Research Article

Graeme Warren*

Mesolithic Montology

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Abstract: This article focuses on the Mesolithic occupation of mountain environments in Europe. The montane Mesolithic is a important aspect of the Mesolithic as a whole, but neither its significance nor its potential is fully recognised. Evidence also suggests that we have not communicated this to the wider interdisciplinary community of mountain researchers – a field sometimes known as montology – which is dominated by models of human behaviour in mountains drawn from agricultural examples. Leading publications in the latter field have suggested that human use of mountains can be understood as structured by three key themes: resources, valuable minerals and precious stones, and the cultural importance of mountains. These themes are used to review the Mesolithic record.

Keywords: mountains, hunter-gatherers, subsistence, stone, cultural significance

1 Introduction

This article provides a deliberately high-level review of aspects of the montane archaeology of the Mesolithic in Europe. The intent is first to provide a point-of-entry overview of a distinctive and important feature of the Mesolithic of Europe which is sometimes neglected. I also seek to highlight potential engagement with broader literature on the relationship of people and mountains and to stimulate discussion and collaboration about approaches to the Mesolithic of Mountain landscapes.

1.1 A Continent of Mountains

According to the definitions and reviews established by the European commission, over 40% of Europe is a mountain municipality (defined as a region where over 50% of the land area is mountainous) and nearly 20% of Europe's population today lives in mountain municipalities (NORDREGIO, 2004). Sixty percent of Europe's area lies within 20 km of a mountain. Europe is a continent of mountains.

Archaeological knowledge from across Europe shows that Mesolithic communities used mountains. They were not the first to do so, with Upper Palaeolithic sites also known in mountains, but as reviewed in detail below, the Mesolithic use of mountains happened from early within the period, was varied in character and was more extensive than in earlier periods. European mountains of course are very diverse. The NORGREGIO review defines ten different biogeographical types, including Alpine, Artic, Atlantic,

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* **Corresponding author: Graeme Warren,** UCD School of Archaeology, University College Dublin, Dublin 4, Ireland, e-mail: graeme.warren@ucd.ie

Boreal, Continental and Mediterranean. We should not expect similar types of human activity within these varied mountains in the past. But put simply, if Europe is a continent of mountains, then we cannot speak of the Mesolithic of Europe without engaging with the Mesolithic of mountain landscapes. Indeed, given that a high proportion of the European landscape is mountainous, this should be core to our understanding of the period.

In fact, given the importance of Mesolithic use of mountains, these sites, and the stories they allow us to tell, should be a key part of the cultural heritage of our European mountains. My personal experience has been that people are fascinated by the idea that prehistoric hunter-gatherers used our mountain landscapes. Yet, despite important publications aimed at broader readerships (Cornelissen, 2020) and some local exhibits and displays, my experience working in Britain and Ireland has been that public awareness of this aspect of montane heritage is limited.

The Mesolithic archaeology of mountainous landscapes is an especial challenge because mountain landscapes are under threat, and consequently, our montane Mesolithic is under threat. Mountain landscapes are being transformed by climate change and by broader processes of development (Price & Kohler, 2013). As Callanan argues, ice-patch melt is a dramatic example of climate change's impact on the survival of montane archaeology (Callanan, 2016), but increased glacial retreat and changes to river behaviour (both incision and deposition) are also significant threats. Mountain landscapes are also transformed through increasing tourism and directly associated infrastructure as well as national infrastructure such as hydroelectric or wind-farm installations, initiatives that are often ostensibly "green." Even the private collection of artefacts by members of the public can present a serious challenge to our understanding of the distribution of archaeological materials.

Unfortunately, managing cultural heritage in these landscapes is profoundly challenging. Cornelissen and Reitmaier's (2016, p. 20) description of the situation in Switzerland is of broader relevance:

> *The Subalpine and Alpine zones have been the focus of a number of research projects and the majority of surface finds were recovered here. In contrast, this part of the landscape has largely been neglected in the archaeological scheduling systems which form the basis of much rescue archaeology in Switzerland. Building activity, whether related to infra-structure works, agriculture or tourism, threatens the archaeological record at these high altitudes much more than might be expected. This remains, to some extent, a challenge for the authorities responsible for the cultural heritage management of the mountain cantons that many have not truly learned how to manage.*

There are significant challenges in locating, excavating and managing sites in these landscapes, and in many areas, extant data are uneven in quality and quantity. In some regions, survey undertaken in the context of infrastructural development means that there are good understandings of the distribution of archaeological evidence – at least for specific landscape types within the mountains. This is true, for example, in Norway where work in advance of hydropower developments provides good data for lacustrine and riverine environments. In some areas, broad level models are effective at predicting site locations (as for example in the Eastern Alps, see below). But in some regions – or even within some landscape types within the mountains – sites are mainly known through chance finds. Large areas of mountain landscape are effectively both *terra incognita* and, as is well recognised, difficult landscapes for site prospection: for example in Scotland – a country of many mountains – where these areas have been described as "amongst the most intransigent in terms of standard survey approaches" for identifying Mesolithic material (Saville & Wickham-Jones, 2012, p. 58).

The pressures on and importance of mountain landscapes is such that they are a specific focus for the UN's Sustainable Development Goal 15.4, which seeks to "ensure the conservation of mountain ecosystems, including their biodiversity," through an indicator focusing on green cover: or changes in area of green vegetation in mountain areas (forest, shrubs and pastureland and cropland). Even although apparently "green" in motivation, such changing land use is a potential threat to archaeological remains. The complexity of these relationships is shown by our work in the Cairngorms, Northern Scotland. Here chance finds of lithics on footpaths used by leisure walkers demonstrated the presence of Mesolithic sites near rivers but provided little detail. This was followed up by detailed archaeological investigation partly funded by the landowner, the National Trust for Scotland when they were required to expand riverine woodlands to

mitigate the effects of global warming on biodiversity, and recognised that plantation might have an impact on these poorly understood riverine findspots of Mesolithic material (Fraser et al., 2021; Warren et al., 2018; Wickham-Jones et al., 2020). For many mountain regions, the recent emphasis on "re-wilding" (Jørgensen, 2015; Lorimer et al., 2015; Monbiot, 2013) also poses challenges for the future identification and preservation of Mesolithic archaeology.

2 Mesolithic Montology

The value of the story of Mesolithic use of Mountains is partly about what it tells us of the Mesolithic and the local (pre)histories of specific regions. But there is also a significant opportunity for the Mesolithic community to start to engage with conversations above and beyond the immediately archaeological. The broader sub-disciplines of mountain anthropology and mountain geography are relatively well established (Price, 2015; Price, Price, Byers, Friend, & Kohler, 2013; Rhoades, 2007), and a new term has been coined for the highly interdisciplinary study of human interaction with these landscapes – montology (Veteto, 2010).

Surprisingly, overviews of the interactions of humans and mountains in the field of 'montology' make little or no reference to hunter-gatherer use of mountain landscapes *past or present*. Beyond a passing reference to Palaeolithic hunters, the examples of adaptations to mountain environments are all about different forms of agricultural systems (e.g. Price, 2015; Rhoades, 2007). Since 2000, the key journal *Mountain Research and Development* has offered one book review of an ethnography of mountain hunter-gatherers in Nepal, and very occasional articles with one-line historical references to hunter-gatherers, but no more. It is as if the broader field has no knowledge of the ways in which hunter-gatherers have used mountains – and indeed, continue to do so (Fortier, 2009). Given the potential heritage value of Mesolithic archaeology in Europe's mountains and the focus on sustainability in the montology field (Price & Kohler, 2013) as well as the threats faced by mountain landscapes, this information gap is concerning. But it is also unsurprising. To the best of my knowledge, there are few syntheses of the montane Mesolithic of Europe, although some operate at the regional level. We have an opportunity to reach out to a broader research community and inform them about Mesolithic mountains and the ways in which hunter-gatherers lived in these places.

3 Approaching Mesolithic Mountains

Mountains are a cultural construct as much as a physical reality (Macfarlane, 2003), and situating and contextualising our perspectives on them is important, as these perspectives shape our interpretations. My perspective is influenced by my archaeological work in mountain landscapes in Ireland and Scotland, as well as by my hobby of mountain running.

Mountains have often been perceived as remote, difficult and dangerous landscapes (Macfarlane, 2003). Whilst this is changing with increased public access to mountain landscapes, a common refrain in publications on hunter-gatherer archaeology in the mountains, including Mesolithic archaeology, is to the difficulty of access or poor weather. Whilst there are undoubtedly challenges of working in these environments, it is inescapable that these references reach back to a broader understanding of risk and reward in climbing and exploring in these landscapes. This is a long-standing trope seen in a wide variety of literature. It is also a characteristically masculine approach to mountains, and a voice which has long been dominant.

A history of women walkers and their journeys in mountain landscapes is valuable as a comparison and corrective (Andrews, 2020). Andrew's account of female walkers shows that their descriptions of their journeys did not neglect consideration of risk and danger or of endurance, but it often places more emphasis on the relationships between walkers and the landscapes they cover and the repetition of visits.

For example the poet and writer Nan Shepherd's accounts of the Cairngorms emphasised knowledge gained through repeated pedestrian encounters, on focusing beyond summits and passes to explore hidden parts of the mountains in order "to be with the mountain as one visits a friend" (Shepherd, 2011 [1977], 2014 [1934]). Following *paths* was an important way of experiencing the mountain for Shepherd, and the sense of shared journeys with previous generations and non-human persons structures her encounters. Shepherd argues that she could come to share experience with the other parts of the mountain world – non-human persons, or animals, plants and things – indeed, she reports that she "walked out of the body and into the Mountain." Andrews argues that "running through both her (*Shepherd's*) poetry and prose is an intense and deeply felt certainty that both humans and mountains *are*, and can share meaning with and in each other; for Shepherd both are types of being, accessible to each through conversation, proximity and empathy" (Andrews, 2020, p. 180). This is a radically different experience of mountain landscapes than we often consider.

I am a mountain runner, and as such, potential speed of route, extent of climb and distance are familiar filters through which I engage with mountain landscapes. However, I also repeatedly visit favourite routes and places – week after week, season after season, in good weather and bad. I stop and enjoy places. I see them change. Returning to the archaeological experience of mountains, one of the joys of mountain archaeological fieldwork is this same experience of repeatedly visiting one location, often on a daily basis for extended periods of time. This form of encounter means you see a place change with the weather, the light, the seasons – in Andrew's terms it is "*sharing its meaning*." This is not an unusual experience amongst mountain fieldworkers, but it is much less common to see this development of understanding of place reflected in the archaeological literature than accounts which stress how hard it is to get there (for a really important exception – albeit not Mesolithic in focus – see Edmonds & Ferraby, 2014).

Acknowledging and rethinking our situated perspectives on mountains is an important part of any self-reflexive practice. Our positionality shapes our experience of mountains – including gender, class, geography and other aspects of our biographies. I have especially highlighted the focus on relationships highlighted so strongly in female writing about mountains because it can help to break down the pervasive dichotomies that structure our approaches; notably ideas that mountains are separate to people, and that culture is separate, and shaped by, nature. Most of mountain literature abounds with the need for human groups to "adapt to" the affordances of mountain landscapes: with distinctive forms of settlement and subsistence one example of these adaptations. Yet, most mountains have been shaped by people at different scales and in different ways. In North America, for example, Scheiber and Zedeño have demonstrated how mountain landscapes are "engineered" by social investment and intergenerational commitment to place, breaking down easy categorisation of natural or cultural landscape:

> *People were* (*and are*) *not passively connected to the physical realty* (*sic*) *of the landscape but actively modifying it … Such landscape modifications can and do bring about intended and unintended environmental consequences* (Zedeño & Scheiber, 2015, p. 190)

Within the overall context of montology and sustainable development goals, there is a tendency today to view mountain landscapes as "natural." In a key review, for example, Gardener discusses the "natural conditions" of forests on mountains (Gardner, Rhoades, & Stadel, 2013, p. 283). Given the scale of mountain landscapes and the complex, European cultural construction of "wilderness" as a category, this assumption is understandable. But practices of Mesolithic landscape management have influenced the character of the mountain environment, long before the introduction of agriculture which often was an even more profound cause of change. Hunter-gatherers transformed Europe's mountains: as for example in the creation of moorland landscapes in Northern Britain through forest burning (Simmons, 1996), or the introduction of fish to the rivers of Norwegian highlands (Mjærum & Mansrud, 2020). There is an opportunity for us to tell different and more complex stories: to pay attention to how Mesolithic people went *into* the mountains and the mountains went *into* them, and how this formed them and the landscapes they lived in.

3.1 Themes in the Human Use of Mountains?

Many overviews of human use of mountains suggest that there are common themes that lead to people using these landscapes. Price identifies three: resources, valuable minerals and precious stones and the cultural importance of mountains (Price, 2015). Whilst these themes are identified from a review of mainly agricultural and contemporary cases studies, using this framework for a Mesolithic review at least facilitates engaging with the broader disciplinary field of montology. In fact, from an archaeological and hunter-gatherer perspective, Pitblado provides a very similar list (Pitblado, 2017): water, knappable stone, resource diversity, power and sanctity.

The remainder of this article provides a review of what we do know about the Mesolithic use of Mountain landscapes in Europe set against these categories, prefacing this with some overall comments on the timing and nature of human exploration and settlement in mountains. My review is not comprehensive and primarily focuses on the Alps, the Scandinavian mountains and the British & Irish Isles, with some references to sites in other areas.

3.2 When Did Mesolithic Communities Start Using these Landscapes?

Although the absolute dates vary according to local biogeographical variation and specific histories, in some cases, Mesolithic hunter-gatherers appear to have started using montane landscapes very rapidly once they were available for use. For example, in the Alps, which had been crossed at the end of the late Glacial, in the Mesolithic "people rapidly followed the retreating glaciers into higher region(s)" (Cornelissen & Reitmaier, 2016, p. 13) and in Southwestern Norway, where use of at least some mountain landscapes took place with a few hundred years of first settlement (Bang-Andersen, 2012). In the latter case, the rapid exploration and use of mountain landscapes once settlement was established on the coasts stands in some contrast to an earlier delay in development of a maritime adaptation that enabled the settlement of the coast of Norway once the area was ice-free (Bjerck, 1995). The rapid use of mountains is possibly a continuation of reindeer-focused Late Glacial settlement patterns from further east (Breivik & Callanan, 2016). Here, mountain landscapes allowed aspects of a lifestyle to be sustained in the context of climate changes which threatened to disrupt traditional practices.

This use of mountain landscapes in the Mesolithic appears to have reached into higher altitudes than previous hunter-gatherer settlements. In the Eastern Alps, for example, Fontana and Visentin show that occupation of the Eastern Alps in the Late Glacial interstadial (GS-I) reached to 1,700 m, whilst in the early Holocene, this extended to 2,300 m (Fontana & Visentin, 2016). In Switzerland, Mesolithic groups were very happy to operate in close proximity to glaciers, for example in the Urschai valley and Bernina Pass (Cornelissen & Reitmaier, 2016).

At the broadest of levels, many commentators highlight the relationships between climate and environmental change and human use of mountain landscapes. In the Eastern Alps, for example, Kompatscher argues for "the high adaptation ability (*sic*) of hunter-gatherer communities living in an articulated landscape with a wide variety of environments during a period of rapid climate change" (Kompatscher et al., 2016, p. 23). In other places, such as our own work in Scotland, use of montane landscapes is clearly discontinuous over the long term and a relationship with climate change seems plausible (Warren et al., 2018; Wickham-Jones et al., 2020). But beyond identifying a coincidence of timing between specific environmental changes and human activity, it is challenging to define causal relationships. Much more work is required to sustain and investigate the character of this relationship in most of our mountain landscapes.

Whilst many early hunter-gatherers were clearly capable of using very diverse mountain environments, not all mountains were used quickly once they were deglaciated. Bang-Andersen argues that the higher mountains of Western Norway saw 1,500–2,000 years of delay before settlement compared to South-Western Norway, probably because of the length of time it took for reindeer populations to establish themselves (Bang-Andersen, 1996). Some mountains, such as those in Ireland, have no record of Mesolithic activity. Here, the recovery of later prehistoric lithics from uplands in Ireland probably indicates that the

absence of Mesolithic sites is real, rather than because no one has been looking. The lack of upland activity is often considered to relate to the absence of large game such as red deer from Ireland which in other regions would have dispersed into mountain environments and provided a potential resource for hunters (Woodman, 2015).

Overall, local motivations, conditions and histories appear to have been important, but the potential for rapid human interactions with mountain landscapes is compelling across Europe and includes the use of very high areas of these mountains. These were not marginal or late developments, but part of the Mesolithic from the start.

3.2.1 Resources

Most overviews of human uses of mountains highlight the availability of resources as a key factor – whilst this can be understood broadly to include resources such as food, water and raw materials for crafting, most accounts focus on subsistence (see below for discussion of lithic resources). We will assume that requirements for water are met easily in a European mountain context and focus here on food.

At the broadest level, one of the key features of mountain environments is their verticality and spatial complexity, meaning that different ecozones can exist in proximity (Bach & Price, 2013; Rhoades, 2007). Through this diversity, and perhaps counter-intuitively, mountains can be very productive environments, although they are often very seasonal. Many models of Mesolithic mountain settlement highlight the seasonal exploitation of these distinctive environments, for example in the Alps "groups of hunter-gatherers ascended to high altitudes during the spring and summer months so that they could exploit animals from different ecological niches" (Thun Hohenstein, Turrini, Guerreschi, & Fontana, 2016, p. 100).

Most accounts provide few details on the use of plant resources, and discussion is dominated by narratives focused on hunting. The emphasis on hunting and large game again runs the risk of prioritising stereotypically male activities (Finlay, 2000), and narratives that emphasise the potential of other montane resources are valuable – not least to assess which resources were acting as attractors of activity in mountain landscapes. Where faunal evidence is available, it sometimes raises distinctive and new data. For example, Rosie Bishop's identification during ongoing post-excavation analysis of the use of bearberry and possibly crowberry for either food or fuel at Caochanan Ruadha, Cairngorms, is a distinctive Mesolithic archaeobotanical assemblage in a British context (c.f. Bishop, Church, & Rowley-Conwy, 2013) and highlights different forms of archaeological activity in mountain landscapes (Bishop, pers comm.)

Several reasons for Mesolithic use of mountains have been proposed, but the hunting of large game is a dominant theme. Given the common acidity of many upland soils, faunal assemblages are rare, and many assumptions about likely exploitation patterns are made based on the *expected* presence of key resources and their behaviour: assumptions about the latter are based on historical and recent observations and uniformitarian logic. In Norway, rock shelters and caves do not appear to have been used, and settlement instead focused on areas of good visibility, near the inlets of lakes or on headlands (Bang-Andersen, 1996). Most site locations relate to the present-day migration routes of reindeer and it is assumed that these were the key resource for early mountain use, with coastally oriented hunters using forms of logistical mobility to access the interior highlands via long marine fjords. In England, although the model has long been criticised (Spikins, 2000), many of the small upland Mesolithic sites are typically assumed by archaeologists to be linked to red deer hunting by small groups: also understood as being logistically organised (Preston, 2013). There are clearly dangers in models built on these assumptions – many of which also tend to be simplistic and too static for the lengths of time involved.

In the Eastern Alps, the dominant explanation for Mesolithic mountain sites was a model based on vertical mobility. This proposes the movement of settlement from rock shelters occupied in the valley bottom in winter to high-altitude task-specific sites associated with the exploitation of large ungulates at or near the tree line (1,800–2,100 m) in summer and autumn (Broglio, 1993). Site location includes consideration of ideal access and mobility routes into the mountains, with a focus on areas that provided good views:

> (*p*)*referential site locations are lakes, passes, erratic boulders, small terraces or localities with a good view on the territory. The proximity to the ideal routes, in terms of the best directories to connect adjacent mountain areas, appears as a basic criterion for the site choice*. (Wierer, Betti, Gala, Tagliacozzo, & Boscato, 2016, p. 104)

Whilst this general picture remains in place, ongoing research demonstrates variability amongst valley bottom rock shelters, including evidence for specialist exploitation of valley bottom resources and developments in fishing technology, whilst upland sites include residential locations. This complicates the simple model, and as Wierer argues, this is likely to reflect a "a complex mobility and settlement system" (Wierer et al., 2016, p. 120) which changes over time. The Eastern Alps is one of the most intensively researched Mesolithic mountain settlements in Europe, and the indications of complexity and change over time in how settlement was organised here are likely to have characterised all Mesolithic exploitations of mountain landscapes. We should expect variability and change over time. There was no single way of using these landscapes.

3.3 Lithic Raw Materials

As noted above, many general accounts of human use of mountains stress the importance of accessing valuable minerals and rock types. In a Mesolithic context, much of our discussion has focused on the quotidian use of stone as a raw material for tool manufacture. Nyland, however, has demonstrated the ways in which quarries and the use of distinctive "cloud stones" shape the experience of and understanding of mountain landscapes (Nyland, 2020a,b; see below). It is important to stress that not all Mesolithic use of mountains aimed at the discovery and exploitation of stone resources: sites in many regions show the importation of raw material to enable activity or where the procurement of lithic raw material was embedded into other tasks.

Mountain landscapes can provide significant geological diversity and appropriate exposures to access lithic raw materials. But not all mountain landscapes contain raw materials for tool manufacture, or, where they do, the quality of the available material may be a problem. In the Pennines of Northern England, for example, the absence of suitable raw materials means that there is little on-site knapping and the long-distance importation of blanks is evidenced. Preston argues that lithic assemblages therefore see "increased occurrence of flexible strategies such as risk avoidance, caching, co-option, and re-tooling" (Preston, 2013, p. 10). Our work in the Cairngorms has found specialist function sites based solely on flint procured from at least 70 km away as the crow flies, whereas other places in the same mountain range use imported flint and local rhyolites (Warren et al., 2018; Wickham-Jones et al., 2020).

In other instances, local raw materials are available, but of low quality, and are supplemented by imports. At Grande Rivoire, France, Angelin et al. identify two distinct *chaîne opératoires*: one with local red-grey-brown flint of poor quality, and the other on flint imported from the region (0.1–50 km) and with a focus on microlith production (Angelin et al., 2016). Similar strategies are in use elsewhere, including the North of the Iberian Peninsula where microliths are made on imported materials (Neira Campos, Fuertes Prieto, & Herrero Alonso, 2016) and in Scotland (Wickham-Jones et al., 2020). This common strategy of varying production sequences with raw materials is, however, not exclusive to mountain landscapes but is a common theme of Mesolithic sites in many different locations. At other times in the mountains, local raw material is present but was ignored: at Casera Lissandri, for example, material from 50 to 100 km away was used instead of poor quality locally available materials (Visentin, Bertola, Ziggiotti, & Peresani, 2016). In many of these cases, it is difficult to assess the role of lithic materials in determining the location and character of settlement. Were they using these areas because of the presence of local raw materials, or was this simply a further advantage for a site that was mainly occupied for other reasons? In the South Tyrol, it is argued that lithic procurement was embedded over the long term within other patterns of mobility but was not the determinant of that mobility (Wierer & Bertola, 2016).

These areas with limited availability of good quality raw materials highlight a critical aspect of the archaeological record of Mesolithic mountains – the visibility of archaeological material to surface survey. For example, in Sweden, Norway and Scotland, upland sites with very low numbers of lithic artefacts are an

outcome of a complex and poorly understood relationship between site function and raw material properties and distributions – the low numbers of artefacts and sometimes small surface area of mountain sites do not mean that the site is of low significance (Högberg & Persson, 2019; Warren et al., 2018). In areas with very limited numbers of lithics, this provides a significant structure to the character of the archaeological record and may provide significant constraints on the recognition of sites through survey. Indeed, in some locations, sites without lithics may be present (Bang-Andersen, 2015) – presenting challenges of a very different kind for survey. Alongside this, the use of local raw materials may dictate the use of different chaîne opératoires which may mean that resulting debitage products are not diagnostic to period. At the most extreme, the use of materials with less regular knapping properties may make any kind of artefacts difficult to identify, but especially typologically distinctive ones. This is especially problematic in landscapes where opportunities for surface survey are limited.

In some cases, however, people were being drawn to very specific places for the sole reason of procuring stone, and in some areas, quarries appear to have acted as nodes or anchors for repeated activity (Nyland, 2020a,b). Some of the most striking examples are rock crystal quarries, which are known from the Western Alps, with Swiss and Austrian quarries known at 2,800 m OD (Cornelissen, 2020; Leitner, 2012). These sites highlight the seeming value placed on the remarkable aesthetic qualities of rock crystal: Leitner is clear that the "incredible and incomparable transparency and purity" of the rock crystal was the reason for quarrying at Riepenkar, and Nyland also notes the targeting of the highest quality quartz crystals in Norway (Nyland, 2020a) and stresses the need to consider the sensorial properties of materials to understand why and how it formed part of people's lives and structured their activity. In Nyland's case studies, it is the "cloud stones" that draw people to particular locations. Mountains are landscapes of stone – and evidence from throughout the Mesolithic suggests that the properties and qualities of stone mattered deeply. They were not just a useful material for tool manufacture.

Fontana, Visentin, and Wierer argue that variable lithic resources determine the variable character of settlement in the different areas of the Alps (Fontana et al., 2016). This is generally applicable at European scale, at least in the sense that variable lithic resources determine how archaeological materials appear to us in the present. But lithics structure the character of settlement – and our ability to reconstruct this – in all Mesolithic landscapes. Apart from a small number of quarries, there is currently little compelling evidence that one of the reasons Mesolithic people were using Mountain landscapes was for specific sources of stone. Much more work is needed in this context, and there is significant potential in understanding the use of mountains through further examination of quarries, sites for the procurement of lithic materials from pebble and other erosive contexts, the place of mountains in broader procurement strategies and the ways in which Mesolithic communities understood stone. In short, through a holistic perspective on the use of stone in mountain landscapes.

3.4 Cultural Importance

Most overviews stress that one of the key reasons for the human use of mountains is the cultural significance these high places hold. Drawing on the very wide variety of contemporary human groups who treat mountains as places of great spiritual importance and power, these assumptions are often very generalised. Many rely on simplistic analogies to reconstruct the deep time human past; as for example with Bernbaum and Prices' synthesis:

> *Very little is known about early views of mountains. Much of the evidence is based on the study of indigenous societies who still follow prehistoric ways of life. Impressed by volcanic eruptions, storms, avalanches, and other physical manifestations of power, many of these societies view mountains as the homes of powerful deities and demons that have to be treated with great care and respect.* (Bernbaum & Price, 2013, p. 253)

The difficulty of understanding how prehistoric communities understood the "deities and demons" associated with mountains – or indeed any specific aspects of their world view – is of course considerable, but

the need to do so is often emphasised, including in Mesolithic contexts. Grimaldi and colleagues, for example, argue that considering mountains as "(s)acred places. … functioning as physical attractors of symbolic values, and underlining reflection, adventure and superstition as basic human properties which should always be taken into account as possible correctives to "solid evidence"" (Grimaldi et al., 2016, p. 3) is a key research question.

Despite the frequency of such statements, only a small number of accounts are specific about the cultural value of Mesolithic mountain resources. Selsing, for example, argues that the use of the mountains for reindeer hunting in Southern Norway was "closely related to a prolongation of the original reindeer culture and to rituals that had required reindeer hunting" (Selsing, 2012, p. 186) and that this enabled the continuation of a long tradition of reindeer-shamanism with origins in the Late Glacial (see also Breivik & Callanan, 2016 for mountain use as continuation of Late Glacial hunting strategies).

But overall, discussion of Mesolithic world view is more reticent. This is possibly because the problem of world view is often framed inappropriately. The distinction between symbolism and superstition and "solid evidence," made for example by Grimaldi et al., cannot lead to a productive archaeological resolution to the problem of how people understood mountain landscapes. Nor can separating "natural" resources from "human" activity. Instead, and returning to themes introduced above, a focus on *social investment* and *intergenerational commitments to place* (Scheiber & Zedeño, 2015a) has much more potential to allow us to see how communities "*engineered*" their mountain landscapes and constructed, maintained and transformed systems of meaning whilst doing so (see contributions to Scheiber & Zedeño, 2015b). How did people "*go into*" the mountains and how did this change them and the mountains?

Many Mesolithic sites in the Mountains of Europe are occupied over the long term. Indeed, the oft-referenced idea of Mesolithic "Persistent Places" arose from discussion of long-term Mesolithic use of a specific place in the Welsh Mountains (Barton, Berridge, Walker, & Bevins, 1995). Some places are occupied over the long term whilst their function within settlement and technological systems change. Sites interpreted both as base camps and more specialist areas (if we want to use that language) can therefore be understood as resulting from intergenerational commitments to place.

Whilst we can often say this at a generalised level, in some instances, the social investment in particular physical materials is clear, and we can begin to assess how the investment in place shaped later experience of that place. In the Norwegian highlands for example, Fretheim suggests that following the initial transport to an appropriate site of poles for a cone tent, which was utilised by a task-specific group, these poles were left on site for repeated use into the future (Fretheim, 2017). Fretheim describes these as "space attractors" which structured future use: here, we see the investment in place providing the material with a form of agency in determining the location of future settlement. In other terms, the social investment in bringing specific materials to this site creates a form of long-term commitment. Such activities are likely to have been widespread, although often hard to document. Caches of raw material in the mountains for stone tool manufacture will have worked in a similar way. Nyland offers a compelling argument that in Western Norway, in a landscape shaped by dynamic coastal change, quarries "became anchors and focal points and places, representing stability in a changing Mesolithic natural environment and landscape" (Nyland, 2020b, p. 343).

People's movements into the mountains were therefore not into a natural landscape, but one shaped by prior activity. More broadly, revisiting sites on annual or longer cycles would have led to encounters with previous activity and a landscape clearly transformed by human activity. Such repetition likely provided a sense of ontological security. These were *familiar landscapes* that people were going into, not explorers into the unknown. Shepherd's emphasis on knowing the mountain through repeated visits and in tracing paths of previous movement is echoed by such approaches (see discussion above). In Andrews terms:

> *going over the same ground brings into being a connection between present and past selves, and between those selves and the future. By virtue of walking a path that endures beyond the limits of human lifespans, we can inhabit the same space as our selves-that-were, and keep the path open for the selves-to-come.* (Andrews, 2020, p. 249)

The nodes and anchors that Nyland discusses in the context of quarries were nodes and focal points on networks of paths that linked places – and it was through travelling these paths that experiences were

Figure 1: Excavation at Caochanan Ruadha, Cairngorms 2014. Note eroded footpath immediately behind the trench and running across the photograph © Graeme Warren.

shaped. Paths again become a focal point for our consideration of the experience of mountains – as is highlighted repeatedly by the location of montane Mesolithic sites (as discussed above for Alpine sites; and see Figure 1 for a Scottish example).

At a less intimate level of consideration of paths and mobility, mountains clearly had some role in terms of contact and exchange. This is often discussed in terms of transport *through* mountains, which acted as a barrier and filter but did enable contact between groups (Fontana et al., 2016). In fact, from an analytical perspective, the presence of distinctive raw materials, often from some distance, is an advantage in understanding mobility through and within mountain ranges: north–south movement across the Alps, for example, is demonstrated by the presence of chert from the Southern Alps in the Austrian Tyrol (Schäfer et al., 2016). These fragments of evidence highlight the mountains as points of contact and connection and remind us of journeys that were assumedly taken across high passes.

As well as traversing the mountains, the potential for upland areas as meeting places for different groups in the summer months is also significant: for example in Bang-Andersen's discussions of groups from different lowland areas meeting in the southwest Norwegian mountains (Bang-Andersen, 1987, 2012, 2013). Given the dominance of ideas of logistical mobility and task-based mobility in interpreting the high mountain sites, it is worth emphasising that this contact and opportunity to meet may have been restricted to only some members of society.

Assessing the cultural significance of mountains therefore remains challenging and the specifics of belief systems will likely remain elusive. But a focus on social investment and intergenerational commitments to place, as well as the experience of paths and journeys and the mutually constitutive relationships between people and mountains, offers some potential to understand Mesolithic mountains as familiar places, key to the identity of communities, as well as places that enabled contact and communication with others – at least for some members of the community.

4 Conclusions

I argued at the outset that Europe is a continent of Mountains, and that therefore, the Mesolithic of Mountains should be foregrounded in accounts of the Mesolithic. I suggested that there is considerable cultural heritage value in understanding how hunter-gatherers used these mountain landscapes, and that there is an opportunity to engage in broader debates about humans and mountains. There is an important

socio-economic context here – Mountain landscapes are under pressure, and the archaeology within them under threat.

Providing a high-level summary of what we know therefore has value: to our own community and to those who work in mountains in other contexts. I have attempted to provide this review against commonly defined themes which are held to articulate human use of mountains. I have "positioned" my perspectives: with an emphasis on going "into" the mountains and understanding human shaping of these landscapes, rather than setting the mountains and humans apart. Reviewing the Mesolithic use of resources, stone and the cultural importance of mountains shows some emergent themes and many areas and details that challenge our conventional understandings. Further research is required.

My closing point is a straightforward one. The community of researchers who work on Mesolithic mountains is well networked. Researchers publish well in a wide range of specialist journals and conference proceedings. The detail of our work is available. But it is not so straightforward to stand back from this detail and ask what it means or what the opportunities and threats are that face us. There is no single synthesis volume of the montane Mesolithic – in contrast to many books written focusing on the Mesolithic and the coast, for example. My attempt to pull threads together in this article is inevitably partial. It will be characterised by oversights and misunderstandings. A co-authored review which strongly attempted to develop key themes in the archaeology of the Mesolithic in Europe's mountains should be a priority. Such a review could be invaluable in terms of promoting our understanding and curation of this remarkable archaeology.

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