'They wrought almost any material that came in their way': Mesolithic Flint Alternatives in the West of Ireland

Killian Driscoll

Abstract

The title's quote comes from Knowles' 1889 paper on his fieldwork, where he collected lithics made from various raw materials. He commented on the difficulty of identifying such lithics and the consequent biases produced in the archaeological record. However, these comments were effectively overlooked, and flint continued until recently to be perceived as the premier lithic raw material: the Antrim flint deposits were regarded as the lynchpin of Irish prehistory, and, when noted, other materials were seen as substitutes rather than proper materials in their own right. This article outlines research on the social archaeology of the Mesolithic in the west of Ireland, and how the 'flint gaze' has shaped our understanding of prehistory. The article's main focus will be on the social implications of the variety of lithic raw materials that were used at that time – materials that included chert, siltstone, greywacke, quartz, slate, flint, tuffs, and rhyolite, as well as other types used in the manufacture of stone axes.

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1. Introduction

This article discusses some aspects of research, completed in 2006, which reviewed the evidence for the Mesolithic (c. 8000-4000 BC) in the west of Ireland (Driscoll 2006). This period and area had been, for the most part, overlooked by researchers and the record was characterised by a few find locations scattered throughout this quarter of Ireland. Most of the finds were initially discovered after mid-20th-century drainage schemes lowered the water table of two lakes, Loughs (the Gaelic word for lake) Allen and Gara. This article will discuss how the prehistoric use of various raw materials for stone tools had been presented by researchers, followed by some results and interpretations, with a focus on the results from fieldwalking around the shores of Lough Allen. Firstly, however, I will quickly introduce the geology of Ireland as it pertains to flint and chert, and outline the Mesolithic lithic technology.

The schematic geological map in Figure 1 shows that the predominant bedrock consists of limestone, implying carboniferous chert deposits in places, with in situ deposits of flint in the

![Geology of Ireland](image_url)
north-east, especially in Co. Antrim. The Antrim flint is not chalk flint, but nodule deposits in the Ulster white limestone formation; other areas around Ireland have secondary deposits of beach flint, and also in the glacial till. My research area consisted of the six counties – Clare, Galway, Leitrim, Mayo, Roscommon, and Sligo – west of the River Shannon, which divides the Irish midlands in half; these six counties comprise about a quarter of Ireland (Fig. 1).

Very briefly, and generally, the Irish Mesolithic is divided into two main phases; the earliest date for the Early Mesolithic is c. 8000 cal BC (Woodman 2003), with the lithic technology typified by a microlithic technology, as well as the use of flake, core, ground, and polished axes. At some stage in the seventh millennium, the Later Mesolithic began (for debates on the chronology see Warren 2003; Costa et al. 2005), which is characterised by a switch from a microlithic to a macrolithic technology, with the Bann flake, named after the River Bann in Northern Ireland (Fig. 1), as the icon of this phase. But these Bann flakes were just one part of this macrolithic technology, and indeed, only in one sub-phase of the Later Mesolithic (see Woodman et al. 1999). In the west of Ireland the evidence for the Early Mesolithic is limited, with almost all the material being Later Mesolithic.

2. Previous Research

The title quote comes from Knowles' (1889) article in which he outlined his investigations of various sandhills around Ireland. Knowles was an active collector and buyer of lithics in the 19th and early 20th century and it is estimated that his collection comprised up to 40,000 artefacts, consisting predominantly of flints from the north-east (see Woodman et al. 2006). As well as his collection, tens of thousands of other lithics were collected in the north-east at the time – a far greater number than anywhere else in Ireland. This degree of concentration of collecting in the north-east has had a profound, long-lasting legacy on our understanding of Irish prehistory; this legacy is typified by Roe and Woodward's article (this volume), where about half of the Irish bracers are from one county (Co. Antrim) out of 32, and not a particularly big county at that. Compared to other counties, Co. Antrim appears to have an embarrassment of artefactual riches.

In the 19th century, it was suggested that flint would have been a valued trade item where there was a lack of flint, and ethnographic parallels were made in material trading, such as those witnessed at the time in Australia (see Wood-Martin 1888). Knowles' (1889; 1891) work around the coast of Ireland suggested that a wide variety of raw materials had been used in prehistory; he pointed out the necessity of looking beyond the flint gaze, commenting that in areas of Ireland without flint, other materials would have been used, and warned that implements in these other materials were harder to recognise, which would lead to a substantial bias in the known distribution of prehistoric communities. A few decades later Brunicardi (1914) took a different view – she argued that because flint was not exported around the country, but local material was used instead, this suggested a 'low grade of civilisation' in these non-flint areas. By the mid-20th century, Macalister (1949) almost exclusively discussed flint in his book on Irish archaeology; he even went so far as to suggest that the use of chert in Co. Sligo (Fig. 1), and the lack of flint there, was a reason for the surmised early adoption of metal in the region. A few years earlier, Movius (1942) had published the first book dedicated to the Stone Age in Ireland. While titled The Irish Stone Age, however, the monograph was limited to discussions on the flints of the north-east: the
Antrim flint supply was seen as the major attractor for settlers to Ireland. Indeed, not only was flint seen as an attractor, but during the Late Glacial period the lack of flint in the south of Ireland was seen as a reason for the perceived avoidance of the area. We can see, therefore, that Knowles' work, which had highlighted the use of a variety of materials for stone tools, was effectively ignored and flint was the perceived premier raw material and the north-east the ultimate home of the Irish Stone Age.

For the known distribution of the Mesolithic, this perception of the premier place of the north-east, as well as the concentration of collecting there, created the situation whereby in the 1970s Woodman's (1978) distribution map in the first monograph on the Irish Mesolithic was heavily skewed towards the north-east (Fig. 2). The number of sites in the midlands on the Shannon system in Figure 2 are related to finds, predominantly of chert, collected during dredging or exposed when drainage schemes lowered water tables in the mid-20th century. While these finds eventually allowed the perception that there was more to life than flint, Woodman (2003) has noted that it was initially interpreted that these midland chert sites were simply an extension out of the north-east flint Mesolithic, rather than as signatures of a valid settlement distribution in their own right. Moreover, research in the midlands, and the west in general, was sporadic if not non-existent before and since the initial discoveries of the mid-

Figure 2: Distribution of Mesolithic sites as of 1978; adapted from Woodman (1978)
20th century post-drainage lakeshores (O'Sullivan 1998). In the last few years, however, a few of these areas have been reinvestigated; Fredengren (2002; 2004) has looked at Lough Gara, and has excavated a Mesolithic and Neolithic platform site at Lough Kinale, and Little (2007) is conducting a PhD project on some of the midland sites around the Lough Derraveragh area (Fig. 1).

3. Mesolithic Lithic Raw Materials

My research consisted of reviewing the evidence in the west of Ireland, the six counties west of the River Shannon, in an area for the most part overlooked by researchers, with only a few findspots cited in the previous literature. The aim was to bring together the available evidence and to conduct fieldwork to assess various areas for further longer-term work. As I was beginning in 2004, Warren initiated an excavation of a Mesolithic and Neolithic quartz scatter at Belderrig, Co. Mayo (Fig. 1), which is the first Mesolithic research excavation in the six counties (see Driscoll this volume; Driscoll and Warren 2007). Again, as I was beginning, the first development-led excavation of a Mesolithic site in the west was under way, and this has revealed a series of Mesolithic cremations on the banks of the Shannon at Hermitage, Co. Limerick (Fig. 1), with human bone from the earliest cremation dating to c. 7500 cal BC (Collins and Coyne 2003; Collins 2006).

3.1 Flaked stone

The identification of the lithic raw materials in the National Museum and those collected during my fieldwork was helped by Michael Williams, Geology Dept, NUI, Galway, and Matthew Parkes, Natural History Museum, Dublin; Julian Menuge, School of Geological Sciences, UCD, identified material from the excavations at Belderrig. At this stage, these identifications have been only cursory, macroscopic identifications, and therefore require further work. Figure 3 shows the distribution and initial find circumstance of the Mesolithic finds in the west, with the text showing the quantity and material types. The two major concentrations of surface finds are Lough Gara (c. 3000 predominantly Mesolithic artefacts), and Lough Allen (c. 500 predominantly Mesolithic artefacts), both of which relate to the drainage of the lakes mentioned above. As is clear, the available evidence is thin on the ground – the paucity of finds in the west is a consequence of the lack of a tradition of collecting, a lack of fieldwork by researchers, and in some areas the result of extensive bog coverage; while bog finds tend to include a lot of stone axes, other lithic artefact types are found less frequently. The two blocks that show the material as of uncertain provenance were given to the National Museum as artefacts that had been used as healing charms, so the original find circumstances, and findspots, are uncertain; the two question marks are lithics that have been reported as Mesolithic, but could not be found when requested, so are therefore unverified (Driscoll 2006).
While prehistoric finds from non-excavated contexts (i.e. 'stray finds') in the west are usually flint, excavated materials will generally be predominantly chert, highlighting the bias towards spotting flint. Consequently, as Figure 3 shows, many of the Mesolithic finds consist of flint artefacts, and most are single artefact finds. However, when you look at the larger collections – from the excavation at Belderrig, and the post-drainage shorelines of Loughs Allen and Gara – a different picture emerges of the raw materials. The excavation at Belderrig has uncovered a predominantly quartz lithic scatter and the finds from Loughs Gara and Allen are predominantly chert. In the Museum archives the material from Gara and Allen are for the most part called flint or chert, but a closer examination has shown that many have been labelled incorrectly and actually include a much wider variety of materials. Including the lithics collected at Lough Allen during my fieldwork, 18 broad rock types have now been identified as being used in the west of Ireland during the Mesolithic – these are 'broad' types as they can include sub-varieties (List 1). As these have only been looked at macroscopically, and quite briefly, a number of artefacts are called undetermined volcanic types, and the assemblages from Loughs Gara and Allen still have many of the artefacts to be geologically
determined. In addition, this count of 18 types does not include the raw materials used for hammerstones, coarse stone tools, or stone axes.

**List 1: Rock types used in the west of Ireland in the Mesolithic**

- Undetermined volcanic
- Tuff
- Rhyolite
- Basalt
- Porphyry
- Turbiditic greywacke
- Siltstone
- Mudstone
- Sandstone
- Limestone
- Non-carboniferous chert
- Chert
- Jasper
- Flint
- Schist
- Slate
- Vein quartz
- Rock crystal

A common theme of Mesolithic assemblages is the use of siltstone – it was a component at the Ferriter’s Cove excavations in the south-west (see Woodman et al. 1999), and it is found in all of the three large assemblages in the west (Belderrig, Allen, and Gara) and is one out of the three diagnostically Mesolithic artefacts collected from the Corrib River, Co. Galway, by divers. This latter siltstone has been identified as coming from west of the Lough Mask area, which itself lies to the north of Lough Corrib (Fig. 1). When the geologist identified the Corrib River lithic as siltstone, he commented that they probably wouldn't have travelled far to get such a poor material – the use of siltstone, however, does seem a distinct pattern and an active choice on the part of the Mesolithic communities; they did not necessarily conceive of it as a poor material. Another material from Lough Gara is turbiditic greywacke. As far as I am aware, there are no other flaked stone artefacts made from this material in Ireland, but this may well be due to a lack of identification rather than a lack of prehistoric use; as the Lough Gara greywacke artefacts had been labelled as chert, so more may be incorrectly identified. There is a surprisingly small amount of either Mesolithic or post-Mesolithic jasper artefacts from Ireland, considering the surmised importance of colour of lithics, especially a symbolically charged colour such as red; Roe and Woodward (this volume) have discussed the use of jasper for bracers in Ireland. In the west, there are only four findspots of jasper stone tools, two being post-Mesolithic, and the two Mesolithic being Lough Gara and Belderrig. At Lough Gara there is a jasper blade, and from the surface collection at Lough Kinale there is a jasper core (Fig. 1). The sources of these two materials is unclear, and they are, of course, not necessarily from the same source, but they nevertheless open up discussions of how these two locales, 70km apart as the crow flies, or twice that as the boat rows, were enmeshed. The original source for the turbiditic greywacke from Lough Gara is near Lough Kinale, specifically from the Longford-Down Hills to the north-east of the lake.
The glacial movement of material always has to be contended with, and may apply in this case, but cannot account for all the movement of material.

In terms of a comparison to the post-Mesolithic material component, the Lough Gara, Lough Allen, and Belderrig assemblages have a greater diversity of lithic raw materials in the Mesolithic. The post-Mesolithic assemblages seem in a sense restricted to the use of chert, flint, and quartz, again excluding the axes. It is unclear what the social implications of this change were. Is it the case that in the Mesolithic the use of differing materials was less restricted, that a wide variety of materials were interpreted as acceptable for use by the communities? Or is this pattern of restriction only an apparent pattern – an artefact of differing patterns of material movement and deposition in the landscape? In other words, do the Mesolithic assemblages amplify this diversity of material simply because they bring materials from different areas together? What is apparent is that the roles of raw material diversity appear to switch between the Mesolithic and post-Mesolithic in terms of material for flaked stone artefacts and stone axes – the Mesolithic stone axes identified from excavated contexts are of a more limited range of materials while the flaked stone is varied; in the post-Mesolithic, as commented on by Cooney at the conference, it is the converse, with a wide range of raw materials identified by the Irish Stone Axe Project (2006).

3.2 Stone axes

The use of flake, ground and polished axes in the Irish Mesolithic has been noted for many years (Woodman 1978; 2003). Nevertheless, there is a general assumption that all polished axes are Neolithic (e.g. Zvelebil et al. 1996; Fredengren 2002). The attribution of polished axes to the Neolithic stems from the entrenched tradition that the Neolithic heralded a new era of technological and ritual advances. This is highlighted by the comments of the excavators of the site at Hermitage mentioned above, before the Early Mesolithic radiocarbon dates for the cremated human bones were returned (the axe was found deposited with the dated bone), 'the polishing of stone axes is a time consuming business. It takes a long time to polish the entire surface of an axe. It may be no accident that the adoption of the polished axe happens alongside decorated pottery and the building of complex monuments. They are not simply work tools' (Collins and Hayes 2001, emphasis added). These comments are mirrored by a report on an axe find from the River Corrib, 'there appears to be no purpose to the polishing of the surface other than aesthetic and this may indicate the increase in emphasis on the decoration of implements and a shift towards the use of tools in a ritual context' (Kelly 2006, emphasis added).

These two quotations highlight the arguably erroneous view of Mesolithic communities as being essentially less cultured people – indeed uncultured people – than the supposedly more sophisticated Neolithic farmers; according to this view the Mesolithic communities had no concern for non-pragmatic, ritual acts, or aesthetics. While researchers investigating the Neolithic often acknowledge the symbolic and aesthetic value embedded in an axe and look at the ritual aspects of their deposition, for the Mesolithic it is presumed to have been strictly a work tool, devoid of meaning and value beyond its purpose of woodworking. This ingrained view of the Mesolithic stems from an evolutionary perspective that relegated hunter-gatherers – past and present – to a lower rung on the evolutionary ladder. The ubiquity
of axes on Mesolithic sites, however, suggests that this artefact must be considered as an integral part of the material culture for the period. By omitting the polished axes from discussions concerning the taskscapes of the Mesolithic communities – and by omitting the social aspects of the creation, distribution, use, and deposition of ground and polished axes – we are immediately missing an integral piece of the story of the communities that inhabited Ireland for four millennia.

In the west, there are about 1800 stone axes, with nearly two-thirds of those identified being shale or mudstone (Fig. 4), and, where the contexts are known, over two-thirds come from 'watery' contexts – over 700 came from Killaloe on the Shannon, about 10km upstream from the Hermitage site. The porcellanite and Group VI axes (about 4.5% of the total) highlighted in Figure 4 can be excluded as possible Mesolithic, as these materials are not seen as having been used until later. Woodman et al. (1999, 78) have commented that in the Mesolithic the axes tend to be formed from pebbles that required minimal shaping to create an axe. What the deposition of a finely crafted polished mudstone axe from the cremation pit A at Hermitage mentioned above (Collins and Coyne 2003) tells us is that we can consider well-crafted axes as being from the Mesolithic as well as the more natural, fortuitously shaped ones. Woodman et al. (1999, 80) have also suggested that axes found in riverine and lacustrine contexts should not be automatically assumed to be Neolithic instead of Mesolithic. While in agreement with this – and acknowledging the importance of the deposition of axes in watery contexts – I suggest that we should take it even further and argue that, even away from these
areas, the assumption should not automatically be made that they are Neolithic. As this project's review has shown, Mesolithic material is found away from riverine and lacustrine contexts, albeit in low numbers (Driscoll 2006). Consequently, other probable Mesolithic axes are among these 1800 from the west, therefore possibly showing a greater distribution of Mesolithic material than is apparent in Figure 3.

**3.3 Raw materials from Lough Allen**

Lough Allen lies close to the northern source of the River Shannon and is the first large lake of the system (Fig. 1); the upland lake is nestled between three separate high hill ranges to the north, east, and west, with the river valleys running from the north-east and north-west. The southern end of the lake opens out onto the undulating Irish central lowlands. Today, the environs of the lake are permanent pasture and bog, with a minor amount of conifer plantation woodland, and scrub and trees along the shores; this land usage meant that the fieldwalking conducted during this project was restricted to walking the lake shore to identify lithic scatters and is therefore biased against the lake's hinterland.

While two Mesolithic findspots from the lake were previously noted in the literature (e.g. O'Sullivan 1998; Fredengren 2002), the National Museum actually held material from six locations, and, as mentioned, these were collected during dredging and on the post-drainage shoreline. Two of the greats of Irish archaeology, Raftery and Mitchell, both had a hand in surveying and collecting material at Lough Allen in the early and mid-20th century; however, little follow-up work had taken place on the lake. During my fieldwork, I collected material (some scatters were sample collected, giving a total of 436 artefacts collected) from 98 findspots, of either single finds or scatters (Fig. 5). The yellow in this figure shows the extent of the survey, and that in only one stretch of the shore were no lithics found. The 98 findspots identified are scattered all along the lake, and almost all areas surveyed turned up some lithics (as mentioned, due to a lack of tillage in the area, only the lakeshore was fieldwalked). The raw material used by the Mesolithic communities on Lough Allen in their stone-working was dominated by chert followed by tuff, other non-specific volcanic types, siltstone/mudstone, flint, and a non-carboniferous chert; an axe of shale and one of basalt were also identified. It should be cautioned, however, that the identification of the material was based on a cursory assessment of the material by the geologist; only half the material has been identified, and what is needed is a careful scrutiny of the material to assess provenance, as well as further fieldwork to identify possible sources in the locality. In terms of the volcanic types used, while some have been identified as tuff, the rest is unspecified as volcanic.

It is unclear whether all of this was derived locally. While we can, for now, say in a general sense that the chert, siltstone, and volcanic rocks are 'local', and the flint and non-carboniferous chert can be considered 'non-local', this is probably masking a considerable difference in the provenance of 'local' materials, which ultimately has consequences for our understanding of the movement of material across the landscape. In terms of the chert used at Lough Allen, there appears to be a number of different kinds of chert in the assemblage, including banded and striated chert, with colours ranging from light grey to dark grey, and from dark blue to black, with these different colours also being dull to glossy chert. One of the difficulties is that a single outcrop of chert can reveal a wide variation in the appearance
of chert. According to the OSI (Ordnance Survey Ireland) maps there is a chert outcrop a few kilometres to the south-west of the lake, and another two a few kilometres further again to the west. These may well be the source of some of the chert and remains to be investigated during further research. If this is the case, the chert may have been removed in blocks from the outcrop, and brought to the various locations on the lake in the form of cores, and then worked into blades and so forth. However, it is unclear to what extent chert was available closer to the actual working areas.

Figure 5: Lough Allen
The finds collected during the survey ranged from single finds to discrete scatters of lithics, and the lithics in the scatters were a mismatch of cores and debitage products of different materials. Of course, when dealing with a surface collection, we have no fixed chronology over the assemblage; the deposition of material may have occurred over many generations, and there are taphonomic factors to contend with as well. A flake and a core of a non-local, non-carboniferous chert were identified in two of the scatters, 1.2km apart, from the eastern side of Lough Allen and the origin of this raw material is unknown. The flint from Lough Allen is also non-local and, together with the non-carboniferous chert, over half of these artefacts came from one stretch of the east side of the lake, even though this area accounted for only 30% of the total assemblage. As seen in Figure 5, this stretch is well away from the water-based entry and exit points of the lake, and is backed by a steep hill. While there would seem to be an emphasis on the mouths of watercourses, as is usually stated for Mesolithic artefacts, it is clear that a lot of the material does not come from these locales, but rather from the shoreline in general.

Possible readings of these finds could be that they represent either a) the casual discard of tools, b) the remnants of knapping episodes on the shore, or c) the erosion of caches of material. However, these pragmatic, naturalistic explanations may not be considering the complexity of the deposition of material – a complexity not fully understood but often glossed over in terms of subsistence activities. This complexity of lithic deposition was undoubtedly tied in to the world view, and ritual practices, of the communities involved. In a Neolithic context, O'Sullivan's (2001) discovery of a lithic scatter along with human remains, floral and faunal remains, as well as a basket, highlights that these lithic scatters must be considered in a more holistic sense than in pure subsistence terms. The sense of a ritualistic taskscape (sensu Ingold 2000), being played out in a ritualised landscape, should be considered on equal terms with the economy to which it is intimately fused. Therefore, these scatters that we find on Lough Allen and elsewhere may have a more complex history of deposition rather than casual discard, or economically motivated caching. The lithic scatters presented to us today are signatures of technical acts that are innately social. As Dobres (2000) has put it ' [. . . ] technological practice ... is not simply the activities and physical actions of artifact [sic] production and use, but the unfolding of sensuous, engaged, mediated, meaningful, and materially grounded experience that makes individuals and collectives comprehend and act in the world as they do'; to Dobres' artefact use and production, I would add the deposition of artefacts.

But is describing the lithic scatters as part of a ritualised landscape effectively a conceptual cop out – if all else fails, call it ritual? I suggest not, and maintain that more seemingly naturalistic or rational interpretations of lithic deposition may miss a more rounded account of prehistory. This ritualised landscape enabled and constrained how the communities interacted with their world, and ultimately has shaped what we now conceive of as the archaeological record and archaeological landscapes. These can be viewed as bringing different nodes of the landscape together, the creation and elaboration of places on the lakeshore through the working, use, and deposition of stone. While we have locally derived stone being collected, worked, and used at various locales dotted around the lake, we also have the arrival of distantly derived material to the same areas. We can suggest that the non-local material arrived at the lakeside through different methods. The possible exchange relations for the non-local material to arrive at Lough Allen may have involved a convoluted route, rather than a direct, utilitarian, trading route; this material may have passed through various communities on its way, and its value may have waxed and waned along the course –
an entangled object’s (*sensu* Thomas 1991) net worth as a material is socially constituted to a greater extent than its straightforward utilitarian value. The convergence of the local and non-local stone at Lough Allen brings different nodes of the landscape together – the stone is not just extracted from its source to then become a reified commodity, but probably brought with it the personality or qualities of its source (see Bradley 2000), or at least the stories told of the source. This sense of the personality of the source can be manifested sensuously: when cracking open a core collected from the beach, the smell of the sea wafts out with each hit. The remains of lithic technology we find as scatters of stones were a part of the communities’ relations with the world and with themselves. How they used and deposited the stones was contingent on their understandings of their world view, rather than an ahistorical, pragmatism. The difficulty is in relating the patterning available to us to a historically contingent society.

4. Conclusion

Of course, for this historically contingent society, their lithic technology was but one part of their technological repertoire, which included organic materials, for which there is scant evidence in comparison to stone in Ireland. As well as having been expert 'geologists' we can view the Mesolithic communities as having been expert anatomists and ecologists, albeit in their own idiosyncratic ways and through the lens of their worldview. Rather than from an era of specialists, they were probably more akin to polymaths. As noted by Taçon (1991) and La Planta (2007), stone can also be understood as an animate 'organic' entity, and it may be our particular parochialism to see it as an innately inanimate collection of minerals. This brings me back to the notion of local and non-local stone and issues of the glacial movement of material, and how this was perceived in the Mesolithic. If we can accept that these Mesolithic communities were expert geologists with a depth of knowledge about the material distribution in the landscape of primary and secondary sources of the various materials, and they possibly perceived this stone material as alive and growing, how does this relate to glacial erratics, as discussed at the conference? Did they perceive these as offspring of known outcrops, sprouting like fungi from an underground web of spores? And how does this relate to their use and deposition of lithics – their use of a variety of materials and their deposition of these differing raw materials from different locales together?

The 19th-century explosion of lithic collecting in Ireland was primarily a northern Irish phenomenon, where the main sources of flint, especially *in situ* flint, lie. While some researchers, especially Knowles, noted a wide range of raw materials, for the most part discussions on materials for flaked stone were limited to flint or chert. This research has shown that at least 18 broad types of raw material was used by Mesolithic communities for their flaked stone repertoire in the west, with more used for their axes and coarse stone tools and hammerstones. Clearly, this is far from a chert/flint dichotomy. An apparent pattern is that in the post-Mesolithic the range of raw materials for flaked stone tools becomes restricted, and the social implications of this are unclear. For the raw materials for stone axes in general the converse is the case, with a more restricted range in the Mesolithic compared to the post-Mesolithic. This is not to say that in the post-Mesolithic no other materials were used for flaked stone – there were, and Knowles' quote was, for the most part, discussing post-Mesolithic material, but these appear to be more isolated and localised,
whereas in the Mesolithic all these materials appear to be used together in the same locales. For the west, little work has been carried out, and research begun a generation ago was not followed through; consequently the record is scant and only recently have Mesolithic sites begun to be excavated. While 18 broad rock types have been identified as having been used by the Mesolithic communities in their flaked stone repertoire, there is as yet little information on their procurement strategies and procurement locations, beyond a broad description of material being 'local' or 'non-local'.

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