), and in one case were used to mount human skulls (Hallgren and Fornander 2016). Wood and other material deriving from trees are also associated with assemblages of animal remains and objects that have been interpreted as the result of ritualised depository practices (e.g. Taylor et al. 2018, Sørensen 2020). Finally, very deliberate forms of depository practice have been identified in association with trees (Conneller et al. 2018) and the archaeologically visible features that are left by trees (e.g. Poulton et al. 2017). Taken together, this would suggest that as well as being an important economic resource, trees also held an ontological significance that made them suitable to be used in these contexts.

Before looking at the archaeology in more detail it is worth considering how plants, and particularly trees, have been perceived by historical and contemporary hunter-gatherers, focusing specifically on communities in continental North America and northern Eurasia. The purpose here is not to impose direct analogies onto the Mesolithic, but to consider how plants figure within particular ontologies, and how this might be manifested in patterns of human activity that can be identified in the archaeological record.

### **The role of trees in contemporary northern ontologies**

Trees figure prominently in the ontologies of many northern hunter-gatherer communities, and attitudes towards them are well documented in the ethnographic literature. As was discussed earlier in this paper, the ways in which plants are perceived is structured by

broader understandings of the world and the place of humans within it. These may be underpinned by animist ontologies, which view plants, as well as animals, topographic features, and meteorological processes as animate, living beings (e.g. Jordan 2003, Willerslev 2007). However, beyond these general animistic principles, plants (and other aspects of the natural world) can also be bound up in, and gain significance and meaning from, specific cultural traditions. These can include particular ways of understanding the origins of people, plants, and animals, the structure and composition of the world/universe, and the behaviour of supernatural beings. Such traditions can imbue particular plants with certain qualities that informs the way people perceive them and how they interact with them through economic or ritual practice.

We can see this very clearly in Boas' accounts of the Kwakiutl of the Canadian Pacific coast. Kwakiutl folklore and ceremonial practice explicitly describes trees and bushes as possessing souls and as previously being human (Boas 1921), with trees capable of speech, and possessing a social hierarchy (see Boas 1935). Cedar and hemlock were also considered to be sacred, with red cedar bark regarded as a source of supernatural power, and both plants were employed extensively in ritual practices (Goldman 1975). It is also implicit from Boas' descriptions of Kwakiutl customs that plants were believed to be sentient, autonomous beings, aware of the world around them and capable of acting upon the world with intent. Killing a young cedar by stripping its bark, for example, could result in the human perpetrator being cursed to death by other cedar trees, while the operation of a deadfall trap required the active cooperation of the hemlock stems used to construct it (Boas 1921). As a result, success in economic activities relied as much on the agreement and cooperation of the tree itself as it did on the actions of humans. To facilitate this, human interactions

with plants were mediated through prescribed forms of behaviour, that either asked their permission to be collected or utilised, requested that they acted in a particular manner, or gave thanks to them (see Boas 1921, 1930). In other cases, humans selectively employed particular plant materials in ritual practice, where the plant itself was believed to possess particular affective qualities that could act upon the world.

The Koyukon of the Alaskan interior also understand some trees as having spirits, and of possessing the ability to act upon the world (Nelson 1983). Some species of tree, notably white spruce and paper birch, are considered to possess particularly potent spirits comparable to those of powerful animals, and, in the case of white spruce, can act positively upon the world by conferring luck onto humans (Nelson 1983, Jordan 2003). Another species of tree is thought to be malevolent, and some fruits are considered to have significant power, which they gain because they grow close to the ground (the ground-surface being considered a source of spiritual power) (Nelson 1983). As with the Kwakiutl, interactions with plants are essentially social, and are mediated through prescribed forms of behaviour, which can include particular ways of treating certain plant materials (such as leaving the shavings of spruce and birch on trails rather than burning them) and, in the case of the malevolent tree, excluding its use from craft or economic activities (Nelson 1983).

In northern Eurasia, the perception of plants, and the ways in which humans interact with them, is also intricately bound up in broader cosmological understandings of the world.

Trees in particular can be understood as powerful entities, and certain species can be considered as sacred and imbued with particular powers, or of possessing wider cosmological significance (e.g. Jordan 2003, Vajda 2011, Ozheredov et al. 2014). In some

cases, the significance of particular tree species lies in their association with specific realms of the tripartite universe, a cosmological model where the universe is divided vertically into an upper-world (generally associated with positive forces), a middle-world of humans, animals, plants and a host of supernatural beings, and a lower-world, inhabited by the dead and often associated with malign forces (e.g. Jordan 2003). These associations imbue trees with particular properties that have an effect on the world, and inform the ways in which humans interact with them. The Ket, for example, regard larch, birch and cedar as trees of the upper-world. Of these, larch is considered sacred and can act as the focus for ancestral veneration, birch can host benevolent spirits and is used in certain ritual practices, and cedar is used to manufacture shaman's equipment (Vajda 2011). Similarly, the upper-world trees of the Khanty (cedar, birch and pine) are associated with positive or benevolent forces, and are used for displaying sacrifices and offerings (Jordan 2003), and the Nenets place offerings for forest spirits on birch trees (Ozheredov et al. 2014). In contrast, trees of the lower world are understood as potentially harmful (e.g. Jordan 2003), and can be used in practices associated with the dead, or with malign spirits, such as the Ket practice of using alder (a lower world tree) to remove evil spirits from old buildings (Vajda 2011). In other cases, species of tree are considered to be powerful or sacred in their own right, as with the Koryak (or Kuriak) of northern Kamchatka who attribute alder with the ability to protect humans from evil spirits (e.g. Minori 2001).

Due to these cosmological associations and inherent properties, trees play important roles in ritual practice, particularly those associated with communicating or negotiating with supernatural beings. The Ket use a larch tree to mark the locations of sites of ancestral veneration, carving the face of the ancestral spirit on the tree and placing carved wooden

posts and offerings of food around it (Vajda 2011). A sacred tree also marks important sites in the Sel'kup landscape, notably where spirits are known to reside, or at locations where movement between the middle and lower world is possible (Maloney 2011). The Khanty hang the skins of sacrificed animals on upper-world trees at sacred sites, and offerings to benevolent spirits are hung on birch trees (Jordan 2003), and the Mansi attract spirits to sacred sites by dressing birch trees with cloth and items of clothing (Glavatskaia 2011). In some cases, *representations* of trees are also used in this way. The Sel'kup, for example, create 'sacrificial trees' from a straight birch stem with branches tied to it, and use these as the focus for offerings and bloodless sacrifices at sacred places in the landscape (Ozheredov et al. 2014, Maloney 2011). These 'sacrificial trees' represent both real trees growing at a sacred site and sacrificial trees in the upper-world (Maloney 2011). Similarly, a 'fortune tree', made from branches of alder, is used by the Koryak in practices intended to facilitate the reincarnation of animals that had been hunted (Manori 2001, Plattet 2011). Living trees can also be modified as part of such practices; the Ket placate malevolent forest spirits by constructing an anthropomorphic figure from a living fir tree (Vajda 2011), and the Sel'kup create idols at sacred sites by carving faces into spruce trunks that have had the crown and side branches removed (Ozheredov et al. 2015).

### *Implications for the perception of trees during the Mesolithic*

As this review of the ethnographic literature shows, trees can play important roles in people's beliefs and understandings of the world, and we should be open to the possibility that they played comparable roles in the European Mesolithic; that they may have been perceived as animate persons in their own right, as media for communicating with other

beings, and/or as cosmologically significant entities imbued with power and with tangible links to other worlds.

We should not, however, expect to see a consistent way of understanding trees across Mesolithic northern Europe. As the ethnography clearly shows, perceptions of trees vary significantly between contemporary hunter-gatherer communities, with important differences in the ways in which particular species (and trees in general) were understood. In particular, concepts of animacy and plant personhood differ greatly, with some communities (such as the Kwakiutl) understanding certain trees to be conscious and capable of intentional actions, while for others, the issue is more ambiguous (as in the case with the Koyukon). Nor should we assume that Mesolithic communities perceived trees in particular ways simply because they were hunter-gatherers, given that animistic ontologies are also common amongst pastoralists and agriculturalists (e.g. Brown and Walker 2008). As such, we need to approach Mesolithic understandings of plants through the specifics of the archaeological evidence, rather than direct ethnographic analogy.

We can approach this by considering how the ontological significance of trees imbues them with particular properties or associations, which, in turn, inform the ways in which humans interact with them, resulting in particular material traces that may be visible archaeologically. Living trees, for example, can act as the focus for ritual practices that involve the deposition of objects and materials around them, and representations of trees, which may be as simple as a cut sapling or a wooden post or pole, can also act in this way. Particular species of tree may also be used preferentially in ritual practice, resulting in a

potentially observable, material signature, such as the selective use, treatment and deposition of certain species in particular contexts. While taphonomic issues will obviously limit the extent to which the material remains of such practices survives, it gives us a starting point from which we can think about the archaeological evidence, and how it may be interpreted.

### **The selective treatment of trees, and material from trees**

As was discussed earlier, trees and material deriving from trees (notably wood, but also forms of bracket fungus that only grow on trees) occur in a range of mortuary and other ritual contexts on Mesolithic sites across northern Europe. The character of the evidence varies, from wetland sites where wood, wooden objects, and other organic materials deriving from trees can be identified, to dryland contexts where the presence of wood is inferred from features such as post-holes or from carbonised remains. In all cases, a key point to consider is whether the inclusion of these materials was incidental, or if it was the result of a deliberate decision to treat material from trees in a certain manner as an active part of the ritual process. As the ethnographic examples show, the selective use of trees in such contexts is usually based on the properties or associations they are thought to possess. As such, where we can demonstrate in the archaeological record that this treatment is both intentional, and that it was part of the practices taking place, we can use it as a starting point to explore the ways in which trees were perceived during the Mesolithic.

#### *The treatment of plant materials in ritual contexts*

Despite taphonomic limitations there are several sites where wood and other material from trees has been subject to forms of selective treatment and deposition within contexts characterised by the intentional, ritualised deposition of animal remains and material culture. In these cases we can argue that the treatment of the arboreal material was also a deliberate, and active part of the practices taking place.

The clearest evidence comes from the excavations at Syltholm 1 (Lolland, Denmark), which recorded large quantities of faunal remains and material culture, as well as over 240 vertical or oblique wooden posts, which had been placed in what would have been shallow water along the edge of the fjord (Sørensen 2020). In one part of the site a cluster of fifty-four poles was recorded from a c. 20m<sup>2</sup> area, coinciding with an assemblage of animal bone (including 44 mandibles), antler and antler artefacts, tinder fungus (*Fomes fomentarius*) and several rare or unusual artefacts (pieces of decorated wood and antler, and an antler T-Axe). Radiocarbon dating shows that the poles and associated acts of deposition resulted from repeated visits to the site during the Late Mesolithic (Ertebølle) and the Early Neolithic (Sørensen 2020).

The Syltholm assemblage was clearly generated through the conscious decision to select and deposit a specific range of objects and materials at this location. Antler and antler artefacts have their highest concentration in the area around the poles, as do animal mandibles, and the rare artefacts (which occur exclusively in this area) (Sørensen 2020). The same is true of the materials deriving from trees. The majority of the tinder fungus recorded from the site (18 out of 20 specimens) came from this area, while the posts are predominantly hazel, demonstrating a degree of selection, and are spatially and

chronological associated with these concentrations of bone, antler, and artefacts (Sørensen 2020). While we might be tempted to see the selection of hazel for the posts in a more functional manner, perhaps relating to the local availability of trees, it is unlikely that we would interpret the occurrence of the other materials (such as the high number of mandibles) in this manner. In other words, if we accept that mandibles, antler, antler artefacts, rare objects, and tinder fungus were deliberately chosen for deposition, then we must also accept that the decision to utilise hazel for the posts was likely also intentional.

There are several other sites where tinder fungus occurs as part of assemblages generated through the selection and deposition of materials. At the early Mesolithic site of Star Carr (Yorkshire, UK), two concentrations of tinder fungus were recorded (Robson 2018), both of which were associated with the intentional deposition of a selected range of materials into wetland environments at the edge of the site. The first concentration forms part of a large assemblage of material, including animal bone and antler, osseous artefacts (including uniserial barbed antler points, axes, and red deer antler frontlets), worked wood and flint (Robson 2018, Taylor et al. 2018). As at Syltholm, the assemblage shows signs of deliberate selection; notably significantly larger quantities of bone and antler artefacts, the presence of animal species that are either rare or absent from the rest of the site, and the occurrence of artefacts such as shale and amber beads and a decorated shale pendant that are not only limited to this part the site, but are also unique within the surrounding landscape (Conneller 2004, Taylor et al. 2018). As such, we can suggest that the tinder fungus was also intentionally selected, along with these other materials, for deposition. The same is true of the second concentration of tinder fungus. This occurs some 24 metres away (Robson 2018), and is also associated, both spatially and chronologically, with the deposition of red

deer antler frontlets and uniserial barbed points (again made from red deer antler), as well as animal bone and worked flint. Again, given its association with these other materials we can argue that the tinder fungus was intentionally selected and deposited as part of the depositional practices taking place.

Tinder fungus is also present in a large assemblage of material that had been deposited into a body of water at Friesack IV, Germany (Gramsch and Kloss 1990). As with Star Carr the assemblage includes large quantities of animal bone, several hundred bone and antler artefacts, and plant-based material culture. Several authors have suggested that the assemblage reflects prescribed forms of deposition, possibly similar in character to that at Star Carr (e.g. Chatterton 2003, Conneller 2004), in which case we should consider that the tinder fungus was amongst the materials deemed as suitable for treatment in this way.

Wooden objects were also treated selectively during acts of deposition at some Mesolithic sites. At Star Carr, wooden handles, and spear and arrow shafts are significantly under-represented in comparison to the numbers of uniserial barbed antler points, and antler axe and mattock heads that were deposited into the wetlands (Taylor et al. 2017, 2018, Taylor, M. et al. 2018). This is not the result of taphonomy, given that both worked and natural wood occur in large quantities at the site, including in the same contexts as the antler artefacts (Taylor, M et al. 2018). Nor can it be easily explained as the retention of these objects for firewood, given that worked and unmodified wood was being discarded, or the recycling of arrow shafts, given that complete or easily repairable barbed points were being deposited (Taylor et al 2017). Instead, it suggests that the wooden components of these

tools were being separated, and then treated in a different way to the components made from antler when these objects were being deposited.

This practice of separating wooden shafts from osseous projectile tips, or wooden handles from objects such as axes, can also be seen at a number of other Mesolithic sites. At KannalJordan and Strandvägen (Mottala, Sweden), for example, bone and antler armatures and other osseous tools were present while wooden hafts and shafts were absent, despite other wooden artefacts being recorded in the same deposits (David 2018, Gummesson and Molin 2020). This is also the case at Zamostje 2 (Russia) (Lozovskaya and Lozovski 2016, 2020). A slightly different situation occurred at Beregovaya 2 (Russia), where wooden spear and arrow shafts were deposited into an area of shallow water, but were spatially separate from two discrete collections of large, bone spearheads (Zhilin et al. 2014). As Larsson (2001) notes, finds of objects such as wooden arrow shafts are rare, particularly when compared to the numbers of bone and antler armatures recorded from wetland deposits, suggesting that their removal and alternative treatment was a relatively common occurrence during this period in some parts of Europe.

This absence of the wooden components of projectiles, axes and other tools, appears to be part of a wider pattern where certain types of wooden artefact are either rare or absent entirely from wetland sites where preservation of organic materials is typically exceptional. Baskets and other forms of container in particular are conspicuous by their absence at many wetland sites where other wooden objects occur. In other cases, wooden artefacts of any variety are rare despite excellent levels of organic preservation. At Star Carr, for example, the wood assemblage included 1,602 worked pieces (identified from a total of c. 4,400

pieces of wood that were examined), including wood chips, split timbers, and other forms of woodworking debris, but, of these, only 38 objects were classed as artefacts (Bamforth et al. 2018). These are significantly under-represented in relation to material culture from other types of material, suggesting that wooden artefacts were subject to different forms of treatment and disposal.

### *Trees in mortuary practice*

Wooden posts also occur in association with human burials, potentially playing an active role in the mortuary ritual. At Hermitage (Ireland), for example, the cremated remains of an adult human, several burnt flint tools, and a shale axe were placed around a wooden post set into a shallow pit (Collins 2009, Little et al. 2017). Though the wood does not survive, the presence of the post can be inferred from a stain in the sediment (Collins 2009). From the positioning of the material in the pit, the cremated remains were deposited around the post, suggesting that it was already in position when deposition occurred, and the axe was placed against it (Little et al. 2009). At Skateholm 1 (southern Sweden) the cremated remains of an adult male were recovered from a discrete scatter of post-holes and pits, with the post-holes seemingly delimiting the area (Larsson 1989, 2008), while in a separate area of the site cremated remains were found around the edge of a very large post-hole, some two metres in diameter (Larsson 2008, 2016). An arrangement of four post-holes was also recorded around a grave containing an inhumation, and large quantities of wood charcoal (from the species ash) was found above the body (Larsson 1989). And at Tågerup (Sweden), a wooden post was inserted into the fill of a grave containing a human inhumation (Andersson et al. 2004).

In all these cases the posts were used selectively, occurring in or around some graves, but not others, which would suggest that they were not just a way of marking a grave, but an active part of the funerary ritual that was employed in these specific cases. At Hermitage, for example, there was no evidence for a post in a second pit containing cremated human remains (Collins 2009). Similarly, at Tågerup only one grave had a post associated with it (Andersson et al. 2004), and at Skateholm, posts around graves were the exception rather than the norm (Larsson 1989). Furthermore, the association between the posts (and the trees they derived from), and the funerary ritual is unlikely to have been incidental, given that most other aspects of mortuary practice involved very deliberate choices in terms of the treatment of the human body, and the selection and treatment of the materials that were deposited with it. At Hermitage, for example, people chose to cremate the remains of this person, rather than dismember them or bury them intact, just as they selected a microlith, microblade and a shale adze for deposition with them, and intentionally blunted the adze (Little et al. 2016). Similarly, at Skateholm people made deliberate choices to select and deposit certain objects and materials, including animal remains, in particular graves. As with the depositional acts at Syltholm, if we accept that these choices were deliberate, then we should at least consider that the choices surrounding the selection and working of the wood for the post were also intentional, possibly involving certain species (ash in the case of one burial at Skateholm) and/or specific individual trees.

As well as the post-holes around graves, traces of individual or multiple posts also occur in discreet areas of some Mesolithic cemeteries. At Skateholm 2, for example, an arrangement of post-holes was recorded within a discrete area of the cemetery demarcated by deposits

of ochre and soot, from which assemblages of animal bone were recorded (Larsson 1989, 2008). As Larsson (2008) notes, the post-holes form no obvious structural arrangement and could have held individual upright wooden posts. Again, we should be open to the possibility that, within the context of the cemetery, the selection of wood for these posts may have been intentional, and that the posts themselves played an active role in the practices that were taking place.

### *Acts of deposition around trees*

As well as the selective treatment of material from trees in ritual practice, there is also archaeological evidence that trees themselves acted as the focus for depository acts. At Star Carr a cache of nineteen pieces of flint, mostly cores, was recorded from amongst tree roots at the edge of the lake (Conneller et al. 2018). Use-wear analysis showed that three of the pieces were used to scrape wood, possibly to mark the tree and show the location of the flint (Conneller et al. 2018). The excavators interpreted the assemblage as a raw material cache (Conneller et al. 2018), however the ritual deposition of worked stone has been recognised at numerous sites across northern Europe (see, for example, Larsson 1978) and there is no reason why we should not consider this assemblage to have been deliberately placed at the base of the tree as an offering or gift.

We can also argue that dead or felled trees were the focus for acts of deposition based on finds from tree-throws, the irregularly shaped hollows created by a fallen tree. Assemblages of Mesolithic worked flint, sometimes accompanied by burnt animal bone and stone, have been recorded from these features on sites across northern Europe (Newell 1981). In some

cases, the hollows have also been enhanced through the addition of hearths, post-holes (Newell 1981), and in one case by the addition of a layer of stones (Jaques et al. 2018). While some researchers have argued that this represents the utilisation of tree-throws as hunting hides or structures (e.g. Crombe 1993, Jaques et al. 2018), others have argued that, in some cases, the assemblages are more characteristic of acts of intentional deposition. Poutlon et al. (2017), for example, argue that the lithic assemblages from tree-throws recorded during excavations at sites in Surrey, in the south of England, show similarities in terms of their size, the range of tools and debitage, and the proportions of burnt flint. This, they suggest, could reflect the 'formal' deposition of material into these features. Poutlon et al. (2017) also note that isolated finds of tranchet axes were recorded in two tree-throws during excavations at the Eton Rowing Course (Surrey, UK) (Poutlon et al. 2017), while at Blick Meads (Wiltshire, UK), an axe pre-form and a large, utilised cobble (a unique find on the site) were also recorded from a tree-throw (Bishop 2018). Similarly, in a review of material from Ireland, Lawton-Matthews and Warren (2015) note that tree-throws can include objects that they describe as rare or unusual. These include single finds of Moynagh points, a relatively rare polished stone tool that has been recorded from individual tree-throws on two separate sites (Lawton-Matthews and Warren 2015). In some cases, tree-throws also contain very large quantities of burnt stone that seems to have been deliberately placed within them. At Blick Meads, for example, two tree-throws contained very large assemblages of burnt flint (c. 5.5 kg and c. 14 kg), which the excavators argued exceeded what would be expected from a hearth (Bishop 2018). Though burnt material in tree-throws can be the result of the deliberate burning of the tree after it has fallen (McPhail and Golberg 1990), the burnt stones at Blick Meads were concentrated in

particular parts of both features and are thought to have been deliberately deposited there (Jaques et al. 2018).

Hay et al. (2011) have suggested that the deposition of material culture into tree-throws served to acknowledge the taking of the tree, possibly through a reciprocal exchange of materials between Mesolithic people and the tree or wider woodland. We could go further, however, and argue that the presence of post-holes, and the incidences of burning suggest that the practices taking place around the fallen trees could be more complex than the simple deposition of artefacts, and also involved the erection of posts, and the setting of fires. More speculatively, we could argue that the lithic assemblages, which often include knapping debris and tools, may not only reflect *material* deposited as an offering, but could have derived from other activities carried out around the fallen tree to mark its significance. While this remains conjectural, the evidence overall suggests that the killing or death of some trees was being acknowledged by Mesolithic communities through a suite of prescribed activities.

### **Perceptions of trees**

As this review of the evidence shows, trees and material from them, were treated in very selective, deliberate ways at some sites during the Mesolithic. In one case a standing tree was marked out by the deposition of flint cores, some of which may have been used to physically mark the tree itself. In others, the hollows left by fallen trees were the focus of depository acts involving rare objects, axes, or selected assemblages of material, acts that may also have involved erecting posts and setting fires. Wood and other materials that

derive from trees were also selectively treated and deposited in forms of ritual practice. At Syltholm 1, wooden posts were erected as part of practices that also involved the deposition of tinder fungus as well as certain skeletal elements from animals, antler and antler artefacts, and rare objects. Tinder fungus was also intentionally deposited at Star Carr along with a range of other objects and materials, and also at Friesack. The wooden components of tools made from bone or antler were removed and treated separately when the objects were being deposited, a practice that appears to have been relatively widespread, and in some cases wooden artefacts more generally appear to have been subject to different forms of depository practice to other types of material. And wooden posts were erected in or close to graves, or in other parts of the cemetery, as a part of the funerary rite.

In the ethnographic cases discussed earlier, such acts of deposition around trees, or the selective treatment of material from them, relate to the properties or associations that they are understood to possess. These not only make them appropriate for use in these contexts, but can also play an active role in the practices taking place. While the specific nature of this understanding was not necessarily the same, we can argue that the way trees and material from them were treated during the Mesolithic was also guided by an understanding of these things as possessing certain affective properties or associations.

At Star Carr, people made a conscious decision to avoid depositing wooden objects into the wetlands at the edge of the site. This is most apparent in the treatment of wooden hafts and handles, which were separated from the antler components of tools when depositing items - such as uniserial barbed points - into the wetlands. This suggests that something

about the wood, or the tree/s it derived from (probably species of willow) required these objects to be treated in certain ways, perhaps by burning them, depositing them away from wetland areas, or returning them to living trees. This may have been seen as a reciprocal obligation in return for the tree providing the wood for use in hunting equipment and other tools. Alternatively, the wood itself may have possessed properties that deemed it inappropriate to be deposited in the same place as the parts of the tool made from antler. Conneller (2004, 2011) has argued that the deposition of the antler objects was itself an appropriate way of disposing of a material that was understood to retain certain qualities that derived from red deer. Perhaps it was this that necessitated the differential treatment of the wood, possibly as a way of ensuring both animals and trees were respected.

We can also suggest that the tinder fungus, which was selectively deposited in two concentrations along with antler artefacts, also possessed properties that required it to be disposed of in a particular way. This may have related to the physical properties of tinder fungus, which can remain hot and smouldering without burning, and/or its use in starting fires. There is evidence that fire itself was seen as a powerful, transformative force by some Mesolithic communities. Mansrud (2017) has argued that burning animal bones and objects made from them was deliberately undertaken by Mesolithic groups in Norway as an appropriate way of disposing of animal remains. Similarly, Warren (2015) has discussed the role of burning in the disposal of food waste in Ireland. The lighting of hearths over graves has been observed at several Mesolithic cemeteries, and there is increasing evidence for the practice of cremation during the period (Gray Jones 2018). As such, a material associated with the starting and maintaining of fires may have been perceived as a particularly powerful substance in its own right. Indeed, the fact that tinder fungus and wooden

artefacts necessitated particular forms of treatment would itself suggest a certain potency, either to these things, or to the trees they came from, that had to be dealt with through these particular forms of deposition.

At Syltholm we can also argue that the tinder fungus, as well as the hazel posts, were understood to possess affective properties that were employed through the acts of deposition. Sørensen (2020) has argued that the selective nature of the assemblage suggests that it represents acts of ritual deposition. In the ethnographic literature such acts are undertaken for a variety of reasons, such as to ensure success in future economic tasks or to influence environmental processes (e.g. Maloney 2011). Whatever the motivations, however, such acts are carried out with the expectation of an outcome, which would imply that the objects and materials deposited at Syltholm (including the hazel posts and tinder fungus), possessed qualities upon which the success of these acts was contingent. Again, this suggests a certain potency that meant that their presence and use in this context would have been expected to have a tangible effect upon the world.

The same could be true of the use of wooden posts, and post-built structures, in cemeteries. As has been discussed, the posts were clearly a part of the funerary ritual, which would suggest that something about trees in general, or specific species, not only made them appropriate for use in these contexts but also played an active role in the intended outcome. Blinkhorn and Little (2018) have suggested that the post at Hermitage may have acted in a way analogous to the tree of life in some Eurasian cosmologies, and facilitated the movement of the soul after death. If we follow the ethnographic literature, this would relate to associations that were inherent in particular species that linked them to particular

cosmological realms (Ozheredov et al. 2014). However, trees may also have possessed other qualities that were an active part of the mortuary ritual, such as the ability to ward off malevolent forces (Minori 2001, Vajda 2011). The fact that single posts and wooden mortuary structures appear to have been employed selectively for certain individuals would suggest that such properties were appropriate to certain circumstances, and not to others.

If trees, and the tinder fungus that grew on them, were seen as possessing such properties, then the acts of deposition that took place around the tree at Star Carr, and in tree-throws in parts of Europe, can be seen as forms of interaction with them. The placing of the nodules at Star Carr is certainly suggestive of a communicative act, one in which humans engaged with the tree through the giving of gifts with the expectation of some response. The same is true of the acts of deposition into tree-throws, where the giving of material could be seen as way of mediating relations with them. As noted above, Hay et al (2011) suggest that that the deposition of material into tree-throws were reciprocal acts undertaken in return for felling it, or which marked its death. This suggests a level of animacy on the part of the tree that would allow it to recognise that these acts were undertaken, and the ability of it to act in response.

The fact that axes occur in some tree-throws may also be significant, given their association with trees. Indeed, axes themselves are often accorded particular forms of treatment, a fact that may relate to their association with trees. As has been discussed, the shale axe at Hermitage was deliberately blunted, an act that Little et al. (2016) suggest related to its involvement in the funerary process (either by preparing wood for the pyre or manufacturing the post). At sites in the Vale of Pickering (UK), axes tended to be curated for

relatively long periods and were typically subject to different forms of disposal than other objects (Conneller et al. 2018). And in other parts of Europe, axes and adzes (of both stone and antler) were among objects that were deemed appropriate for deposition in caches, pits, and in wetland areas (e.g. Larsson 1978, Woodman et al. 1999, Jacques 2018). These forms of treatment suggest that axes were seen as important objects in their own right, an understanding that may have derived from their use in practices associated with trees and the working of wood.

It is important to note, however, that ways of using, treating and depositing materials from trees were not consistent across Mesolithic northern Europe, or throughout the period. At some sites, wooden objects such as hafts and handles were deposited into wetland areas along with bone and antler axe heads and other osseous material culture (e.g. Andersen 2013). And though rare, wooden arrow shafts of Mesolithic date have been recorded (e.g. Larsson 2001). Tinder fungus was not always deposited in a manner suggestive of deliberate selection and deposition, and not all tree-throws show evidence for the intentional deposition of material culture. This would suggest that understandings of trees varied between Mesolithic communities, and changed over time.

### **Living with trees in the North European Mesolithic**

Drawing this material together we can argue that, amongst some Mesolithic communities, trees were understood to be potent entities, possibly with an awareness of the actions of humans, and possessing certain affective properties or associations that had a tangible effect on the Mesolithic world. These qualities formed part of the tree itself, but were also

an inherent part of the materials that came from them, persisting, for example, in wooden tools, artefacts, and posts. Specific species of tree may have been understood as possessing particular properties or qualities. For the Mesolithic communities at Skateholm, for example, ash may have possessed associations with the dead, the processes of death, or the afterlife, while at Syltholm hazel may have been understood to possess properties that facilitated acts of communication with other beings. However, individual trees may also have been marked out as important, perhaps relating to their location or by particular characteristics that set them apart.

These understandings of trees guided the ways in which humans interacted with them and materials that derived from them. Material from trees was used selectively in ritual and mortuary practices, where its properties played an active role. At Syltholm, this meant erecting posts made from hazel, and depositing tinder fungus, as well as other materials, into the fjord. At Skateholm 1 it meant raising and then burning posts of ash around the burial of an adult female. In some cases, the potency of trees required particular ways of disposing of objects made from wood, especially where these had been in contact with the remains of animals. In other cases, living and fallen trees were marked by acts of deposition. In all cases these interactions were essentially social, involving a dialogue between two parties carried out with an understanding that both sides possessed the capacity to act in a meaningful, intentional manner.

These practices were an acknowledgement by the Mesolithic communities that undertook them that trees (or certain species of trees) possessed these qualities; that they were animate and could act upon the world, or that they possessed certain properties that had an

effect upon the world. By participating in these acts, the human community recognised these qualities, and actively engaged with them through prescribed forms of behaviour. In turn, the perceived outcome of these acts served as a tangible reminder of the affective properties of trees, underpinning the way they were perceived and informing the manner in which humans interacted with them in the future.

This way of understanding trees also extended to other non-human aspects of the Mesolithic world. As has been discussed, animal remains and objects made from them were also subject to prescribed forms of treatment and deposition, acts that related either to the intrinsic properties of the animal, or ways of mediating with the animal itself. At Lundby Mose (Denmark), for example, several discrete deposits of elk bones (possibly in bags or wrapped in hides) were deposited into a small pool of water, an act that has been interpreted as a 'post-kill ritual' intended to secure success in future hunts through the respectful treatment of the animal's remains (Pedersen and Brinch Petersen 2017). The deposition of red deer antler, and objects made from it, at Star Carr, has been interpreted as prescribed ways of disposing of material that retained its animal qualities, qualities that were also harnessed through its use for tools such as projectile points and frontlets (Conneller 2011). And Mannermaa (2013) has suggested that the deposition of osprey bones in burials at Yuzhniy Oleniy Ostrov (Russia) reflected the bird's status as a shamanic helper and/or its role is transporting spirits of the dead. As with trees, these practices acknowledged the role of animals as active constituents in the lives of Mesolithic people, with whom relationships were enacted through prescribed forms of behaviour.

The fact that prescribed ways of treating material from animals and trees occur together, at the same sites and in the same contexts, suggests that the way they were treated was guided by an overarching ontology. The character of this ontology was not necessarily the same across northern Europe. As has been noted, the treatment of material from trees varies between sites, suggesting differences in the ways in which trees were perceived and understood. The same is true of the ways other aspects of the world were perceived. The representation of animals in artistic media, for example, is limited to particular areas, notably northern Scandinavia and the Baltic, and particular moments in time, which would suggest that understandings of animals were specific to particular areas and periods during the Mesolithic. A consistent theme, however, is that that humans shared their world with a host of powerful entities, interactions with which had to be carefully negotiated. In this way, the relationship between humans and their environment was one of mutual understanding and shared obligation, structured by traditions that laid out particular ways being and acting in the world.

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## **Biographical note**

Barry Taylor is a Senior Lecturer in Archaeology at the University of Chester. His research focuses on the relationship between early prehistoric hunter-gatherers and their environment, with a particular interest in the North European Mesolithic. He has carried out archaeological and palaeo-environmental fieldwork at Mesolithic sites in the North of England, including the early Mesolithic site of Star Carr, and the Small Isles of the Scottish Hebrides. He has also undertaken research into prescribed forms of treatment and disposal of objects and materials during the North European Mesolithic, and the technological and cultural aspects of plant-use.