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PICKEN'S HOLE, CROOK PEAK, SOMERSET: A DESCRIPTION OF THE LITHIC COLLECTION AND ITS PROBABLE LATE MIDDLE PALAEOLITHIC CONTEXT

by

REBECCA M. WRAGG SYKES

ABSTRACT

The British Late Middle Palaeolithic (LMP) is numerically extremely small compared to the Continental record, and the majority of lithic assemblages suffered extreme collector bias due to early excavations. A few site were dug during the later half of the 20th century, and provide much more reliable assemblages in terms of debitage and concomitant technological analyses. The lithic assemblage from Picken's Hole, Crook Peak (Mendips) was excavated during the 1960s– when techniques were generally improved from 19th and early 20th century work– and is therefore potentially important at a national level, but it has not been published until now.

A technological analysis of the lithic material is presented. This finds that much of the material can be placed within a general LMP classification, including centripetal reduction and significant use of the immediately available chert; features that are shared with regional LMP sites like Hyaena Den. On the other hand, other aspects are unusual and may point to mixing through later prehistoric activity (the presence of which is suggested by the Neolithic human teeth). This includes a lack of any bifaces, unequivocal biface production or maintenance waste, or 'classic' Mousterian retouched objects or waste from their retouching. Additionally, a tiny rotated core with multiple platforms appears unusual within the broader British LMP, although a diminutive chert biface is known from Hyaena Den. It is concluded that at least some of the assemblage is likely to be LMP, and therefore this assemblage is an important addition to understanding of later Neanderthal techno-economic strategies within the south-west of Britain.

INTRODUCTION

Excavations at Picken's Hole have previously been described in several publications (ApSimon 1979: 102, 1986; Hawkins and Tratman 1977: 106; Tratman 1964), although until now the lithics have not been published in detail. The lithic assemblage, while limited in size, in fact has one of the better archaeological contexts in relation to recording and excavation methodology, compared to most other British Late Middle Palaeolithic (LMP) assemblages (White and Pettitt, 2011; Wragg Sykes, 2009, 2016), which it is believed to be relevant to based on the biostratigraphic and radiocarbon information for Unit 3 (see ApSimon and Smart, pp 245-259 this volume). Therefore the nature of this material is of some interest, in addition to the fact that it occurs in a region that hosts a cluster of at least three other LMP localities (Hyaena Den and Rhinoceros Hole, both at Wookey, and Uphill Cave 8).

The lithic artefacts were excavated between 1962-66 in short phases, and there are several factors which argue for some caveats to be discussed in regard to them. First, the slope deposits may have suffered disturbance during the extended time-span of excavation, and it is possible that the lithic assemblage itself may be incomplete due to truncation of the deposits down the northward slope (ApSimon, 1986). In addition, the taphonomy of the site is complex, with at least two bioturbation agents, Pleistocene hyaenas and presumably Holocene badgers, and potentially human action. This is one explanation for the presence of artefacts at different levels within Unit 3 (3D and 3B)[1], which in some places are vertically separated by several inches. Furthermore, one refitting artefact (a Carboniferous chert flake fragment) was recorded.

[1] For an explanation of the subunit numbering system, see page 258, this volume.

within a badger hole, clearly demonstrating some level of disturbance. On the other hand, the presence of any refits at all indicates that there is some structural integrity to the assemblage, and is a rare feature in other Middle Palaeolithic sites from Britain

METHODOLOGICAL APPROACH

This study follows established techno-economic approaches for the Middle Palaeolithic (e.g. Geneste, 1988, 1989, 1991; Boëda, 1993; Boëda *et al*. 1990; Sellet, 1993; Inizan *et al*. 1999; Kuhn, 1994, 1995; Bar-Yosef and VanPeer, 2009), while taking into account the likely palimpsest nature of the assemblage, as previously shown in Wragg Sykes (2016). The influence of both contextual (e.g. local resource availability) and structural (e.g. technical and mobility systems) factors are considered (Porraz, 2010), permitting discussion of techno-economic choices and behavioural commonalities, without assuming strict contemporaneity of all lithic elements. The representation of particular artefact categories, reduction methods and raw materials were assessed, alongside biasing factors such as taphonomy and recovery.

Specific details of analytic categories and metrics can be found in Wragg Sykes (2009). The small assemblage size prevented statistical analysis.

RAW MATERIALS AND GENERAL ASSEMBLAGE CHARACTERISTICS

There are a total of 48 lithics in the extant collection. Of these, 11 pieces show no features suggestive of human modification and were therefore not analysed. They do however comprise broadly similar raw materials to the rest of the collection, including some pieces that appear to be flint, although they are very small pebbles. Some are distinct from the humanly-modified artefacts in having a heavy orange, probably iron staining. This may be related to the large amounts of ochre deposits locally found on Crook Peak and Axbridge Hill infilling hollows in the Carboniferous limestone.

Table 1. *Raw material composition of the assemblage.*

	Count	Column N%
Flint	7	18.9%
Quartzite	1	2.7%
Carboniferous chert	29	78.4%
Total	37	100.0%

The raw material classification is based on previous identifications made by T. Atkinson in 1976 and D.T.D. Donovan in 2009, recorded in the Picken's Hole archive, as well as the author's experience with lithic assemblages of varied raw material compositions, including those from Hyaena Den, Rhinoceros Hole and Uphill Quarry, all sites from the Mendips featuring flint and Carboniferous chert raw materials (Wragg Sykes, 2009, 2016). The chert artefacts at Picken's Hole have been identified by Donovan as silicified oolitic chert, but there is a great deal of variation in both the condition/patina and the texture and grain size. They are described here simply as Carboniferous chert because the regional oolitic limestone deposits containing cherts are of this age. Furthermore, it facilitates comparison with other local assemblages containing material similarly described as Carboniferous chert, such as Hyaena Den (Jacobi and Hawkes, 1993; Jacobi *et al.* 2006; Currant and Jacobi, 2004; Wragg Sykes, 2009, 2016). However specific sources are suggested in a later section of this article.

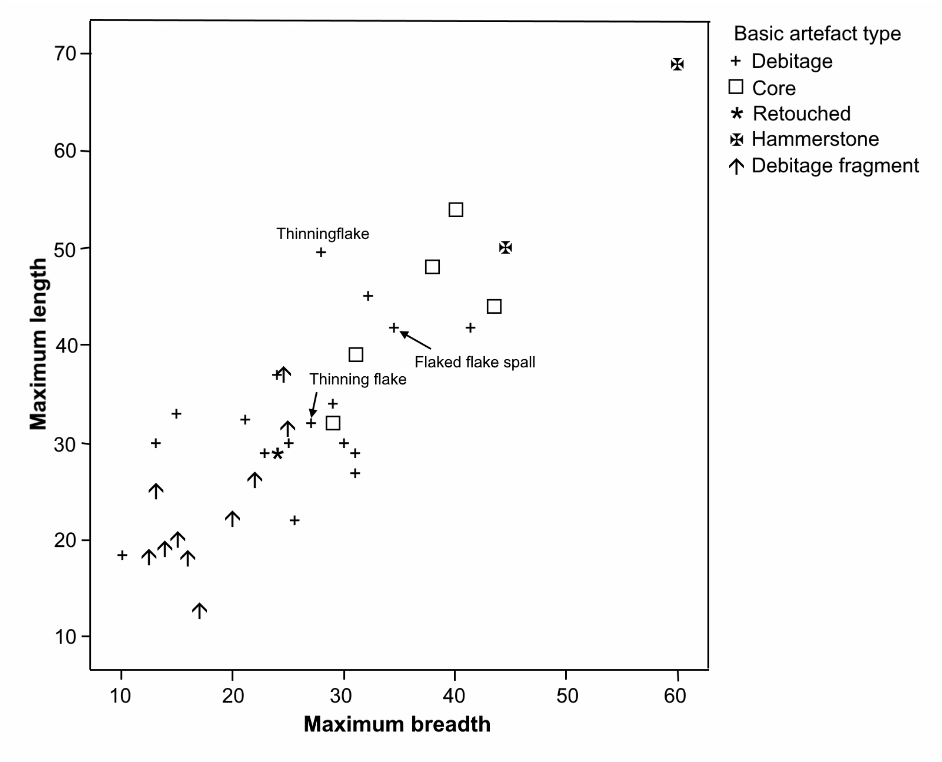

Figure 1. *Size of all artefacts by type. Biface working flakes and flaked flake spall labelled.*

Three raw material types are found among the 37 artefacts identified as knapped lithics (Table 1). The majority are Carboniferous chert (specifically silicified oolitic chert, referred to hereafter as 'chert'), but almost 20% are flint, of a generally good internal quality and translucent type, though with external weathering and some flaws. There is a single artefact identified tentatively here as quartzite (though described as silicified oolite in the site archive, and previously as sandstone by ApSimon (1986, 1979).

In terms of artefact types, the collection is dominated by debitage elements including whole flakes, flake fragments and debris, together accounting for 29 artefacts, over 78%. There are five cores (13.5%), including some that are minimally reduced, along with two hammerstones and a single artefact that appears to have been secondarily retouched. Figure 1 shows maximum length and breadth for all artefacts by type. In terms of artefact type and raw material patterning, all of the flints are debitage, including two pieces of knapping debris (Table 2). The quartzite artefact is a hammerstone. The chert pieces include debitage, a hammerstone, the five cores and single retouched artefact..

Table 2. *Artefact types by raw material.*

	Flint		Quartzite		Carboniferous chert	
	Count	Column N%	Count	Column N%	Count	Column N%
Flake	5	71.4%			13	44.8%
Core					5	17.2%
Retouched piece					1	3.4%
Debris	2	28.6%			4	13.8%
Hammerstone			1	100%	1	3.4%
Flake Fragment					5	17.2%
Total	7	100%			29	100%

CONDITION

All the artefacts have suffered some degree of mechanical damage, and the assemblage as a whole is almost equally split between slight and minor damage/abrasion to edges and arêtes. In terms of raw materials, the flint artefacts appear to show a slightly lower degree of damage, which may reflect difference in hardness. Regarding chemical alteration, only two artefacts - both hammerstones - do not seem to be patinated at all. One is quartzite, the other of chert, but both have an orange coloured 'skin', that likely results from iron staining. Over 45% of the assemblage is heavily white patinated, to the extent that the texture of the rock has become chalky and cortex-like. A slightly smaller proportion is patinated white but does not show texture alteration, while only two pieces show light degrees of alteration. When analysed by raw material, it can be seen that the greatest degree of patination is found on the chert artefacts, but this raw material also includes the very lightly altered examples. This could indicate that the more numerous chert artefacts derived from separate occupation events with different taphonomic histories, or simply that the exterior of the chert is affected diversely by the chemical conditions of the deposits. The greater patination in the chert may also explain the apparent higher mechanical damage, if it softened the rock. In any case, the patination of the collection in general suggests that most artefacts were exposed sub-aerially for some time after deposition. This concurs with patterning noted for other cave sites in Britain where higher levels of patination are observed than for gravel/riverine contexts (Wragg Sykes 2009, 2016).

Spatial data for the refitting pieces are shown in Table 3. Little can be said overall due to missing data; Refit group 2 shows one inch depth difference between the two pieces, but horizontal movement is more significant, and due probably either to sloping or bioturbation, but this supports the identification of mechanical damage to many of the objects.

CORES

There are five cores present in the collection, all of which are chert. In terms of form, two are shapeless, while three are broadly disc-shaped. Two of the latter are centripetally-worked, and might be included within a discoid classification (Boëda, 1993), while one of the shapeless cores has also been worked in a centripetal manner. The other two cores follow an informal strategy, with mutiple platforms; one is very small (M30.5/36 Figure 5). One of the discoid-like cores (M30.5/9, Figure 2) could be described as showing bifacial hierarchical reduction: although worked centripetally on both faces, one surface appears to have functioned more as a striking platform (Terradas 2003; Mourre 2003). Two of the cores refit to debitage: M30.5/9 has one whole (M30.5/40) and one broken (M30.5/39) flake that refit onto the active surface of the core (Figure 2). The dorsal scars on these flakes demonstrate that centripetal reduction was a consistent approach during this phase of reduction.

Table 3. *Spatial data for refitting artefact groups. Unit 3D. "nd" = no data available; "bh"= found in badger hole.*

	Artefact Number	Unit	Square	Easting	Northing	Depth
Refit 1	M30.5/9	3D	E	4' 4"	2' 1"	5' 0"
	M30.5/39	nd	bh	nd	nd	nd
	M30.5/40	nd	nd	nd	nd	nd
Refit 2	M30.5/13	3D	E	2' 10"	3' 11"	4' 10"
	M30.5/18	3D	E	6' 11"	4' 2"	4' 9"
Refit 3	M30.5/5	3D	E	4' 6"	4' 11"	4' 5"
	M30.5/19	3D	E	nd	nd	nd

The second refit is between core M30.5/13 and the flake M30.5/18. This reveals that the apparent flat termination of the latter is a previous flake scar on the core (Figure 3). This refit documents a chordal (obliquely angled to centre of core, vs. centripetal: Boëda 1993; Cook and Jacobi, 1998) removal from the external cortical surface of the core, which had already been quite extensively worked in a centripetal manner. It is unfortunate, however, that the dorsal surface of the flake M30.5/18 is a mix of cortex and a scar that is very rough, as the striking axis cannot be determined.

The third refit, between M30.5/5 and M30.5/19 (Figure 2) is a siret fracture, and while it happened during reduction, it is not strictly a technological refit as part of a knapping sequence. It is still meaningful, however, in supporting the coherence/completeness of the assemblage.

The centripetally-worked cores have higher scar counts on average, indicating that more careful and intensive reduction was integral to this reduction strategy. Four of the cores have significant amounts (<50%) of remaining cortex, but the fifth, technologically informal and very small, is fully decorticated.

In terms of size, the cores are among the largest objects in the assemblage, and only the hammerstones exceed the largest core in size. On the other hand, two of the cores are shorter than the three longest flakes. It is feasible that the chert cores could have produced at least some of the chert flakes present. The presence of remnant cortex on relatively small cores indicates that the available chert nodules may not have been very large, and suggests that formal reduction using discoidal/centripetal working may have been an economising response to this.

DEBITAGE

Over a third of the debitage element of the assemblage is composed of flake fragments and debris, the latter found in both flint and chert. The debris indicates *in-situ* knapping was occurring, and the high proportion of chert flake fragments could suggest quite intensive reduction, or alternatively mechanical damage. Two chert flakes appear to result from biface-working, and are discussed separately below.

Overall, the debitage includes a medium-high proportion of cortical elements, including striking platforms. While a third of flakes have none, more than a quarter have dorsals with over 50% remnant cortex, and there is one totally covered piece. There are differences between raw materials, with flint flakes showing a higher frequency of cortical flakes and platforms than chert (Table 4).

Table 4. *Non-biface working debitage dorsal cortical frequency*.

		Flint		Carboniferous chert	
		Count	Column N%	Count	Column N%
Percentage of cortex	0%	1	14.3%	8	38.1%
	<50%	3	42.9%	11	52.4%
	>50%	3	42.9%	1	4.8%
	100%			1	4.8%
	Total	7	100.0%	21	100%

Most of the flakes produced from core reduction are not technologically suggestive of the use of formal reduction systems, such as Levallois or discoid technology. There are virtually no obvious chordal flakes such as core edge-removal flakes (*éclats débordants*; Boeda 1993), despite the presence of cores which show such scars (e.g. M30.5/13 Figure 3). One flake somewhat resembles an a-typical pseudo-Levallois point, with convergent dorsal scars, off-set axis of percussion, and a thick striking platform with what could be the core edge extending round one lateral margin. There are four examples of naturally-backed knives, two each of flint and chert, which indicate that primary-stage reduction of small pebble cores was occuring *in-situ*; some also have lateral dorsal scars showing that cores were being turned during initial knapping, possibly as a first stage in centripetally-focused reduction (e.g. M30.5/7, M30.5/12 Figure 2). The naturally-backed knives also provide a technological link between the two raw materials, especially in the absence of any flint cores.

Of the flakes with determinable dorsal scars, over 30% are bidirectional, including combinations of proximal/distal and lateral. Table 5 shows that there is a difference between flint and chert, with flint having a higher percentage of lateral scars, though the smaller sample size advises caution. Overall the scar patterns are technologically consistent with the centripetal/discoid cores. Some bi-polar dorsal scars may relate to the informal chert cores where the platform moved. Figure 6 shows that flint and chert broadly overlap in the number of dorsal scars, indicating that reduction in both raw materials was of a broadly similar intensity. Some of the higher scar counts for chert include the biface-working flakes (below).

Table 5. *Dorsal scar patterns for debitage by raw material.*

	Flint		Carboniferous chert	
	Count	Column N%	Count	Column N%
Proximal	1	20.0%	10	47.6%
Proximal + 1 lateral	0	0%	1	4.8%
1 lateral	1	20.0%	2	9.5%
Both laterals	0	0%	1	4.8%
Proximal + distal	2	40.0%	1	4.8%
Distal and 1 lateral	1	20.0%	0	0%
Indeterminate	0	0%	6	28.6%
Total	5	100.0%	21	100.%

There is only one facetted striking platform, while the majority are plain, and 20% are cortical/natural. This suggests that striking platforms were typically not being prepared or managed.

There is one chert 'flaked flake' spall (M30.5/37 Figure 5; also known as a Janus flake; Ashton *et al*. 1991), where the striking platform of a large flake is removed, producing a spall which has two ventrals; one of the edges is formed entirely by the relict striking platform.

The single example of refitting debitage is between M30.5/19 and /5, which form two parts of a siret fracture, revealing that the whole flake had converging dorsal scars, which would fit in a system of centripetal reduction (Figure 2).

There are a limited number of *façonnage* (non-core reduction) elements, which probably derive from biface-working. Two chert flakes resemble later-stage manufacture or resharpening waste (M30.5/33 and M30.5/42, Figure 4), most likely using soft hammer percussion. While the former is of medium size compared to the rest of the debitage in the assemblage (49.5 x 28 mm) and might possibly have been imported as a blank, the latter is very small (32 x 27 mm) and therefore was likely removed *in-situ*. The larger example has a rather low number of scars for its size (compared to other British LMP examples, which may indicate that the biface it came from was either quite small, had not been previously highly resharpened, or had large remnant flake scars. Both *façonnage* flakes have proximal dorsal scar patterns; the larger lacks cortex while the smaller has <50%. Although both are of chert, based on differences in grain texture, the flakes probably originated from different bifaces.

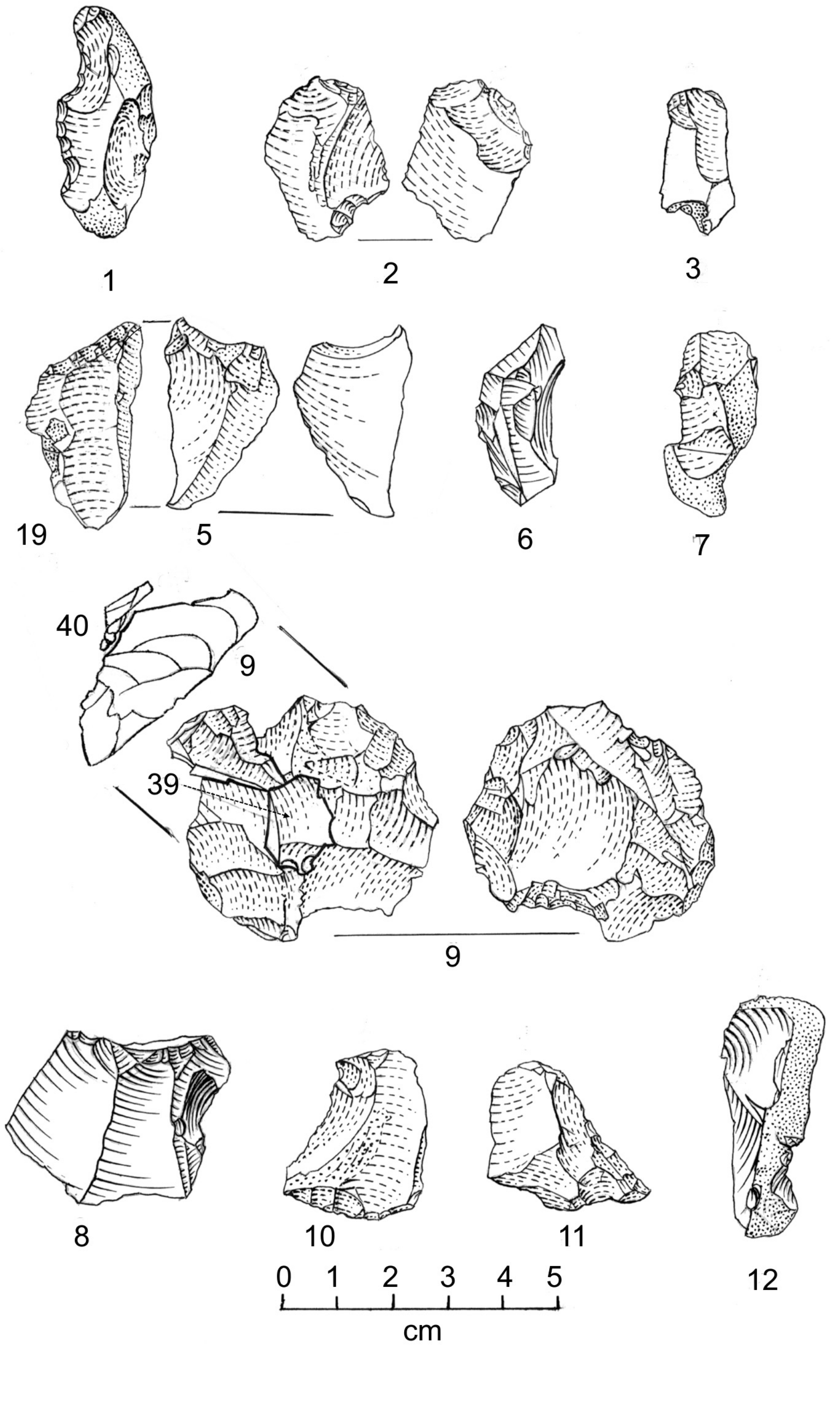

Figure 2. *Picken's Hole Lithics. Numbers refer to the catalogue number i.e.'1' is M30.5/1*

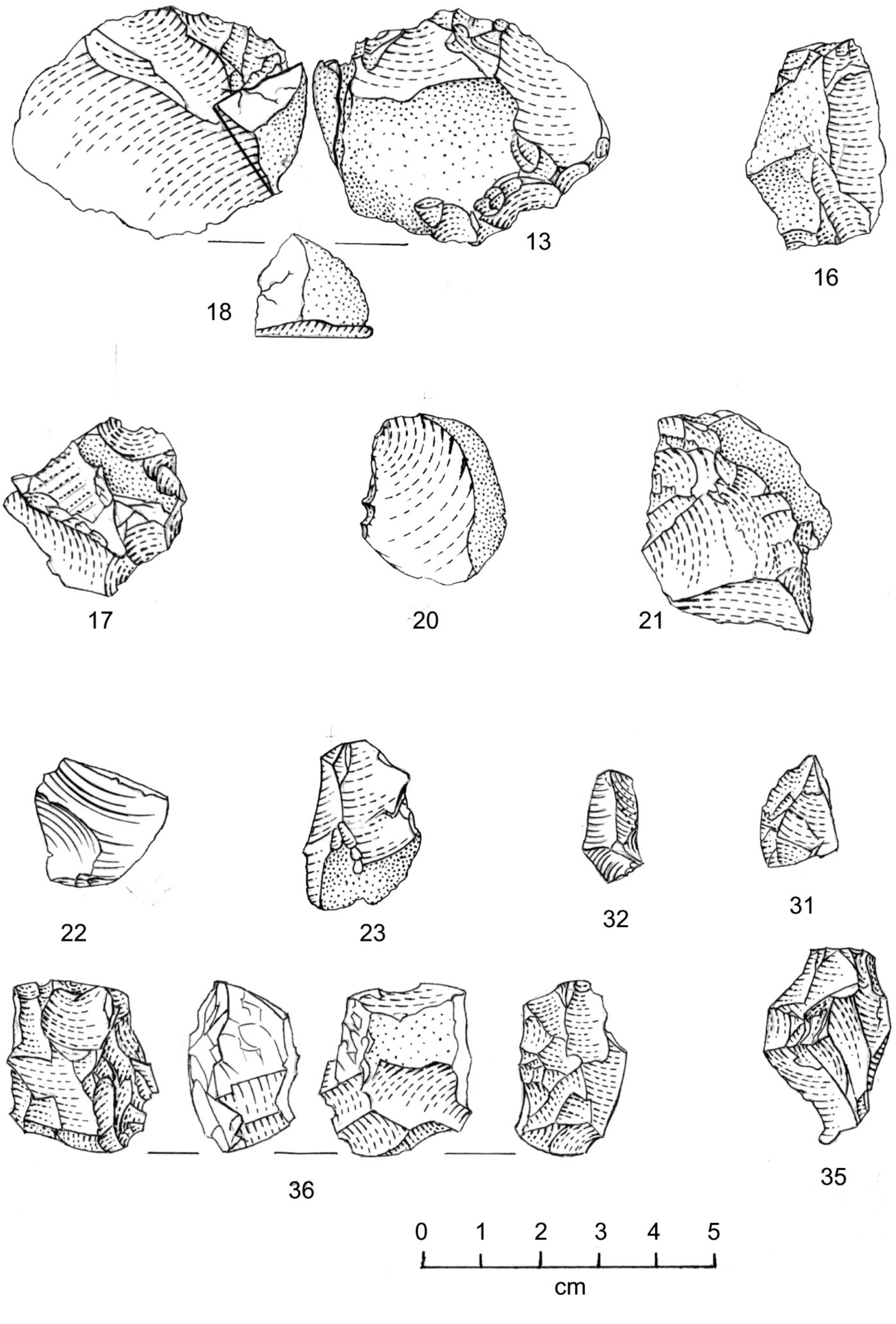

Figure 3. *Picken's Hole Lithics. Numbers refer to the catalogue number i.e.'18' is M30.5/18.*

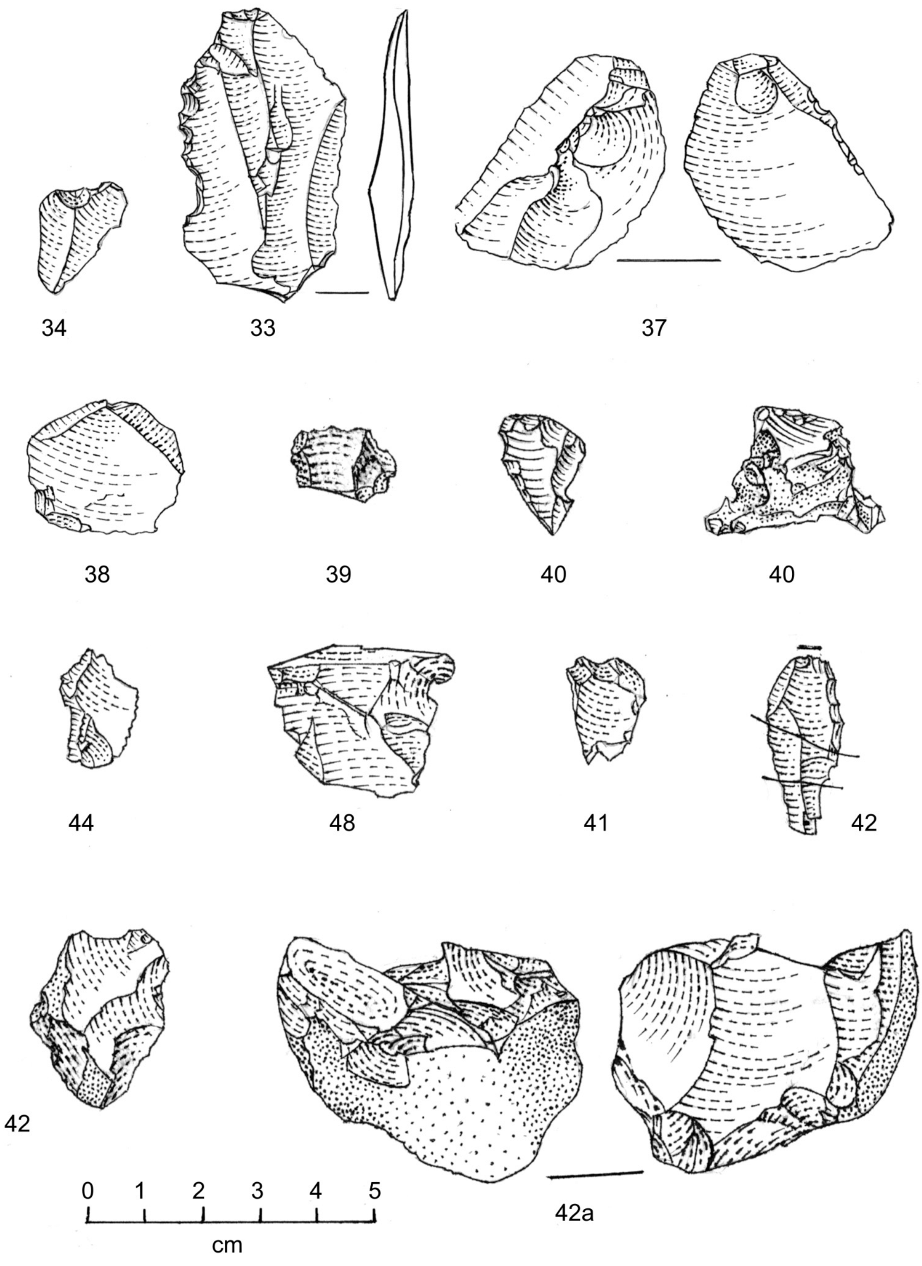

Figure 4. *Picken's Hole Lithics. Numbers refer to the catalogue number i.e.'34' is M30.5/34.*

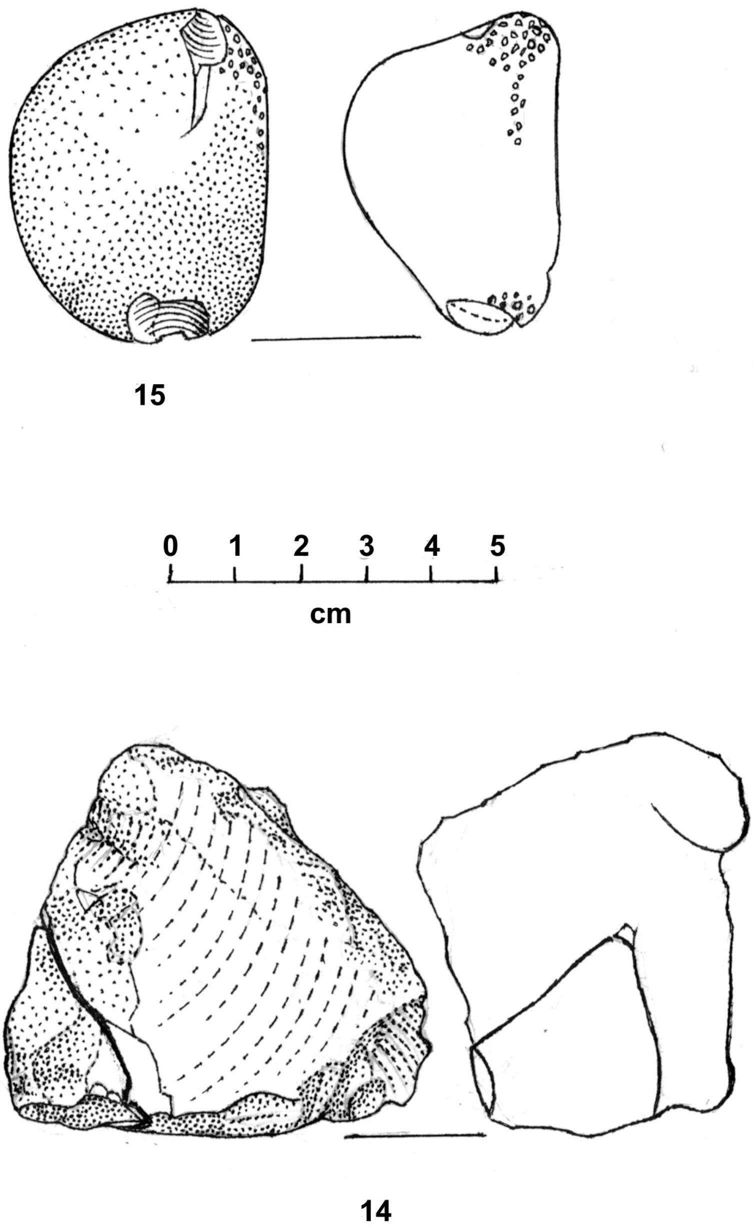

Figure 4. *Picken's Hole Lithics. Numbers refer to the catalogue number i.e.'14' is M30.5/14.*

RETOUCHED ARTEFACTS

There is one probably secondarily modified piece, which is chert and has a small retouched (rather than single stuck) notch on the distal end (M30.5/2; Figure 2). It is retouched directly from the ventral side, and the notch is minimally invasive. The blank's dorsal is non-cortical and while showing features of hard hammer percussion, there are some very small, shallow flake scars at the proximal end, which might indicate it was removed from a secondarily-worked artefact, such as a biface. If this is correct, it would increase the number of biface-related flakes in the assemblage to three; it is possible however that these may be pseudo-flakes from mechanical damage.

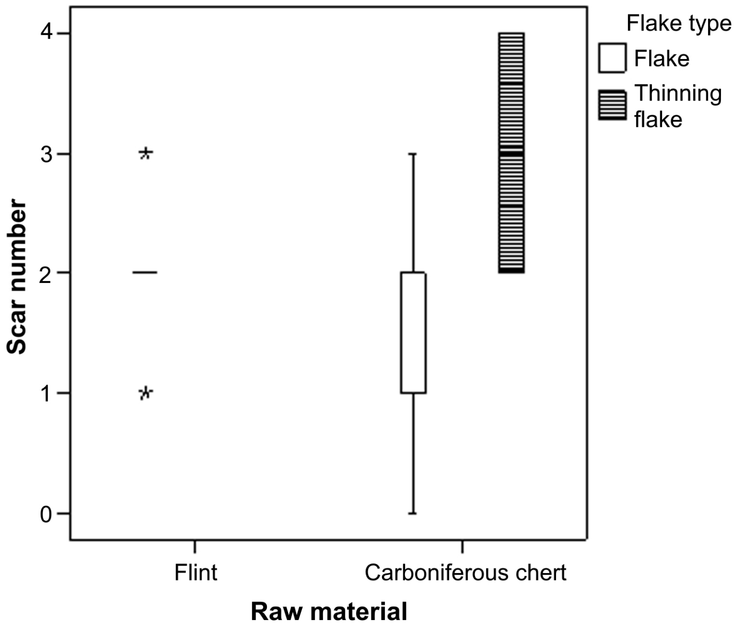

Figure 6. *Dorsal scar numbers for all debitage types by raw material*

HAMMERSTONES

The two hammerstones present are of different raw materials and quite different sizes. The smaller is made of a stone that most closely resembles quartzite with large crystalline structure, while the larger does seem to be chert, but is unlike most of the other artefacts. It has a grey, rather crystalline interior revealed by a modern break, with a heavily stained brown outer skin, similar to iron staining. While glossy in places, it is not abraded as might be expected from a river cobble, and is quite angular. This suggests that it was sourced from a surface exposure, possibly a colluvial deposit. The possible quartzite hammerstone is very rounded, indicating that it might have come from a riverine deposit. These objects are two of the three largest artefacts in the assemblage (the second largest being a core). Hammerstones from other

British LMP sites are made of quartzite only, and the Picken's Hole example is at the small end of the size range. However, the chert hammerstone is within the mid-range of other hammerstones.

RAW MATERIAL PROCUREMENT

This section incorporates information sourced by Donovan (unpublished manuscript) on local geology and examination of the assemblage. The dominant raw material at Picken's Hole (almost 80% of the assemblage) is Carboniferous chert, specifically oolitic. There are diverse local and regional formations with cherts, including immediately present near the cave, from north to south, Black Rock limestone/dolostone, Burrington Oolite (making up Crook Peak) and Clifton Down limestone (Kellaway and Welch, 1993: 41). The Black Rock limestone is not oolitic, but the base of the Clifton Down Limestone, overlying Burrington Oolite, is present on geological maps near the base of hillslope. The lower part of the Clifton Down Limestone consists of 11 – 15 m of dolomite/calcite mudstone, on top of which lies oolitic and bioclastic limestone (Whittaker and Green, 1983: 6, Table 1). The latter unit is a good candidate for the likely source of the chert, and local survey by C. Richards of the north-east face of the Crook Peak ridge (ST 395 551; about 300 m from the cave), identified colluvium containing white and pale grey/brownish chert fragments, along with limestone (cited in Donovan, *ibid*). Some included faint oolitic textures, and while there is no currently visible outcrop, this may indicate an immediate source- more information on the local geology together with information on the size of chert clasts available would be useful in confirming this. Otherwise, head deposits of the Mendip valleys and the River Axe valley contain cherts from Carboniferous limestones, providing another source < 1 km from the cave (Green, 1992; Green and Welch, 1965).

The hammerstone described here as resembling quartzite may, if correctly identified, have eroded from outcrops of Permo-Triassic pebble beds containing quartzitic sandstones, similar to those which occur in the Bristol and Gloucester area. It may on the other hand be a form of silicified limestone from the Carboniferous deposits around the cave. In either case, deposits exist within 10 km of the cave.

The flint source used at Picken's Hole appears to have been very small nodules, but the quality of the flint itself is not poor. Together with flake dimensions and form, the cortex suggests rounded and rather small secondary sources. There are a great many potential deposits of flint in the region overall, and it would require a combined micropalaeontological and geochemical study to accurately source those from Picken's Hole, however such research is still lacking in the British Palaeolithic despite some attempts (Pettitt *et al*, 2012; 2015).

In the Bristol district there are minor amounts of derived Cretaceous chalk and flint in the Kenn gravel deposits near Clevedon, which may be from the Marine Isotope Stage 16 glaciation, deriving from Welsh ice (Kellaway and Welch, 1993; Bowen, 1999). These deposits are likely to be poor quality due to redeposition and subsequent exposure and erosion. Other regional flint sources from gravel deposits are found on Portishead Down, as well as a raised beach deposit near the west coast. The local Triassic Burtle Formation also includes "occasional rounded pebbles of flint" (Richardson, 1928:40), although the size/quality and accessibility of these is unclear.

Further afield, flint is found in some head deposits on the Black Down Hills, as well as in clay-with-flints deposits. West of Picken's Hole, much of the offshore geology (which would have been a flat plain during Marine Isotope Stage 3) is sedimentary, including Upper

Cretaceous deposits of chalk that contain flint occurring in a large band from the western Channel Plain, round the coast of Cornwall and up towards Ireland (Evans, 1990; Tappin *et al*. 1994). The chalk includes some very flinty parts, and it is possible that raised beaches, or eroded outcrops in this area could have been exploited as source. It is also possible that the flint was brought long-distances westwards from Cretaceous deposits in the Wiltshire region.

Bond (2004) has recently discussed the fact that many rivers in the central Somerset area contain flints (and cherts) in the terraces, including the River Axe close to the cave. Taking into account the very small size of the flakes and their appearance as primary stage debitage (including naturally backed flakes), together with the lack of any large imported, curated flint objects such as scrapers or bifaces, until further studies are undertaken it is most parsimonious to assume that the River Axe was the source used..

An additional point is the presence of some definitely unworked, very small pieces of flint within the collection. As no flint-bearing deposits are known directly adjacent to the cave, these unmodified pebbles were either introduced to the cave from colluvial action, implying a source at a higher elevation or derive from flooding deposits of the River Axe, which potentially may have occurred during cold phases when the valley was at a higher level and permafrost may have impeded groundwater. This is speculative, however, and a more detailed geological survey of the locality would be useful in determining the origin of these pebbles.

TECHNOLOGICAL ORGANISATION AT PICKEN'S HOLE

It is uncertain what the internal chronological relationship of the lithic material is, and a palimpsest is a strong possibility, despite the small assemblage size. With this in mind, the technical reduction at Picken's Hole can be considered as a phenomenon relating to raw material availability and broader context, rather than a "strategy" which might imply a unified approach.

The assemblage at Picken's Hole appears to represent use of this locale for primary stage reduction for the production of chert and flint flakes from cores, and probably also documents maintenance of bifaces. The evidence indicates that both decortication and secondary stage reduction of small nodules was taking place *in-situ*. The slightly higher amount of cortex on flint artefacts may indicate that cores in this material were smaller or cores were introduced as unmodified cobbles. This difference may indicate that the chert and flint were sourced separately, and entered the site at different stages. Some of the chert flakes are missing and, while it is possible they were deposited nearby and lost due to taphonomic processes, they may have been intentionally removed despite their small size. Certainly the flint core/s are missing, despite their probable small size, which may indicate that this material, potentially sourced from further away, was more mobile overall and likely to be curated. On the other hand, the existence of a Janus flake is evidence of the economic treatment of the chert, exploiting large flakes as a core.

Despite the possibility of a palimpsest assemblage, the cores and the debitage do share a combination of informal and centripetal/discoid reduction. The presence of refitting groups are especially useful in this situation, and prove (along with the presence of debris) that chert flake production was occurring *in-situ*. The refitting sequence of M30.5/9 (core), /39 and /49 demonstrates a coherent centripetal approach via the dorsal scars on the removed flakes, in their own removal, and the other scars on the core. The informal core M30.5/36 is interesting as it shows intensive reduction despite its small size, and the resulting products would have been very diminutive.

The lack of more retouched tools (n=1) and especially any scraper types is noteworthy. Notches have regularly been characterised as expedient tools due to their greater occurrence on locally available (and often poorer quality) stone, in comparison to scrapers made on exotic, finer raw materials (Geneste, 1989; Holdaway *et al.* 1996). Additionally, use-wear indicates notched tools are not limited to wood-working tasks during the Middle Palaeolithic (Anderson-Gerfaud, 1990; Beyries, 1988; Clark and Riel-Salvatore, 2006: 43). The presence of a single notch on non-exotic stone at Picken's Hole therefore fits wider patterns of tool production seen in the Middle Palaeolithic, and together with a general lack of tools may reflect ephemeral use of the site, where occupations were not extended enough to accumulate discarded scrapers made elsewhere.

There is however a link to wider networks shown by the probable biface-working flakes, which attest to two different bifaces having been present, presumably used and re-sharpened, then removed. If the retouched notch was made on a blank from a biface, this would add a third to the number passing through the site, as the chert is distinctive.

In summary, Picken's Hole is a small assemblage, and its potential disturbed taphonomic history (e.g. stratigraphic data suggesting artefacts were found at different elevations within unit 3, plus clear evidence of bioturbation) advises caution in interpretation other than as a palimpsest. On the other hand, most artefacts occurred in Square E which was not truncated, and the site publications together with the size distribution of the lithics themselves and refitting sequences suggest careful excavation and recovery of all the artefacts present. Therefore the small number of artefacts and restricted types present suggests that the locale was only occupied at a very small scale.

The use of formal alongside informal reduction on the same raw material is interesting, and some cores were intensively reduced despite their limited size and therefore the presumably reduced usefulness of the resulting products. There is an impression of economising behaviour across both raw materials, which could be explained as a response to scarce and/or small raw material nodules. Links to the wider techno-economic landscape of lithic production are demonstrated by at least some of the chert having been tested elsewhere (even if the source was nearby colluvium), the import of flint and removal of *in-situ* blanks and cores, together with the import, use, and export of bifaces.

LATE MIDDLE PALAEOLITHIC CONTEXT

The techno-typological assessment of the assemblage must be followed with a discussion of context. The presence of one human tooth radiocarbon dated to the Neolithic in Unit 3, and others which were out of context, raises the question of whether at least some the lithics could potentially also be later prehistoric (it should be noted that this date was obtained early in the development of radiocarbon studies and may well be too young, although probably not by several tens of thousands of years).

Most of the lithics are not out of place within the apparent MIS 3 chronology for unit 3 provided by faunal and radiometric data, and can be compared with those from other LMP sites in Britain (White and Pettitt, 2011; Wragg Sykes, 2009; 2016). There are some distinctive aspects that emerge however. Figure 7 shows that Picken's is heavily dominated by debitage and cores in comparison to other sites, however this could simply reflect it being a primary reduction locale (and we know there is missing small debitage from other LMP assemblages with biased collection histories). The very small size of the bipolar core and some debitage are noteworthy though, and overall the technological signature of the debitage and cores could just as easily be found in early Neolithics sites. However, the discoid reduction is not period-specific, and an extremely small chert biface/lenticular core is known from the LMP assemblage at the nearby Hyaena Den; in fact this is the smallest known for the entire period.

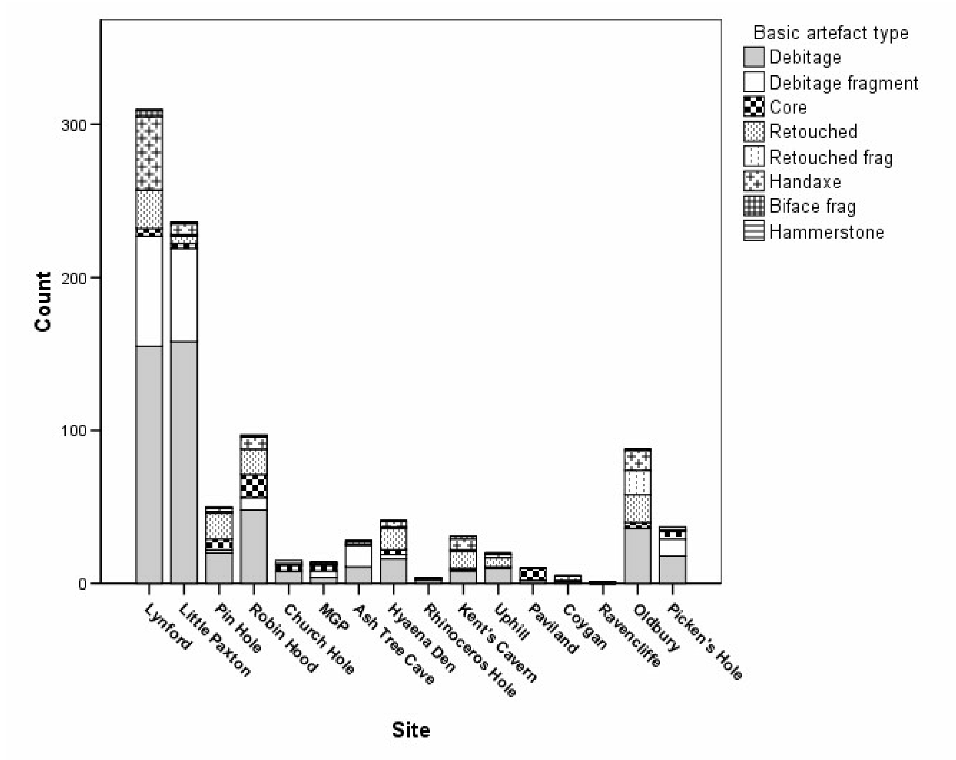

Figure 7. *Sizes of assemblages and proportion formed by different artefact types in British LMP sites.*

The fact that there are multiple refitting groups indicates that at least a part of the assemblage was undisturbed, as does the common use of chert between these sets. The presence of biface thinning/resharpening flakes would fit within wider patterns seen in Middle Palaeolithic caves, even in the absence of any bifaces (as seen at Ash Tree Cave, Creswell (Wragg Sykes, 2009; 2016). Axes or fragments are known in some cave assemblages of Neolithic date, but production/maintenance waste would be very unusual for this period.

Having taken into account the overall taphonomic information available, the clear chronological signal that Unit 3 does contain significant MIS-3 accumulated fauna, and shared technological idiosyncracies with other regional sites, the conclusion here is that the assemblage can be regarded as contemporary with the MIS-3 phase, and is probably LMP. Therefore further discussion here will focus on comparison with other sites of this age at a wider scale.

The geographically closest locales to Picken's Hole with archaeology dated directly to mid-MIS 3 are the Hyaena Den (Dawkins, 1862; 1863; Currant and Jacobi, 2004; Jacobi and Hawkes, 1993; Tratman *et al.* 1971; Wragg Sykes, 2009: 178-190; 2016) and Rhinoceros Hole (Proctor *et al.* 1996; Wragg Sykes, 2009: 187-190; 2016), two caves set into one side of the

Wookey Hole ravine, c.15 km to the east. Additionally, Cave 8 at Uphill Quarry, c.8 km to the west at the end of the Mendip escarpment, also includes artefacts that are regarded as attributable to the LMP on techno-typological grounds (Harrison, 1977; Jacobi and Pettitt, 2000; Wragg Sykes, 2009: 191-196; 2016). There are definite similarities between the four locales in several respects, but also interesting differences.

The raw materials at all the Mendip locales are very similar, primarily using Carboniferous chert. While the chert is quite variable, there are many examples of pieces between sites that are visually comparable both in terms of texture, colour and patination. This may suggest that the same raw material sources (in terms of geologically similar material, whether at outcrops or secondary deposits) were being accessed, and also broadly comparable taphonomic processes operated at the different sites. The presence of flint is also common to all three, but there may have been different practices operating, as while there is evidence of probably regional secondary source exploitation, Picken's Hole has a stronger signature of *in-situ* core reduction, but no evidence of imported flint bifaces or scrapers.

There are also similarities and differences with regard to the artefact types present at the four sites. While debitage is present at all locales, Picken's Hole together with Hyaena Den includes knapping debris from *in-situ* flake production. There is a large, as yet unpublished collection of this material from the Natural History Museum excavations at Hyaena Den between 1991-5 (Currant and Jacobi, 2004; Jacobi and Hawkes, 1993; R. Jacobi, *pers. comm.*, 2008), although some debitage, cores and retouched pieces have been described in Wragg Sykes (2009:178-186; 2016). Hyaena Den is clearly a larger assemblage, but has fewer refitting sequences and fewer cores: only 7.3% of the assemblage (and this would be an even smaller figure if the unpublished debitage were included). At Picken's Hole they are twice as frequent (13.5%), and even though the severely truncated and biased nature of the Hyaena Den 19th century collection probably impacted this, they might be expected to have survived as some of the larger types of artefacts (unless there were very strong spatial differences in the location of cores). It is also likely there could be more examples of refitting among the large debitage component from Hyaena Den from the 1990s excavations which is yet to be analysed in detail.

The two sites are also similar in regard to retouched artefacts and bifaces. Although Hyaena Den has a few pieces that can be described as scrapers, they are marginally worked, while notches and denticulates are dominant. Neither site includes the large, finely-worked scrapers seen elsewhere in the British LMP, whether in the form of imported flint examples or those made on local raw materials. Flake blanks used for scrapers at Middle Palaeolithic sites are significantly larger than average, and often also larger than those used for notches/denticulates, giving them potentially longer use-lives (Dibble 1991: 35, 1995; Wragg Sykes 2009). While not as easily re-sharpened as scrapers, notches and denticulates probably also had several stages of reduction (Hiscock and Clarkson 2007; Holdaway *et al.* 1996), but overall the predominance of non-scrapers at these Mendip sites, including Uphill Quarry, is suggestive of a functional influence, as the nature of the chert is not more intractable than, for example, the quartzite used for large scrapers at the LMP Creswell Crags sites in the Midlands (Wragg Sykes, 2016). It should also be remembered in the context of functional considerations that small flakes may well have been utilised without retouching (Beyries and Boëda, 1983; Bourgignon, *et al.* 2003; Dibble and McPherron, 2006; Lemorini, *et al.* 2003; Moncel, 2003; Vaquero and Carbonell, 2003).

In terms of bifaces, while Picken's Hole shares evidence with the other Mendip sites for their presence, it is the only locale that lacks any discarded examples. This might indicate that Picken's Hole had a more ephemeral use history, with shorter stays and different tasks.

When examining patterns of core reduction, there are obvious technological resemblances between the Mendip sites. Hyaena Den and Uphill both show clear evidence for centripetal and discoid approaches, but these two sites have a higher proportion of 'classic' pseudo-Levallois points, core edge-removal flakes, quadrangular and short broad flakes. This could reflect the overall smaller size of the artefacts at Picken's Hole, especially if this is due to smaller raw nodules. Alternatively the lack of more classic discoid products at Picken's Hole may reflect their intentional removal, with exhausted cores and smaller waste debitage remaining; certainly based on the flake scars on some of the cores, larger blanks were produced but are missing. The other technological difference that should be noted is the small informal core M30.5/36, which is very unusual not only in comparison to the other Mendip sites, but also the wider British LMP for the extremely small flake scars. However as noted above, the smallest known biface for the LMP is made of chert from Hyaena Den, and it could potentially also be regarded as a lenticular core.

There is a potential interesting disparity between Picken's Hole and Hyaena Den, in terms of reduction stages and raw materials are considered. All the flint flakes at Picken's have cortex present on their dorsals, whereas those at Hyaena Den are non-cortical. There are also more cortical Carboniferous chert flakes at Picken's Hole than at Hyaena Den (60%, vs < 30%). Although the unassessed collection of small debitage from Hyaena Den may include more cortical flakes, it is likely that many are non-cortical given their size. Uphill is more similar to Picken's Hole, with all flakes being cortical regardless of raw materials. This disparity between Hyaena Den and Picken's Hole might reflect size differences in the raw noduels being exploited, or possibly that cores were entering the sites at different stages of reduction, with those at Hyaena Den already tested or partly decorticated. This is supported by the fact that Hyaena Den was clearly a more intensively occupied locale (Wragg Sykes, 2009; 2016), and site-specific patterning may therefore reflect their place within wider systems of technological organisation where the *chaine operatoire* was fragmented across the landscape, a pattern that defines the Middle Palaeolithic more broadly (Turq *et al*. 2013).

DISCUSSION AND CONCLUSIONS

As demonstrated here, Picken's Hole overall fits into the Late Middle Palaeolithic archaeology of Britain, particularly in relation to the Mendip regional cluster of sites. It is an important locale as, despite the numerically small size of the collection, it represents one of the better excavated and contextualised assemblages from Britain in this period. Significantly, while sharing some techno-economic aspects with other sites, it also has some distinctive features in terms of the types of artefacts present and the stages of reduction that they represent. Taking into account the taphonomic issues across all the Mendip locales, Picken's Hole still potentially represents a site that was utilised in a different way to the other LMP locales.

The chronological data is too coarse to enable clear correlation, but there is clearly the possibility that these sites were all used roughly contemporaneously as part of a wider landscape exploitation strategy in the Mendips region (White and Pettitt, 2011; Wragg Sykes, 2009; 2016). This is not to claim however that either these locales– or the entirety of the British LMP record– represent the cultural detritus of an individual Neanderthal group (*contra* White and Pettitt, 2011), as the obvious palimpsest nature of many assemblages (including some double patination at Hyaena Den) and the range of even ultrafiltrated radiocarbon dates make this implausible.

However, the Mendip sites, including Uphill, are all within a day's walk, and linked by the River Axe, running along the southern base of the escarpment. Their position, on a topographic and ecological boundary between the Mendip uplands and the now-buried valleys of the Somerset plain, creates a potentially attractive system of locales for occupation which were probably collectively exploited by populations which were present at different times in Britain during early-mid MIS 3 (Wragg Sykes, 2016). Picken's Hole appears to have been used less than Hyaena Den; clearly it is physically a smaller cave, and presumably less attractive for extended stays. But there are also hints it was being used at a different point in the techno-economic system than the Hyaena Den. Certainly, Picken's Hole at face value shows a signature that would be expected from a task site close to a raw material source, with *in-situ* production of blanks that were exported, maintenance of curated bifaces, expedient retouching, but no discard of long use-life tools.

Expanding the view further, Picken's Hole shows technological links with other British LMP sites, in terms of the use of centripetal and discoid reduction in combination with bifaces (Wragg Sykes, 2009; 2016). On the other hand, like the Hyaena Den it lacks any large transported and reduced flint scrapers, typically seen in other LMP sites even outside areas rich in flint, for example the Creswell Crags sites. Locally available flint was probably not suitable for producing large re-sharpenable blanks, but it is interesting that such tools were not being brought in from other regions. Picken's stands out further by the absence of any evidence for transported flint bifaces, which were obviously present, if transiently, at Hyaena Den and also discarded at Rhinoceros Hole.

The small size of the cores, in combination with intensive working, is also quite distinctive and is really only seen elsewhere at Oldbury, Kent, where small frost-shattered flint nodules were exploited, as well as the possible discoid cores from Goat Hole, Paviland (although the age of these is disputed: Jacobi and Higham, 2008). The only British LMP locale that appears to have a similarly brief but focused use, suggesting a satellite task site in a region with larger occupied locales, is Ash Tree Cave, near the Creswell locales. Here bifaces were apparently produced/finished, with expedient flake production and retouching, almost the reverse signature found at Picken's Hole.

In conclusion, although a small assemblage, Picken's Hole is a very important site with a unique technological signature which probably results from its role as a task-site, a rare class of locales within the wider British Late Middle Palaeolithic.

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R.M. Wragg Sykes
Honorary Researcher, PACEA UMR-5199,Université de Bordeaux,
rwraggsykes@gmail.com