A VIEW FROM THE OUTSIDE: SOME THOUGHTS ON THE RESEARCH PRIORITIES FOR MESOLITHIC AND NEOLITHIC LITHIC STUDIES IN BRITAIN AND IRELAND

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ABSTRACT

This paper considers some possible avenues for new research into the study of lithics for British and Irish assemblages dating from the Mesolithic and Neolithic. While scholars have been successful in extracting detail on technological aspects of stone tools, it is argued that we now need to integrate other approaches into our consideration of stone tools. Firstly, the significance of colour in relation to stone tools is considered. Secondly, this paper discusses how specific research questions can help frame the methodologies used for both the collection, and subsequent analysis, of chipped stone assemblages. The research questions for the Southern Kintyre Project are briefly discussed, and new scientific techniques are outlined which could potentially answer these questions. This paper also argues that by making our methods more accessible to the wider archaeological community via the World Wide Web we can potentially enable other people to run their own projects. Ultimately this could mean we could compare results across broad areas. This paper is thus offered as a starting point for thinking about new research priorities which can potentially revitalise our study of lithics.


Keywords: Mesolithic, Neolithic, colour, flint sourcing, fieldwalking, web resources, accessibility.

INTRODUCTION

As someone who has spent most of their career studying megalithic architecture, I have only recently started looking at stone tool assemblages. Drawing on experiences of working with “big stones”, this paper offers some fresh perspectives on “small stones”, specifically chipped stone assemblages from the Mesolithic and Neolithic. Drawing from a range of methodological and theoretical issues surrounding the study of megaliths, this paper highlights a series of research priorities which should enable lithic studies to move forward and become more accessible and integrated with other archaeological investigations.

A CONSIDERATION OF COLOUR

In recent years there has been considerable debate surrounding the significance of colour in the past (Jones & McGregor 2002). Many Neolithic and Bronze Age monuments were constructed using a variety of different coloured stones (Lynch 1998; Jones 1999; Bradley 2000; McGregor 2002). The significance of colour in relation to other stones such as quartz pebbles deposited at monumental sites (Darvill 2002) and polished stone axes (Cooney 2002) has also been noted. All of these different studies have considered the potential symbolic importance of colour in these contexts, and how colour can create connections with other parts of the cosmos, such as the moon and sun. However, while the colour of stone tools is usually recorded by most lithics specialists, the potential significance and meaning of the colour of stone has not been considered in detail. The colour of flint, for example, can clearly assist lithics specialists in provenancing the source of the material. But did people in the past choose particular colours of flint to make specific objects? Were arrowheads, for example, made from different coloured stone than scrapers? Were people deliberately choosing specific colours of stone to make specific objects, and if so, why was that?

Before looking at the colour of stone tool assemblages, it was important to establish a solid and repeatable methodology. It is documented that colour is highly subjective: it can vary considerably depending on light conditions and many people, especially men, are colour blind (Bornstein 1975). Consultation with a colour specialist suggested that the most reliable way to record colour...
would be using a consistent light source so that the ambient lighting conditions were the same regardless of context, and recording the colour of objects using the Natural Colour System, a tool similar to the Munsell chart which includes hues covering all colours of the rainbow (John Hutchings pers. comm.). This method was therefore trialled on a small assemblage. While it was found that it is a consistent and repeatable way of recording the colour of lithics, there are a number of problems. Firstly, it is very time-consuming. It would not be realistic to use this method for a large assemblage. Secondly, this method provides a colour code, as with the Munsell system, that is combination of letters and numbers. The problem with generating a code for each individual object is that it does not give a sense of the colour of an object: people do not think about colour in this way. Instead, people universally create colour categories (Berlin & Kay 1999) such as red, black, white and so on. However, using the Natural Colour System does enable grouping of ranges of hues into colour groups (reds, oranges, and so on) and of course also enables comparability between different assemblages, recorded at different times. For the bulk of my pilot study, then, colour groupings were used which were informed by the Natural Colour System, as well as a consistent light source, but lithics were only recorded by colour category (red, orange, white, black and so on). This is a methodological issue that may need revisiting in the future.

Initially, three fieldwalking assemblages were examined. These assemblages comprised relatively small numbers of diagnostic artefacts such as arrowheads, and it was therefore logical to look at all of the material including the debitage. The most informative of the analysis done on these assemblages involved comparing the colour of the flint debitage with the colour of individual tool types. To avoid repetition, only the assemblage from Tomnaverie will be discussed here, although similar patterns were noted in the Black Isle and Clava assemblages (Bradley 2000 & 2004).

The Tomnaverie assemblage comprised a total of 317 flints, of which 278 were unretouched debitage, with 20 utilised pieces and 19 arrowheads and scrapers. There were some interesting patterns in this material, although the limitations of using such a small dataset should be noted here (and see below). The colour of all of the retouched flints was compared to the colour of the debitage (Figure 1): the absence of retouched grey objects and the larger percentage of red, retouched objects is of interest here; however a chi-squared test on these figures did not support the suggestion that this distribution was significant. It also seems that more “toffee” (browny-orange) coloured pieces were utilised (Figure 2).

There were a total of nine scrapers in the assemblage, primarily brown or toffee in colour. The arrowheads are clearly primarily red in colour; however since there were only four arrowheads in total, this is not a sufficient sample to be statistically significant. It is interesting that the arrowheads were all barbed and tanged; this could perhaps imply...
chronological patterning in the use of specific colours.

The relatively small size of this assemblage means that the relationships noted are at best tentative. There does seem to be evidence, however, that from a broad repertoire of colours, people preferred certain artefacts to be specific colours (e.g. barbed and tanged arrowheads tend to be red, and toffee-coloured pieces tend to be retouched or utilised). So, although these data sets provided useful insights into the use of colour in prehistory, it is clear that they are also limited in a number of ways. Firstly, there is simply not enough material for them to be considered a representative sample. Secondly, the fieldwalked assemblages clearly contain flints from the Mesolithic through to the Bronze Age. This means that changes in the use of different coloured flints through time cannot be identified. The next stage was therefore to locate a flint assemblage which had a large number of diagnostic artefact pieces. Culbin Sands, located to the north-east of Inverness on the Moray Firth, has produced masses of prehistoric material culture (Society of Antiquaries of Scotland 1892; Walker 1966) and was therefore chosen for colour analysis work.

The large lithic assemblage from Culbin Sands is held in the National Museums Scotland in Edinburgh and comprises thousands of artefacts. The Natural Colour System was used to create colour groupings and a consistent lighting source was used to examine all pieces.

The sheer number of pieces from Culbin Sands, around 13,000 artefacts (Alison Sheridan pers. comm.), meant it was only feasible to look at retouched flint artefacts (a total of 4729 for this study) rather than all the debitage. As such, this study differed from the previous studies on fieldwalked assemblages as no debitage was examined.

Results were interesting, and suggested the careful selection of coloured material to make different object types. A high percentage of leaf-shaped arrowheads, for example, were made from red or orangey-red flint as compared to barbed and tanged arrowheads and scrapers (Figure 3). The majority of barbed and tanged arrowheads, in contrast, were made from orange-brown coloured flint. The material from Culbin Sands is sorted by size in the museum, making it easy to consider this aspect of the assemblage. There are two broad sizes of barbed and tanged arrowheads. The larger barbed and tanged arrowheads were more likely to be made from grey flint than the smaller barbed and tanged arrowheads (Figure 4); most small arrowheads are orange-brown.

It is possible that different sizes of arrowheads may have been manufactured by different communities, and perhaps certain colours of material were therefore associated with group identity. Another possibility is that smaller objects may have been used by different groups within a community (children, women, older people, for example: Finlay 2006), and that different colours were associated with these different people.
These preliminary results may suggest that certain objects were preferentially made from specific colours of flint. It could be argued that this pattern is a simple reflection of the quality of the raw material: arrowheads were predominately made from red flint, for example, as that was the highest quality material available. However, high quality flint in all these collections actually occurs in a variety of different colours. Instead it is suggested here that the colour of the raw material was significant. It is possible to envisage a simple connection between the use of an object and its colour: red arrowheads may have been considered more potent as they were the colour of blood. Colour may also have had strong connections with identity. Specific groups of people, or groups of people within communities, may have used different coloured stones.

It is clear from this pilot study that lithic analysis should take into account the colour of material being used and it may well have been the case that specific objects were frequently and deliberately made from specific colours of stone. However, this may have been something that was contextually specific with clear regional differences. Red arrowheads may have been appropriate in the early Neolithic in Scotland for hunting, but not suitable for deposition around megalithic architecture, for example. It would also be interesting to chart the use of colours over time, and, for example, compare early and late Neolithic assemblages. Critically, these should not be studied in isolation, but considered in relation to broader trends and developments. As noted above, I became interested in the colour of lithics through megalithic architecture, and the small study by Jones (1999) on Arran of the chambered tombs and their contents (including lithics) could easily and fruitfully be expanded out both spatially and temporally. Quite clearly, a much more detailed study of this phenomenon is required and with more and more lithic material being excavated and collected, now would be an ideal time to conduct this analysis.

**RETHINKING THEORIES AND METHODS: AN EXAMPLE FROM SOUTHERN KINTYRE**

This paper will now consider other aspects of lithic studies. This stems from a project on lithics which was conducted as part of the Southern Kintyre Project (a co-directed project with Gary Robinson, Bangor University). We conducted fieldwork in southern Kintyre with the explicit aim of trying to understand interactions between western Scotland and...
eastern Ireland from the Mesolithic through to the Bronze Age (Cummings & Robinson in prep.). Prior to our work, very little was known about the prehistoric use of the Southern Kintyre area. Two chambered tombs are located in this area (Blasthill and Macharioch: Henshall 1972), and a couple of stray axe finds and a lithic scatter have also been found. Jack Scott conducted excavations of known chambered tombs to the north of the area in the 1960s and 1970s (Scott 1954, 1955 & 1960), and Graham Ritchie wrote about the prehistory of Argyll more generally (Ritchie 1997). One known Neolithic settlement site is known from the area, Balloch Hill (Peltenburg 1978), which was discovered under later Iron Age remains. While relatively little was known about the prehistoric archaeology of southern Kintyre, it is an important location for thinking about interactions between Britain and Ireland; it is the closest point between the two landmasses, which are separated here by only 12 miles. We decided to look for artefactual and structural evidence in southern Kintyre which we could compare with the eastern Irish sequence. A key element of this was acquiring lithics, primarily through fieldwalking.

METHODOLOGIES

The Southern Kintyre Project used the “total collection” fieldwalking methodology. This was because we wanted to locate and characterise the nature of settlement and we had a relatively small study area, so it made sense to find out as much as possible about the area as we could. As such a team of about 10 people walked two metres apart, each person collecting material one metre either side of their central line. Walking behind the team were one or two people, each with a hand-held GPS and finds bags, who were responsible for recording the location of each find. This effectively meant that the whole strip being walked was covered entirely. Typically we followed plough or harrow lines to make it easier for the walkers. Because flint is not found in the geology of western Scotland (apart from beach flint), every piece of flint had to have been the result of human activity, so all flint and other exotic material such as pitchstone was recorded using a hand-held GPS. This was accurate to about eight metres, and was sufficient for getting a sense of where flints were found within a field in relation to one another (see Figure 5). Large quantities of quartz were found in each field as this does occur naturally in the local geology, so we retained quartz by transect only. Historic material was not retained, found in the geology of western Scotland (apart from beach flint), every piece of flint had to have been the result of human activity, so all flint and other exotic material such as pitchstone was recorded using a hand-held GPS. This was accurate to about
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Although there are now some useful guides to fieldwalking methods (e.g. BAJR 2007), they were limited when we began our work. In response to this we developed an online web resource to outline our methodology, with short videos to illustrate particular points (see www.uclan.ac.uk/kintyreonline and Figure 6). There is scope for this to be developed further (see Cummings et al. 2010). Our resource only covers the specific methodology we employed, and it would be useful to make available and compare alternative strategies in a similar format.

We have also developed online methods for illustrating the results of our fieldwalking. GPS co-ordinates of each flint were used to produce GIS plots which are published on the website and linked to images of finds from each field (only retouched artefacts and not debitage). This means that the distribution and nature of finds from each field can easily be interrogated (Figure 7). Online dissemination of the results of similar fieldwalking projects would allow the amateur groups who conduct the majority of these studies to compare methods and results; a useful development of this approach might be the development of an online guide to lithic identification.

The publication of fieldwalking methods and results on the web is an important step to opening access to this type of research. Many fieldwalking projects are done by local groups of amateurs, and it would be enormously beneficial if they were able to see the methods and results of other, similar projects. One key technique that is currently not available online is a beginner’s guide to lithics analysis. While people have little problem identifying lithics in the field, and getting a GPS co-ordinate for them, it is harder for them to identify diagnostic pieces. A basic, beginners guide to lithics, available online, is now urgently required to redress this imbalance, and open up the study of lithics even further to amateurs, students and professionals alike.

**RESEARCH QUESTIONS AND METHODOLOGIES**

Previous considerations of interactions between communities either side of the Irish Sea have focussed on different elements. Early considerations suggested significant contact between people in western Scotland and eastern Ireland as demonstrated by similarities in monument form (court cairns and Clyde cairns, for example; Piggott 1954) and also pottery styles (see Cummings 2009, chapter 3). But culture-historians envisaged waves of people coming over from mainland Europe within a relatively short chronology (Piggott 1954). As the chronology for early prehistory was revised through radiocarbon dating, so our interpretation of other forms of material
Figure 6. An example of one of the pages from the online fieldwalking methodology resource.

Figure 7. The distribution of finds on the Kintyre fieldwalking website. The numbered points are hotlinked to an image of the artefact (insert is an arrowhead fragment).

culture improved, and lithics had a significant role to play. Stone axe petrological work conducted from the 1960s onwards (e.g. Clough & Cummins 1988) demonstrated that material was transported across the Irish Sea in the Neolithic. However, the analysis of chipped stone assemblages suggested that people were not in contact in the preceding Mesolithic period, evidenced by different technologies either side of the Irish Sea (e.g. Saville 2004). The Neolithic, however, saw the sudden sharing of particular forms of material culture which ultimately originated from mainland Europe. The frequency of contact between eastern Ireland and western Scotland was unclear (Cummings 2009), however, with this uncertain level of contact continuing into the early Bronze Age.

This interpretation of the data is unsatisfying, since the Mesolithic data is interpreted entirely from a technological standpoint, while the Neolithic narrative draws on a completely different dataset, including the results of petrological analysis. How can we begin to change this viewpoint? The petrological analysis used for sourcing stone axes is not
possible on flint, meaning that our understanding of how particular sources of flint were used and distributed is underdeveloped. One of the most exciting advances in recent years has involved pilot studies sourcing flint and chert. A number of studies in both the UK and abroad have been conducted on flint and chert using ICP-MS analyses, looking for pure elements, trace elements and rare earth elements (Owen et al. 1999; Carter et al. 2006; Evans et al. 2007). These pilot studies have shown that it is now possible to isolate the source of both flint and chert objects. While this work needs to be done in combination with the geological assessment of individual flint and chert sources, and it is also much more time-consuming that traditional petrological analyses, it offers a new methodological avenue for us to explore. Our research aims in Kintyre were to understand interactions between communities either side of the Irish Sea but traditional methodologies were unable to answer this question definitively. Flint sourcing offers a new opportunity to answer this question, and for novel avenues of research to be opened up in Britain and Ireland. We plan to conduct these analyses on diagnostic material from our assemblages, including Mesolithic, Neolithic and early Bronze Age pieces, to see if these methods can help address our original research question.

On top of this we also need to challenge the idea that certain technologies define particular periods, and are therefore found exclusively in those cultural contexts. This may have been demonstrated in some areas, but most of Britain and Ireland does not conform to southern British standards. Microlithic technology (or Bann-flake technology) may well continue for several hundred years into the Neolithic. Likewise, technologies associated with the Neolithic, or objects we consider exclusively Neolithic, may well have appeared hundreds of years before 4000 BC, just like the domesticated cattle bones found in Mesolithic deposits at Ferriter’s Cove (Woodman et al. 1999). The challenge now is to excavate sites which can produce tightly dated sequences where we can address these questions head-on.

**INTEGRATING LITHICS INTO LANDSCAPE**

This paper has detailed our work on lithic collection and analysis, but it is important to note that this was just one of a suite of techniques that we used. We conducted extensive walkover surveys of areas that had never been ploughed, and these were successful in revealing archaeological features, including boundary walls, hut circles, house platforms, cairns and quarries (Cummings & Robinson in prep.). In turn, a number of these features were targeted for trial excavation. Detailed excavation was also conducted on some sites such as a chambered tomb in the heart of our study area. This landscape approach is not new and has been used successfully elsewhere (e.g. Bradley 2000, 2004) but we now need to integrate all of this with other approaches too, namely phenomenological approaches (Thomas 2008, 304–305). This experiential approach may seem totally at odds with the careful collection, recording and analysis of lithic scatters but essentially offers us yet another technique at our disposal for considering these assemblages. This needs to be done in combination with the characterisation of the nature of occupation and the types of practices which are being performed. It has been noted for many years that Mesolithic scatters tend to be dense and closely clustered, while Neolithic material comprises less debitage which is spread more widely and is harder to define (for example as noted by Bradley 2000, 208). Why is this? I would argue that we can only begin to answer these questions by using as many theoretically-informed methods as we can. of scientific techniques. This paper has not been offered as a critique of these methods. Instead, this paper has offered some ideas about how we can enhance these already impressive studies. Those of us who are fortunate enough to work in the Neolithic period have other stones to study. Megaliths in particular feature heavily in the Irish Sea zone. But megaliths offer us only a ‘quick glance’ at

**CONCLUSION**

Coming to lithic studies from the world of studying megaliths, I have been amazed by how much information can be gleaned from the study of chipped stone assemblages. This is obviously the result of many decades of dedicated analyses of stone tool technologies, experimental archaeology and the application
society, the fleeting and short-lived constructions of particular people at a particular point in the history of their community. Lithics offer us glances at something more enduring. These are objects that were constantly in use by people, continually being used, thought about, and discarded. This paper has offered some thoughts and suggestions on making the study of lithics more accessible to people through the internet, but also on how we can now move on and glean even more information about past lives.

ACKNOWLEDGEMENTS

First and foremost I would like to thank the Lithics Studies Society for accepting my paper for presentation at their 30th anniversary conference. The colour work presented here was only possible with the help of a number of people, and I would particularly like to thank John Hutchings for advising me on colour methodologies and also Richard Bradley, Alan Saville, Alison Sheridan and Elizabeth Walker for giving me access to various stone tool assemblages. The Southern Kintyre Project was co-directed with Gary Robinson (Bangor University) and the Southern Kintyre web resource was developed with the technical wizardry of Simon Hawkesworth at UCLan. Both are thanked for letting me refer to collaborative work in this paper. I have benefitted enormously from various discussions with Olaf Bayer on lithics. Many thanks to Olaf Bayer on lithics. Many thanks to Olaf Bayer, Gary Robinson and two anonymous referees for comments on drafts of this paper, and to the editors for all their help.

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