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# *LITHICS* 40

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*On the cover: Twisted ovate handaxe from East Farm, Barnham, Suffolk. Photo by Jordan Mansfield.*

# EDITORIAL

Dear Reader,

On behalf of the Lithic Studies Society executive committee, I welcome you to *Lithics* 40. I must begin this editorial with an apology for the delay to its publication. The unprecedented challenges that we have all faced over the past months exacerbated our own challenge of bringing you this volume without an editor in post. That it is with you now is testament to the hard work of several people who have gone above and beyond the call of LSS duty, volunteering their time, knowledge and skills to put together this excellent edition of *Lithics*. Special thanks must go to Freddie Foulds for copy editing, to all our authors for their patience during the drawn-out publication process, and of course to the continuing support of our members. We hope to fill the vacant Editor position at the upcoming AGM and we are determined to bring you the next issue, *Lithics* 41, in good time.

Since the publication of the last issue of *Lithics*, we have had the sad news of the passing of two important members of the lithics community, Terry Hardaker and Peter Hoare. Terry was a member of the Society for over 25 years. He was a regular at Society events and made several contributions to this journal, including to the current issue. Peter, a geologist by profession, joined the LSS in 2010 and made a significant contribution to the publication of *Lithics*, both as an author but also as Assistant Editor, serving on the committee from 2016 to 2018. Peter continued to volunteer his considerable copy editing skills in support of successive editors. Both will be dearly missed.

So to the current volume, which brings you a series of research papers, reports and a book review that showcase the amazing breadth of work undertaken by members of the Lithic Studies Society. Bishop and colleagues open the volume with their study of the exceptional Middle Neolithic assemblage from West Amesbury Farm located within the Stonehenge landscape. This is followed by Hardaker and Rose with a study of new Lower Palaeolithic assemblages collected from three key sites associated with the former River Bytham. Moving away from Britain, Biagi and Nisbet report on an andesite Levallois point discovered in the Javakheti Highland of the Lesser Caucuses of Georgia. The final paper by Dale presents a study of a little-known collection of artefacts from one of Britain's flagship Lower Palaeolithic sites, Furze Platt, held at the Royal Ontario Museum in Canada.

The research papers are followed by two reports by recipients of funding awarded by the Lithic Studies Society during 2019. Clarke provides a report of the lithic assemblage recovered during a fieldwalking survey at East Park, Drumoak, conducted by the Mesolithic Deeside group and supported by the inaugural Saville Grant. Birtwistle reports on preliminary results from the test excavations at Shish-Guzey and Gadir-Dere in northwestern Azerbaijan, which were supported by a Wymer Bursary. Together, these reports demonstrate the Society's commitment to support new research that advances and increases engagement with lithic studies. The volume is completed with Hayward's review of Allen (2017) "Geology for Archaeologists: A Short Introduction".

This volume provides an excellent example of the publishing niche that *Lithics* fills, providing researchers engaged in lithic studies in all its different contexts and at all career stages a platform for sharing their research. I encourage all our members actively engaged in lithic studies in any shape or form to consider contributing to future volumes. Articles may be submitted to the journal at any time. Please visit our website for further details, while enquiries can be emailed to the editorial team.

While we strive to ensure that the next issue is published in good time, I hope you will enjoy reading *Lithics 40* and agree that it was worth the wait!

*Rob Davis*

# FLINTWORKING IN THE MIDDLE NEOLITHIC: TECHNIQUES, TECHNOLOGIES AND DEPOSITION ON SALISBURY PLAIN IN THE LATE 4TH MILLENNIUM BC

*Barry Bishop[1], Kathryn M. Price[1], Peter Marshall[2], Sophie Lamb[3], John Vallender[4] and David Roberts[4]*

## ABSTRACT

*Excavations at West Amesbury Farm to the east of Stonehenge resulted in the recovery of a large and nationally important struck flint assemblage from five pits securely dated, by radiocarbon and their contained assemblages of Peterborough Ware, to the final centuries of the fourth millennium BC.*

*The sheer quantity of material recovered from the pits (11,329 individual pieces) is notable and it constitutes one of the largest Middle Neolithic assemblages to have been examined in any detail from southern Britain to date. This paper provides an account of the technological and typological characteristics of the assemblages, exploring similarities and contrasts between the individual assemblages recovered from the different pits and their various fills, and places this tradition of flintworking into its wider context.*

**Full reference:** Bishop, B., Price, K.M., Marshall, P., Lamb, S., Vallender, J. and Roberts, D. 2019. Flintworking in the Middle Neolithic: techniques, technologies and deposition on Salisbury Plain in the late 4th Millennium BC. *Lithics: the Journal of the Lithic Studies Society* 40: 5–40.

**Keywords:** Struck flint, Stonehenge WHS, Pits, Burins, Mini-rods, Petit tranchet arrowheads, Early-Late Neolithic transition, Deposition.

## INTRODUCTION

During the winter of 2015–2016 Historic England undertook a series of excavations to the south of the A303 in the Stonehenge World Heritage Site (Last 2017; Valdez-Tullett & Roberts 2017). At West Amesbury, on the south-eastern slopes of King Barrow Ridge, excavations revealed five pits that produced a large and nationally significant assemblage of worked flint (Figure 1). The pits also contained substantial quantities of Fengate substyle Peterborough Ware, as well as animal bone, antler, worked stone and shale artefacts including perforated beads. An exhaustive programme of radiocarbon dating and modelling indicates that the pits were dug over a period of 1–210 years (95% probability), with pit digging commencing 3370–3155 cal BC (94% probability) and ceasing 3235–3060 cal BC (90% probability) (Roberts *et al.* 2020). A synthetic account of the excavations, the pits, their contents and wider significance is provided by Roberts *et al.* (2020), but this contribution elucidates in full the character and implications of the highly significant Middle Neolithic struck flint assemblage.

To the west of the pits four apparently contemporary postholes in a curving line and two short linear features were also identified (see Figure 2). Beyond the postholes, the western end of the excavated area had also been severely disturbed by animal burrowing but whilst some struck flint was recovered from this, there were not

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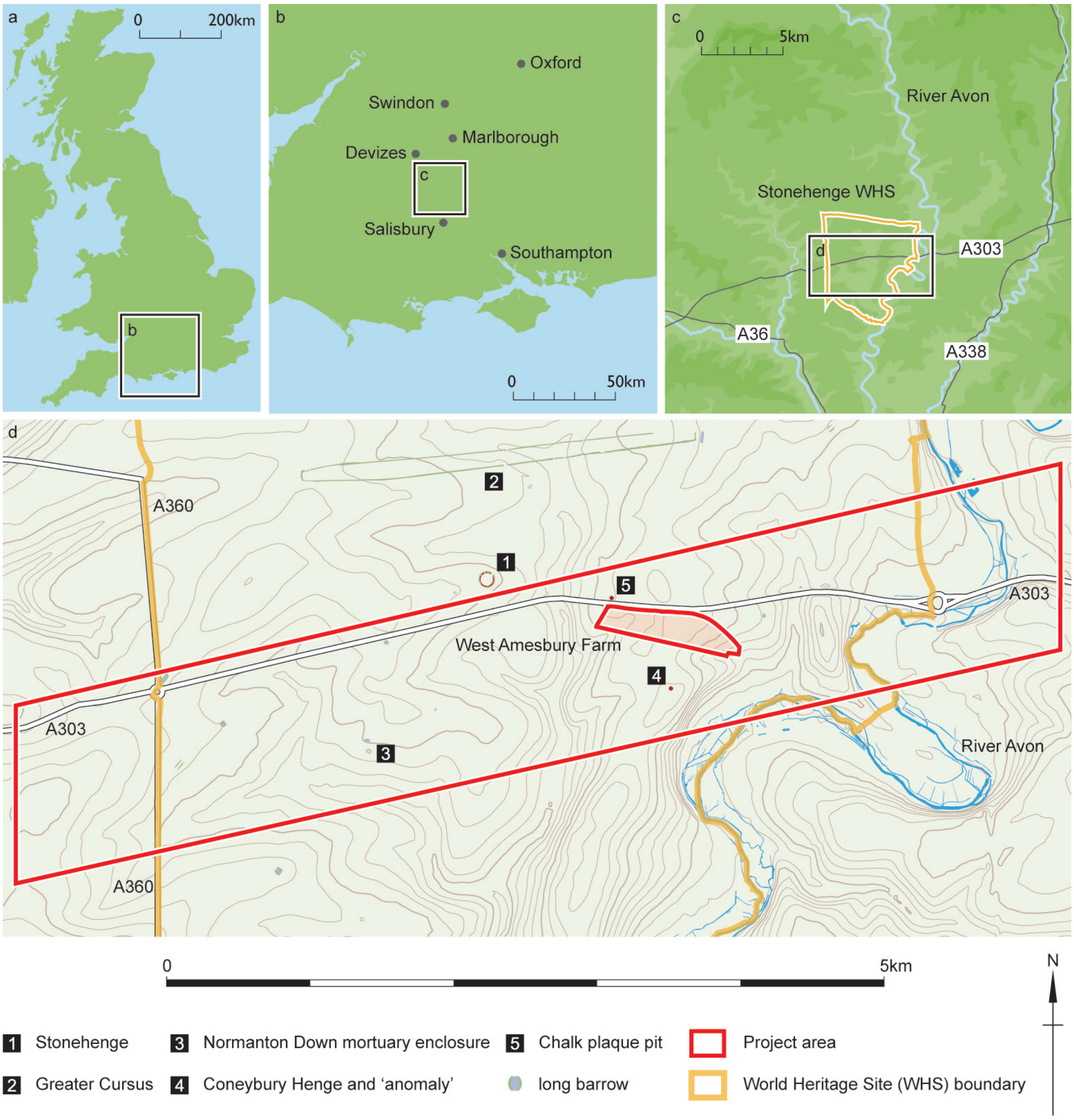


*Figure 1: Site location.*

the quantities that would have betrayed the presence of further similar pits. However, geophysical survey has identified potentially hundreds of pit-like anomalies throughout the entire field and it is likely that further pits lie beyond the areas of excavation, King Barrow Ridge having been long been known as a focus of pit digging and deposition during the Neolithic (Richards 1990; Linford *et al.* 2015; Roberts *et al.* 2020).

## METHODOLOGY

All five pits were 100% excavated. Four were 100% sampled through flotation sampling and coarse sieving and one, pit [93201], was half sectioned during the first stage of the investigations with all finds from the first half being hand collected alongside 40l flotation samples from each context, whilst the second half was 100% sampled and sieved during the excavation stage.

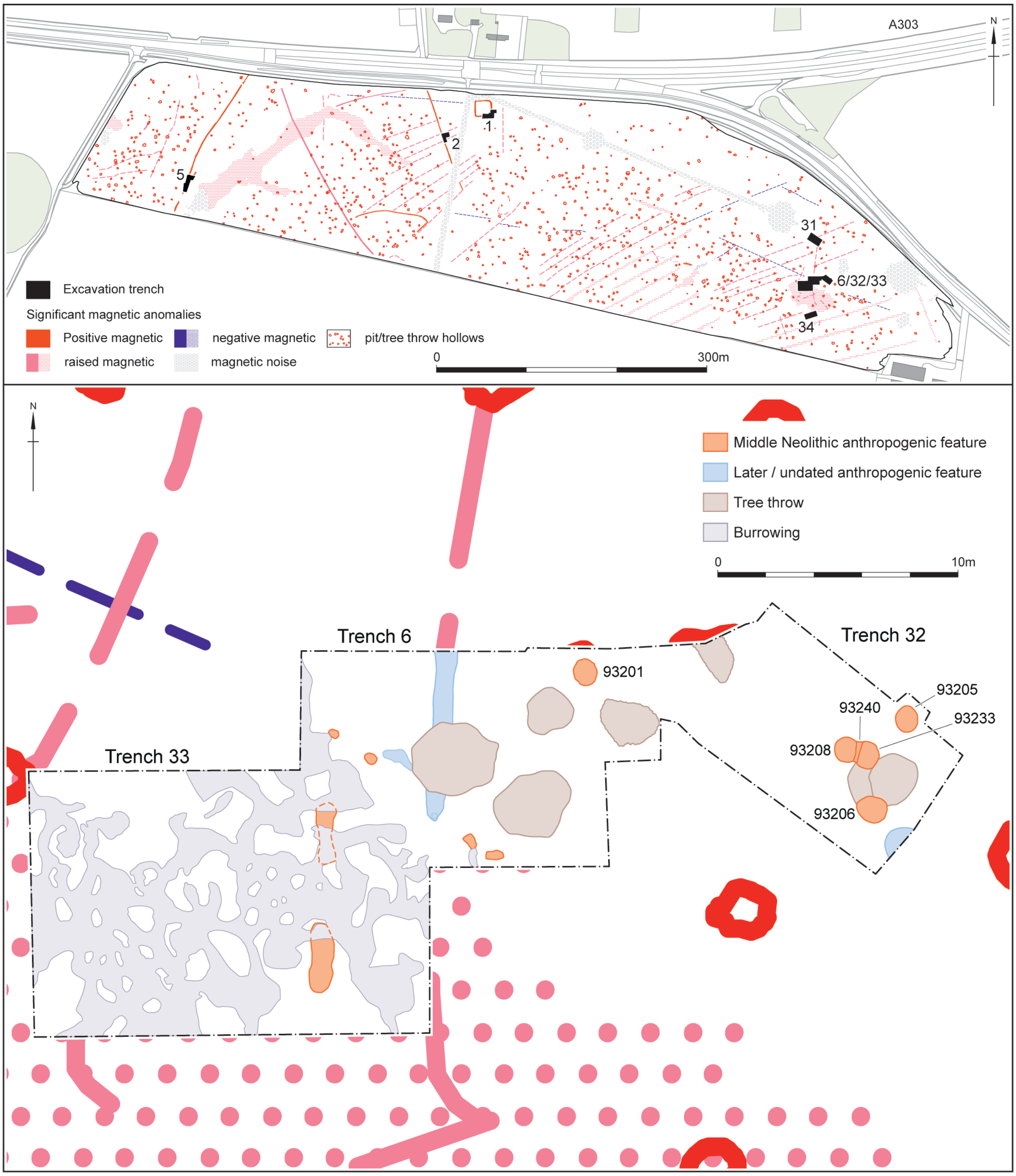


*Figure 2: Plan of excavation area and features.*

Given their secure contextual associations and robust dating with radiocarbon and associations with a significant Peterborough Ware assemblage and following an initial post-excavation assessment (Bishop 2016), the lithic assemblage was subjected to a detailed metrical, typological and technological analysis. This account provides a description and technological and typological overview of the assemblages, along with a discussion of their wider significance.

The assemblages were recorded following standard technological and typological classifications, largely following the methodology of Inizan *et al.* (1999) with modifications and additions as indicated in

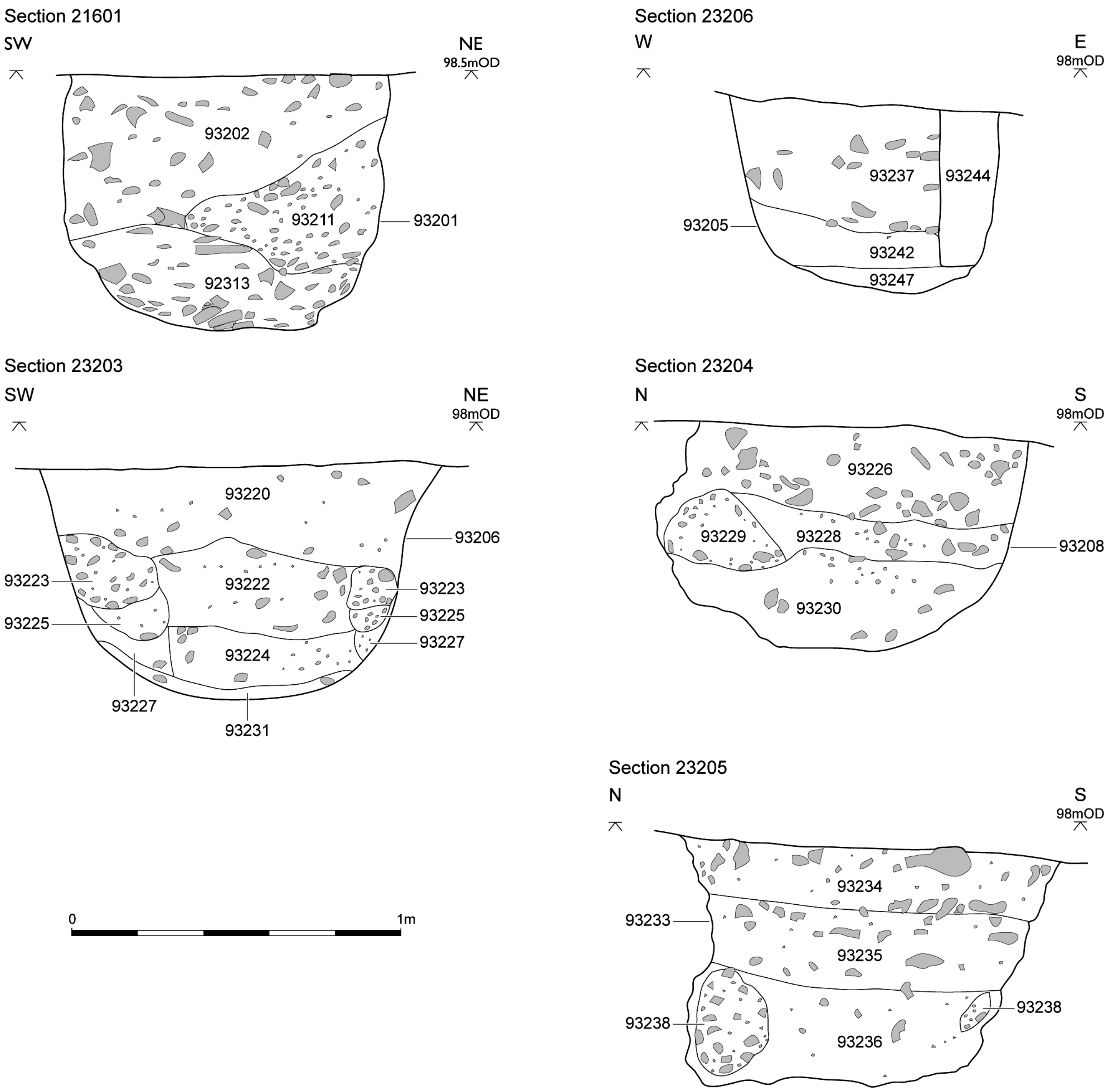


*Figure 3: Pit sections.*

the text by the authors. Retouched tools were classified following standard British works such as Healy (1988) and Bamford (1985). Measurements were taken following the methodology of Saville (1980).

## STRUCK FLINT

### Quantity and context

The assemblage of struck flints recovered from the five pits amounts to 11,329 pieces, of which 4210 consist of macrodebitage (defined here as all pieces of struck flint including flakes, cores and conchoidally fractured fragments measuring 15mm or more in maximum dimension; all struck pieces smaller than 15mm are henceforth referred to as 'microdebitage') (Table 1). The fills of all pits were extensively sampled although to slightly different extents, which has influenced the proportions of microdebitage recorded, as well as the overall totals of pieces recovered. However, as all pits were fully excavated and all non-sampled fill was extensively hand searched for artefacts, we can be confident that the bulk of the struck pieces within each pit have been recovered and that these provide a reasonable representation of what was originally present.

## Raw materials

Nearly all of the struck flint has recorticated, hampering identification, but pieces with recent breaks all comprise a mottled translucent light brown to dark grey flint containing varying proportions of opaque yellow, grey or brown cherty inclusions. Cortex, where present, is rough, relatively unweathered and of variable thickness, although patches of abrasion and battering are present and thermal (frost fracture) surfaces are common. The size of some struck pieces demonstrates that the nodules often exceeded 100mm in diameter and some may have been considerably larger. The raw materials are therefore likely to have been gathered as thermally fractured nodules from peri-glacially mass weathered or Head deposits (*sensu* Gibbard 1986) as can be found on the surface of the local Upper Chalk.

## Condition

The condition of the assemblages varies but is broadly comparable across the pits, with most pieces showing only minimal edge damage or rounding. The exception to this is the assemblage from pit [93208] which contains much higher proportions of burnt pieces (23%, compared to between 1% and 5% for the other four pits) as well as higher proportions of pieces exhibiting edge chipping (40%, compared to between 4% and 20%). Pits [93201] and [93208] both contain higher proportions of broken pieces (20% and 14%) than the other three (8% - 9%); in the case of pit [93208] this can probably be attributed to the greater proportion of burnt pieces which frequently fragment, but it is not clear why there should be such a propensity to breakage in pit [93201].

The generally good condition of the pit assemblages indicates they have experienced broadly similar taphonomic histories between manufacture and final deposition within the pits, although the variability does suggest some differences in depositional pathways. The assemblages had probably entered the pits not long after manufacture but, prior to deposition, had experienced

*Table 1: Composition of the lithic assemblages by pit from West Amesbury (N.B. c. 225l of fill had been removed from pit [93208] by the grave cut).*

| Pit | Flake | Blade | Flake/Blade Fragment | Microdebitage | Core | Shatter / Conchoidal chunk | Retouched | Total | Total Macrodebitage | Total Volume of Pit (l) | Volume Sieved (%) | Density (number of macrodebitage per litre volume) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93201 Total (no.) | 456 | 49 | 872 | 2544 | 14 | 356 | 136 | 4427 | 1883 | 818 | 50.1 | 2.3 |
| 93201 Total (%) | 10.3 | 1.1 | 19.7 | 57.5 | 0.3 | 8 | 3.1 | 100 | | | | |
| 93205 Total (no.) | 127 | 54 | 76 | 635 | 6 | 14 | 22 | 934 | 299 | 345 | 100 | 0.9 |
| 93205 Total (%) | 13.6 | 5.8 | 8.1 | 68 | 0.6 | 1.5 | 2.4 | 100 | | | | |
| 93206 Total (no.) | 406 | 83 | 213 | 1862 | 29 | 41 | 35 | 2669 | 807 | 745 | 87.9 | 1.1 |
| 93206 Total (%) | 15.2 | 3.1 | 8 | 69.8 | 1.1 | 1.5 | 1.3 | 100 | | | | |
| 93208 Total (no.) | 190 | 54 | 225 | 1102 | 9 | 14 | 9 | 1603 | 501 | 440* | 75 | 1.1 |
| 93208 Total (%) | 11.9 | 3.4 | 14 | 68.7 | 0.6 | 0.9 | 0.6 | 100 | | | | |
| 93233 Total (no.) | 397 | 99 | 146 | 976 | 19 | 30 | 29 | 1696 | 720 | 615 | 100 | 1.2 |
| 93233 Total (%) | 23.4 | 5.8 | 8.6 | 57.5 | 1.1 | 1.8 | 1.7 | 100 | | | | |
| **All pits (no.)** | **1576** | **339** | **1532** | **7119** | **77** | **455** | **231** | **11329** | **4210** | | | |
| **All pits (%)** | **13.9** | **3** | **13.5** | **62.8** | **0.7** | **4** | **2** | **100** | | | | |

some weathering and disturbance such as from redeposition and trampling, and some pieces, particularly those from pit [93208], had been subjected to intense heat, probably from hearth use.

Nearly all of the pieces have recorticated, in some cases quite heavily. This has caused the edges of many to become friable and to start to disintegrate; whilst this can be differentiated from pre-recortication damage it does obscure potential traces of utilization or light retouch. A few pieces also have calcium carbonate firmly attached to their surfaces, again obscuring any potential traces of use.

## THE PIT ASSEMBLAGE

Whilst there are broad similarities in the technological strategies used to produce the assemblages from the different pits, some variability is apparent. However, some of the more subtle differences between the pit assemblages were not always brought out by metrical analyses but are apparent when the material from each pit was laid out side-by-side.

**Pit [93201]**

The four fills of this pit produced the largest assemblage at 4427 individual struck pieces of which 1883 comprise macrodebitage. It also had the highest density of flintwork, at 2.3 pieces of macrodebitage per litre, despite only half of its fill having been sieved (Table 2). Whilst struck flint was present in all four of its fills, almost all (95%) came from its primary fill [93213], indicating that this represented the main act of artefact deposition and it occurred shortly after the pit had been dug.

The assemblage diverges from those of the other pits in terms of its relatively low percentage of flakes and blades, but this is made up for by its high proportions of broken pieces. The proportion of retouched pieces is similar to that from pit [93205] but much higher than the other pits, and it has a very low proportion of cores, although this may at least be partially accounted for by the high numbers of conchoidal chunks, many of which are probably shattered core fragments. Twelve of the fourteen cores have multiple platforms and the approach to their reduction appears relatively uniform. The large number of formal tools in this assemblage includes all ten retouched types found at West Amesbury, including nearly all of the burins as well as most of the mini-rods, but no core-tools.

**Pit [93205]**

This pit contained the smallest quantity of struck flint at 934 pieces of which 299 comprised macrodebitage (Table 3).

Over 90% of the macro-debitage came from the pit's two middle fills, [93237] and [93242], although the totals including micro-debitage were more evenly distributed (Table 3). However, the potentially high levels of disturbance caused by the insertion of a post have undoubtedly altered the characteristics of the fills above primary fill [93247], meaning that it is difficult to draw any firm conclusions regarding the nature of the pit's original infilling.

The assemblages from the middle fills are both dominated by two distinctive flake types; narrow flakes with little or no remnant cortex, and fairly thin but wide flakes. This suggests the application of at least two different knapping techniques, but the attributes for each assemblage are very similar and indicate that core reduction was well controlled. Of the six cores recovered, two produced blades, one of which was reduced centripetally, whilst the remaining four included two extensively worked multi-platformed flake cores and two minimally worked pieces. The retouched inventory is varied but dominated by edge retouched pieces, arrowheads and truncated pieces. This pit produced the only oblique

*Table 2: Composition of the struck flint from pit [93201] by fill.*

| ***Fill*** | ***Flake*** | ***Blade*** | ***Flake/Blade Fragment*** | ***Microdebitage*** | ***Core*** | ***Shatter / Conchoidal chunk*** | ***Retouched*** | ***Total*** | ***Total >15mm*** | ***Proportion of total pit assemblage (%)*** | ***Proportion of pit assemblage >15mm (%)*** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93202 (no.) | 20 | | 37 | 15 | | 13 | 2 | **87** | 72 | 2.1 | 3.8 |
| 93212 (no.) | 10 | | 27 | 30 | | 5 | 5 | **77** | 47 | 1.7 | 2.5 |
| 93211 (no.) | 17 | 5 | 22 | 1 | | 2 | 3 | **50** | 49 | 1.1 | 2.6 |
| 93213 (no.) | 409 | 44 | 786 | 2498 | 14 | 336 | 126 | **4213** | 1715 | 95.1 | 91.1 |
| 93213 (%) | 9.7 | 1 | 18.7 | 59.3 | 0.3 | 8 | 3 | **100** | | | |
| **Total** | **456** | **49** | **872** | **2544** | **14** | **356** | **136** | **4427** | **1883** | **100** | **100** |
| **Total %** | **10.3** | **1.1** | **19.7** | **57.5** | **0.3** | **8** | **3.1** | **100** | | | |
| **Total >15mm (%)** | **24.2** | **2.6** | **46.3** | **-** | **0.7** | **18.9** | **7.2** | **100** | | | |
| 93233 Total (no.) | 397 | 99 | 146 | 976 | 19 | 30 | 29 | **1696** | 720 | 615 | 100 |
| 93233 Total (%) | 23.4 | 5.8 | 8.6 | 57.5 | 1.1 | 1.8 | 1.7 | **100** | | | |
| **All pits (no.)** | **1576** | **339** | **1532** | **7119** | **77** | **455** | **231** | **11329** | **4210** | | |
| **All pits (%)** | **13.9** | **3.0** | **13.5** | **62.8** | **0.7** | **4.0** | **2.0** | **100** | | | |

*Table 3: Composition of the struck flint from pit [93205] by fill.*

| ***Fill*** | ***Flake*** | ***Blade*** | ***Flake fragment*** | ***Microdebitage <15mm*** | ***Core*** | ***Shatter / Conchoidal chunk*** | ***Retouched*** | ***Total*** | ***Total >15mm*** | ***Proportion of total pit assemblage (%)*** | ***Proportion of pit assemblage >15mm (%)*** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93244 (no.) | 6 | 2 | 1 | 25 | | | 2 | **36** | **11** | 3.9 | 3.7 |
| 93237 (no.) | 55 | 22 | 44 | 235 | 5 | 12 | 9 | **382** | **147** | 40.9 | 49.2 |
| 93237 (%) | 14.4 | 5.8 | 11.5 | 61.5 | 1.3 | 3.1 | 2.4 | **100** | | | |
| 93242 (no.) | 56 | 28 | 23 | 140 | 1 | 2 | 11 | **261** | **121** | 27.9 | 40.5 |
| 93242 (%) | 21.5 | 10.7 | 8.8 | 53.6 | 0.4 | 0.8 | 4.2 | **100** | | | |
| 93247 (no.) | 10 | 2 | 8 | 235 | | | | **255** | **20** | 27.3 | 6.7 |
| 93247 (%) | 3.9 | 0.8 | 3.1 | 92.2 | | | | **100** | | | |
| **Total** | **127** | **54** | **76** | **635** | **6** | **14** | **22** | **934** | **299** | **100** | **100** |
| **Total %** | **13.6** | **5.8** | **8.1** | **68.0** | **0.6** | **1.5** | **2.4** | **100** | | | |
| **Total >15mm (%)** | **42.5** | **18.1** | **25.4** | **-** | **2.0** | **4.7** | **7.4** | **100** | | | |

arrowhead from the site (Figure 4.19).

### Pit [93206]

Pit [93206] produced a total of 2669 pieces of struck flint with macrodebitage contributing 807 of these (Table 4). The pit had a complex series of fills with significant quantities of macrodebitage coming from four of these, possibly suggesting a series of intermittent depositional episodes.

Retouched implements are not well represented (1.3% of the total) but they include a wide variety of types, including two of four core-tools identified from the site. Cores are better represented, providing

*Table 4: Composition of the struck flint from pit [93206] by fill.*

| *Fill* | *Flake* | *Blade* | *Flake fragment* | *Microdebitage <15mm* | *Core* | *Shatter / Conchoidal chunk* | *Retouched* | *Total* | *Total >15mm* | *Proportion of total pit assemblage (%)* | *Proportion of pit assemblage >15mm (%)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93220 (no.) | 72 | 14 | 43 | 253 | 6 | 3 | 6 | 397 | **144** | 14.9 | 17.8 |
| 93220 (%) | 18.1 | 3.5 | 10.8 | 63.7 | 1.5 | 0.8 | 1.5 | 100 | | | |
| 93222 (no.) | 100 | 17 | 54 | 256 | 12 | 11 | 12 | 462 | **206** | 17.3 | 25.5 |
| 93222 (%) | 21.6 | 3.7 | 11.7 | 55.4 | 2.6 | 2.4 | 2.6 | 100 | | | |
| 93223 (no.) | 5 | 3 | 9 | 175 | | 1 | | 193 | **18** | 7.2 | 2.2 |
| 93223 (% | 2.6 | 1.6 | 4.7 | 90.6 | | 0.5 | | 100 | | | |
| 93225 (no.) | 51 | 12 | 33 | 275 | 2 | 4 | 9 | 386 | **111** | 14.5 | 13.8 |
| 93225 (%) | 13.2 | 3.1 | 8.5 | 71.2 | 0.5 | 1.0 | 2.3 | 100 | | | |
| 93227/ 93224 (no.) | 168 | 35 | 55 | 523 | 9 | 19 | 8 | 817 | **294** | 30.6 | 36.4 |
| 93227/ 93224 (%) | 20.6 | 4.3 | 6.7 | 64.0 | 1.1 | 2.3 | 1.0 | 100 | | | |
| 93231 (no.) | 10 | 2 | 19 | 380 | | 3 | | 414 | **34** | 15.5 | 4.2 |
| 93231 (%) | 2.4 | 0.5 | 4.6 | 91.8 | | 0.7 | | 100 | | | |
| **Total** | **406** | **83** | **213** | **1862** | **29** | **41** | **35** | **2669** | **807** | **100** | **100** |
| **Total %** | **15.2** | **3.1** | **8.0** | **69.8** | **1.1** | **1.5** | **1.3** | **100** | | | |
| **Total >15mm %** | **50.3** | **10.3** | **26.4** | **-** | **3.6** | **5.1** | **4.3** | **100** | | | |

1.1% of the total which is only matched by the assemblage from pit [93233] and they include examples from all the classified categories, indicating a wide range of flintworking strategies were pursued.

**Pit [93208]**

Pit [93208] produced 1603 struck pieces of which 500 comprise macrodebitage. Over half of the struck flint was recovered from the earliest of its four fills with the majority of the remainder coming from its final fill (Table 5).

The two principle sub-assemblages from this pit differ compositionally, the upper fill [93226] contains higher proportions of cores and retouched implements and lower quantities of microdebitage, for example. The most noticeable difference, however, is the condition of the two assemblages. Over 60% of the macrodebitage from the primary deposit [93230] shows obvious signs of having been burnt compared to only 3% of the assemblage from the final fill [93226]. Consequently, the former assemblage is in a far more fragmentary condition with over half of the macrodebitage being broken compared to less than a third (31%) of that from the final fill. There was no evidence for *in-situ* burning having occurred within the pit, indicating that the two assemblages had experienced very different histories prior to deposition, with the earlier having been in very close proximity to a hearth. Neither cores nor retouched implements are particularly common in this pit, with the upper fill containing the highest proportions. This again is possibly due to the more fragmentary condition of the assemblage from the primary fill. The cores present are varied and whilst at least five different types of retouched implements are present, over half comprise simple edge retouched implements.

**Pit [93233]**
This pit yielded a total of 1696 pieces of struck flint, of which 720 comprise macrodebitage (Table 6). The pit contained four fills with nearly two-thirds of the macrodebitage coming from the primary fill [93236] and most of the remainder from the final fill [93234], suggesting two main episodes of deliberate deposition of struck flint, one shortly after the pit was dug and one as it was finally being infilled.

The profiles of both of the main assemblages are comparable and share similar characteristics, the notable difference between the two is that there are much higher percentages of tools, cores and blades in the primary fill. The assemblage from the final fill has suffered more post-depositional damage than the primary assemblage, with nearly half of the pieces showing chipping and abrasion. This suggests a slightly different length of time between manufacture and final deposition each assemblage had experienced, with the artefacts from the final fill having been exposed on the surface for a longer period. The cores from the pit are split between those that have multiple platforms and these include two that have been worked 'keel style', and those that have only a few flakes removed. The most common retouched implements are simple edge-retouched implements followed by scrapers, with mini-rods, burins and arrowheads also being well represented.

## TECHNOLOGY, TYPOLOGY AND TRADITION

The assemblages from all of the pits are technologically comparable and include elements from all stages of the knapping sequence, from the decortication of raw materials to the discard of used retouched implements. Nevertheless, specific proportions from each stage represented within the pits and their separate fills does vary.

Attempts were made to refit the struck flint from the different features, pieces from separate fills within the same features and with pieces from within the same fills but, despite robust attempts, this was largely unsuccessful with only occasional single sequential removals being identified, all of which came from the same fills. This lack of success was partly due to the condition

*Table 5: Composition of the struck flint from pit [93208] by fill.*

| *Fill* | *Flake* | *Blade* | *Flake fragment* | *Microdebitage <15mm* | *Core* | *Shatter / Conchoidal chunk* | *Retouched* | *Total* | *Total >15mm* | *Proportion of total pit assemblage (%)* | *Proportion of pit assemblage >15mm (%)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93226 (no.) | 68 | 10 | 42 | 92 | 4 | 5 | 5 | **226** | **134** | 14.1 | 26.7 |
| 93226 (%) | 30.1 | 4.4 | 18.6 | 40.7 | 1.8 | 2.2 | 2.2 | **100** | | | |
| 93228 (no.) | 26 | 5 | 18 | 133 | | 3 | | **185** | **52** | 11.5 | 10.4 |
| 93228 (%) | 14.1 | 2.7 | 9.7 | 71.9 | | 1.6 | | **100** | | | |
| 93229 (no.) | 20 | 7 | 19 | 365 | 1 | 1 | 1 | **414** | **49** | 25.8 | 9.8 |
| 93229 (%) | 4.8 | 1.7 | 4.6 | 88.2 | 0.2 | 0.2 | 0.2 | **100** | | | |
| 93230 (no.) | 76 | 32 | 146 | 512 | 4 | 5 | 3 | **778** | **266** | 48.5 | 53.1 |
| 93230 (%) | 9.8 | 4.1 | 18.8 | 65.8 | 0.5 | 0.6 | 0.4 | **100** | | | |
| **Total** | **190** | **54** | **225** | **1102** | **9** | **14** | **9** | **1603** | **501** | **100** | **100** |
| **Total %** | **11.9** | **3.4** | **14.0** | **68.7** | **0.6** | **0.9** | **0.6** | **100** | | | |
| **Total >15mm %** | **37.9** | **10.8** | **44.9** | **-** | **1.8** | **2.8** | **1.8** | **100** | | | |

*Table 6: Composition of the struck flint from pit [93233] by fill.*

| Fill | Flake | Blade | Flake fragment | Microdebitage <15mm | Core | Shatter / Conchoidal chunk | Retouched | Total | Total >15mm | Proportion of total pit assemblage (%) | Proportion of pit assemblage >5mm (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93234 (no.) | 90 | 18 | 40 | 380 | 4 | 9 | 4 | **545** | **165** | 32.1 | 22.9 |
| 93234 (%) | 16.5 | 3.3 | 7.3 | 69.7 | 0.7 | 1.7 | 0.7 | **100** | | | |
| 93235 (no.) | 21 | 7 | 5 | 126 | | 1 | 3 | **163** | **37** | 9.6 | 5.1 |
| 93235 (%) | 12.9 | 4.3 | 3.1 | 77.3 | | 0.6 | 1.8 | **100** | | | |
| 93238 (no.) | 39 | 6 | 6 | 83 | 1 | 1 | 1 | **137** | **54** | 8.1 | 7.5 |
| 93238 (%) | 28.5 | 4.4 | 4.4 | 60.6 | 0.7 | 0.7 | 0.7 | **100** | | | |
| 93236 (no.) | 247 | 68 | 95 | 387 | 14 | 19 | 21 | **851** | **464** | 50.2 | 64.4 |
| 93236 (%) | 29.0 | 8.0 | 11.2 | 45.5 | 1.6 | 2.2 | 2.5 | **100** | | | |
| **Total** | **397** | **99** | **146** | **976** | **19** | **30** | **29** | **1696** | **720** | **100** | **100** |
| **Total %** | **23.4** | **5.8** | **8.6** | **57.5** | **1.1** | **1.8** | **1.7** | **100** | | | |
| **Total >15mm %** | **55.1** | **13.8** | **20.3** | **-** | **2.6** | **4.2** | **4** | **100** | | | |

of the pieces and particularly the variable degree of recortication, which meant that their original colours, textures and inclusions were often masked. However, the exercise did demonstrate that for each assemblage many different pieces of raw material are represented and that only a small proportion of any particular knapping episode was included. It is evident that even for the larger assemblages the material present only represents a small fraction of what must have been generated.

In order to gain insight into the general metrical and technological characteristics of the pit assemblages and to get an impression of possible variability between the material from different pits, all of the complete unretouched flakes and blades measuring over 15mm in maximum dimension from pit [93201] and a random selection of 100 complete flakes and blades from the other four pits, plus all retouched pieces and cores, were subjected to full metrical and technological analysis. The selection of complete pieces is necessary in order to provide metrical data but unavoidably results in a degree of bias; thinner and narrower pieces are likely to be underrepresented as these are more prone to breakage. Equally, there will be a bias towards pieces from the earlier stages in the reduction sequence as these tend to be thicker and therefore less likely to break. Nevertheless, it is thought that sufficient complete pieces from all stages in the sequence were included to give a broad indication of the character of the assemblages.

## Microdebitage

Nearly two-thirds of the struck flint recovered from the five pits consists of microdebitage - small flakes, flake fragments and knapping shatter that measure less than 15mm in any dimension - although the proportion of the assemblages from the different pits and fills does vary (see Tables 2–6). The vast majority were recovered from the sieved samples and the high proportions recovered are a testament to the extensive sieving employed on the pits' fills. Small flakes and pieces of shatter are generated in considerable numbers during reduction, from the deliberate trimming of cores and the retouching of flakes and blades, and also accidentally as by-products during the detaching of larger flakes. Although the quantities of microdebitage present were substantial, there is no evidence that the flintwork was knapped directly into any of the pits. Nevertheless, when the material was being gathered for deposition in the pits all of the debris was included rather than just the larger pieces being picked out, and it is possible that knapping took place on a sheet or skin which has helped retain even the smallest fragments.

**Flakes and Blades**

Flakes and blades account for nearly 90% of the macrodebitage with cores and conchoidally fractured fragments making up the remainder. Although all stages of the knapping sequence are present, differences in the technological and typological composition of the assemblages from the separate pits and even their separate fills are evident. In order to illuminate this, a randomly selected sample of struck pieces from the fills of each pit were assigned a place within a very simplified sequence designed to show: the decortication of raw materials (decortication flakes); core preparation and maintenance (core modification flakes and blades); core production (useable flakes and blades); exhausted waste material (core and core fragments), and secondary modification (tools) (Table 7). Whilst the sample sizes are small and some leeway must be permitted, it does demonstrate considerable variation in the proportions present from each of these different stages in the knapping sequence. It shows that the material chosen for inclusion in each of the fills is unlikely come from a homogenized accumulation, and that the material from each fill represents a variety of different, if closely related, flintworking activities.

Decortication flakes and blades all have at least 50% of their dorsal surfaces covered by cortex. Altogether these form 17% of the macrodebitage, although their proportions both within and between the pits varies considerably, from 4.2% to 28.6%. The high overall proportions present are a good indication that the raw materials were being dressed and processed at the site.

Pieces identified as core modification flakes contribute just under 4% of the macrodebitage but their proportions vary between different fills, from none to 14.8%. These are not easy to classify but they mostly comprise large, bulky removals that have significantly remodelled the cores by altering striking platforms and core faces to facilitate continued flake and blade production. Most of those identified are flakes struck transversely across the core face, usually to remove deep flake scars, but others were struck from the top or base of the core to remove large parts of the core's face. No 'classic' core-tablets that remove all or most of the striking platform, a technique most commonly employed during blade production, were noted.

The remaining flakes and blades are considered to represent the main products of reduction and are either at least potentially useable or have been retouched to make formal tools. However, it is unlikely that all were seen by the knappers as suitable for use and in reality the majority probably come from trimming cores and core faces in order to facilitate further flake production. The potentially useable pieces comprise blades and flakes that vary considerably in shape and size with both wide flakes and narrow blades being produced. Blades, defined here as flakes that are at least twice as long as wide, account for 8% of the total macrodebitage, but few of these are prismatic, in that they have parallel sides and dorsal scars, or were made in a systematic way that would allow the repeated production of relatively standardized sized and shaped pieces.

*Metrical Characteristics*

The average length of all flakes is 35mm but this varies by pit from 31mm to 44mm

*Table 7: Reduction sequences. Basic technological composition of a selection of randomly sampled pieces of struck flint from the pits by fill (N.B. only complete unretouched flakes and blades measuring in excess of 15mm are included).*

| | ***Decortication flakes and blades (>50% cortex)*** | ***Core Modification Flakes and Blades*** | ***Useable Flakes and Blades*** | ***Cores / Core Fragments*** | ***Tools*** | ***Number Sampled*** |
|---|---|---|---|---|---|---|
| *Pit 93201* | | | | | | |
| Fill 93202 | 17.2 | | 75.9 | | 6.9 | 29 |
| Fill 93212 | 5.6 | | 72.2 | | 22.2 | 18 |
| Fill 93211 | 10.3 | | 79.3 | | 10.3 | 29 |
| Fill 93213 | 20.8 | 1.5 | 62.7 | 1.9 | 13.2 | 750 |
| **Total no.** | **165** | **11** | **528** | **14** | **108** | **826** |
| **Total %** | **20** | **1.3** | **63.9** | **1.7** | **13.1** | |
| *Pit 93205* | | | | | | |
| Fill 93244 | | | 83.3 | | 16.7 | 6 |
| Fill 93237 | 13.2 | 10.5 | 55.3 | 13.2 | 7.9 | 38 |
| Fill 93242 | 4.2 | 10.4 | 62.5 | 6.3 | 16.7 | 48 |
| Fill 93247 | 16.7 | | 83.3 | | | 6 |
| **Total no.** | **8** | **9** | **61** | **8** | **12** | **98** |
| **Total %** | **8.2** | **9.2** | **62.2** | **8.2** | **12.2** | |
| *Pit 93206* | | | | | | |
| Fill 93220 | 6.7 | | 70 | 6.7 | 16.7 | 30 |
| Fill 93222 | 10.3 | 5.1 | 51.3 | 10.3 | 23 | 39 |
| Fill 93225 | 14.3 | 2.9 | 57.1 | 8.6 | 17.1 | 35 |
| Fill 93224 | 14 | 12 | 50 | 10 | 14 | 50 |
| **Total no.** | **18** | **9** | **61** | **14** | **27** | **129** |
| **Total %** | **14** | **7** | **47.3** | **10.9** | **20.9** | |
| *Pit 93208* | | | | | | |
| Fill 93226 | 18.2 | 6.1 | 60.6 | 6.1 | 9.1 | 33 |
| Fill 93228 | 16.7 | | 66.7 | | 16.7 | 6 |
| Fill 93229 | 28.6 | 14.3 | 57.1 | | | 7 |
| Fill 93230 | | 4.6 | 77.3 | 9.1 | 9.1 | 22 |
| **Total no.** | **9** | **6** | **45** | **4** | **6** | **70** |
| **Total %** | **12.9** | **8.6** | **64.3** | **5.7** | **8.6** | |
| *Pit 93233* | | | | | | |
| Fill 93234 | 9.4 | 9.4 | 62.5 | 6.3 | 12.5 | 32 |
| Fill 93235 | 16.7 | | 66.7 | | 16.7 | 12 |
| Fill 93238 | 13.3 | 6.7 | 73.3 | | 6.7 | 15 |
| Fill 93236 | 6.6 | 14.8 | 39.3 | 13.1 | 26.2 | 61 |
| **Total no.** | **11** | **13** | **63** | **10** | **23** | **120** |
| **Total %** | **9.2** | **10.8** | **52.5** | **8.3** | **19.2** | |
| **All (no.)** | **211** | **48** | **758** | **50** | **176** | **1243** |
| **All (%)** | **17** | **3.9** | **61** | **4** | **14.2** | **100** |

and they have an average breadth of 26mm, varying by pit from 23mm to 33mm. Despite their small size, the flakes and blades tend to be quite thick, averaging at 8mm and with an average thickness to length ratio of 0.24 (Table 8). The flakes and blades range considerably in size but the majority are small, with 70% measuring less than 40mm long and 68% less than 30mm wide. A small proportion is considerably larger, however, and the abundance of small pieces most probably reflects the efforts expended on core preparation and maintenance.

There is also considerable variation in the shape of the complete flakes and blades, although they have a marked tendency to be narrow, with 69.7% being narrower than they are long and 22.6% achieving blade dimensions by being twice as long as wide, a fairly impressive proportion given that blades are more prone to breakage as they tend to be thinner and more fragile. There is also considerable variation in the shape of the flakes and blades between pits, with pit [93205] having both the highest proportion of blades, at 18% of the macrodebitage, and also the thinnest pieces overall, with the flakes having an average breadth / length ratio of 0.60. In contrast, only 2.6% of the macrodebitage from pit [93201] comprises blades and the pieces overall have an average breadth / length ratio of 0.91.

Table 9 charts changes in flake shape from the Early Mesolithic through to the Bronze Age, as documented by Pitts (1978a; 1978b). Compared to the Neolithic assemblages Pitts analysed, the overall sample from West Amesbury has similar proportion of narrow blades and also flakes to the Earlier Neolithic assemblages, but also similar proportions of blades and broad flakes to the Later Neolithic assemblages. There are also some very narrow blades and fewer narrow flakes that are not present in either of Pitts' Neolithic assemblages. Overall, there are certainly some differences but metrically

*Table 8: Metrical characteristics of complete flakes and blades.*

| | Length (mm) | | | Breadth (mm) | | | Thickness (mm) | | | B/L Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | Max. | Min. | Ave. | Max. | Min. | Ave. | Max. | Min. | Ave. | Ave. |
| Pit 93201 | 97 | 8 | 31 | 79 | 3 | 25 | 28 | 2 | 8 | 0.91 |
| Pit 93205 | 87 | 15 | 41 | 55 | 6 | 23 | 26 | 2 | 8 | 0.60 |
| Pit 93206 | 85 | 14 | 44 | 101 | 6 | 33 | 28 | 2 | 10 | 0.81 |
| Pit 93208 | 93 | 13 | 40 | 62 | 7 | 26 | 24 | 3 | 8 | 0.73 |
| Pit 93233 | 107 | 13 | 43 | 78 | 8 | 27 | 21 | 1 | 9 | 0.70 |
| **All pits** | **107** | **8** | **35** | **101** | **3** | **26** | **28** | **1** | **8** | **0.84** |

*Table 9: Complete flake breadth/length ratios as recorded by Pitts (1978a) compared with those from West Amesbury.*

| Pitts 1978a | Very Narrow Blades | Narrow blades | Blades | Narrow flakes | Flakes | Broad flakes |
|---|---|---|---|---|---|---|
| Breadth / Length Ratio | <0.2 | 0.21-0.4 | 0.41-0.6 | 0.61-0.8 | 0.81-1.0 | 1.0+ |
| E. Meso | 2 | 43 | 27 | 13 | 6.5 | 9 |
| L. Meso | 0.5 | 15.5 | 30.5 | 22 | 14.5 | 17 |
| E. Neo | 0 | 11 | 33 | 27.5 | 14.5 | 13 |
| L. Neo | 0 | 4 | 21.5 | 29 | 20 | 25.5 |
| Chalcolithic | 0 | 2.5 | 15 | 24 | 24 | 35 |
| Bronze Age | 0 | 3.5 | 14.5 | 23 | 23 | 35.5 |
| **West Amesbury** | **1.3** | **11.1** | **21.8** | **21.1** | **14.8** | **29.9** |

the West Amesbury assemblage would easily fit in between the Early and Later Neolithic values, suggesting an essentially continuum rather than abrupt change in the metrics of flint reduction.

*Technological Attributes*

The principal technological attributes of the unretouched flakes also demonstrate a complex approach to reduction that resulted in the production of a variety of flakes and blades.

Attempts at modifying the striking platforms were frequently undertaken, with just under half of the striking platform / core face angles being altered by either abrasion or trimming (Table 10). This varies between the pits in the extent and intensity to which it was practiced, which is likely to reflect subtle differences in the skills of the knappers and in the desired products, as increased edge preparation will facilitate the production of thinner and narrower flakes.

Modification to the actual striking platform surface was much more rarely undertaken with only a small number of pieces having facetted or ridged (dihedral) platforms. Such alterations also allow the detaching blows to be made very close to the edge of the core although, on average, the striking platforms are fairly deep at 5.7mm. Nevertheless, with 10% of the detachments the point of percussion landed so close to the edge that either practically nothing remained of the striking platform or it had shattered.

Good flaking control is also evident in that the majority of the flakes and blades have feathered terminations and nearly all of the flakes and blades have diffuse or small, hemispherical bulbs of percussion, the latter being features mostly present on the blades (Table 11).

Pieces with prominent bulbs of percussion and hinged distal terminations are more likely to be larger and thicker and belong to earlier stages in the reduction sequence.

Table 10: Principal striking platform attributes of complete flakes and blades.

**Striking Platform Attributes: Complete Flakes**

| Striking platform type (%) | Pit 93201 | Pit 93205 | Pit 93206 | Pit 93208 | Pit 93233 | All pits |
|---|---|---|---|---|---|---|
| Cortical | 18.9 | 6.3 | 6.7 | 19.4 | 14.6 | 16.5 |
| Dihedral | 3.2 | 2.2 | 1.7 | 2.8 | 10.4 | 3.5 |
| Facetted | 0.2 | 2.2 | 3.4 | | 4.2 | 0.9 |
| Flaked surface | 67.2 | 72.3 | 79.7 | 64.0 | 70.8 | 68.9 |
| Shattered / not present | 10.5 | 17.0 | 8.5 | 13.8 | | 10.2 |

| Striking Platform Thickness (mm) | Pit 93201 | Pit 93205 | Pit 93206 | Pit 93208 | Pit 93233 | All pits |
|---|---|---|---|---|---|---|
| Max. | 22 | 12 | 13 | 15 | 19 | 22 |
| Min. | 1 | 1 | 2 | 1 | 1 | 1 |
| Ave. | 6 | 5 | 6 | 6 | 6 | 6 |

| Striking Platform Modification (%) | Pit 93201 | Pit 93205 | Pit 93206 | Pit 93208 | Pit 93233 | All pits |
|---|---|---|---|---|---|---|
| Fine edge trimming / abrasion | 27.8 | 23.8 | 16.2 | 20.4 | 19.7 | 25.2 |
| Edge trimmed | 23.0 | 33.3 | 25.7 | 36.7 | 13.6 | 24.2 |
| None | 49.2 | 42.9 | 58.1 | 42.9 | 66.7 | 50.6 |

Whilst these attributes cannot always be directly attributed to hammer mode, the evidence here suggests that it is likely that the earlier stages in core preparation were undertaken with hard hammers with soft hammers used for flake and blade production.

The dorsal scar patterns on the blades and flakes show a wide variety of types, demonstrating variability in the methods used to produce the assemblage (Table 12). Almost two-thirds of the flakes have scar patterns consistent with being produced from single platformed cores. Flakes struck from two-platformed cores account for 9% of the total with those from multi-platformed cores contributing a similar proportion. Less than 5% have parallel dorsal scars which would be indicative of systematic narrow flake and blade production.

True primary flakes with cortex covering the entire dorsal face make up between 4% and 13% of the flakes and blades whilst just over a quarter have 50% or more of their dorsal surfaces covered. Tertiary flakes, retaining no cortex at all, account for only around a fifth of the flakes and blades. The presence of flakes and blades with both high and low proportions of remnant cortex suggests that the entire reduction sequence is represented, including the initial processing of raw materials. This is also supported by the average numbers of flake scars present on the flakes; over 80% have only two or fewer scars, suggesting the early stages in core reduction is well represented.

## CORES

A total of 77 complete cores were identified and they were present in all five pits (Table 13). They represent a relatively low 1.8% of the macrodebitage although a further 11% of the macrodebitage comprises conchoidally fractured pieces, many of which are likely to be fragments of cores that disintegrated during reduction. The relative paucity of

*Table 11: Principal technological attributes of the selected flakes and blades.*

| Bulb of Percussion Type % | | | | | | | Distal Termination Type % | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pit 93233 | Pit 93206 | Pit 93205 | Pit 93208 | Pit 93201 | Combined | | Pit 93233 | Pit 93206 | Pit 93205 | Pit 93208 | Pit 93201 | Combined |
| Pronounced | 17.8 | 0.0 | 2.8 | 0.0 | 1.0 | 2.8 | Feathered | 58.4 | 57.9 | 71.7 | 59.4 | 52.8 | 55.5 |
| Diffuse / Hemispherical | 82.2 | 100.0 | 97.2 | 100.0 | 99.0 | 97.7 | Hinged/ Stepped | 39.6 | 36.9 | 20.3 | 37.8 | 42.8 | 40.2 |
| | | | | | | | Plunging | 2.0 | 5.2 | 8.0 | 2.8 | 4.3 | 4.3 |

complete cores raises the possibility that some which were prepared and perhaps even worked at the site were still serviceable and taken away for use elsewhere.

The cores themselves had often been simply worked and nearly all of those recovered from the site have been affected by thermal flawing, suggesting many were probably abandoned at an early stage. It would appear that the limitations of the raw materials were mitigated by the abundance of raw material that could easily be gathered

The complete cores varied in shape and ranged from 31mm to 85mm in maximum dimension although the presence of even larger flakes amongst the assemblages shows some at least had originally exceeded 100mm.

Only two cores were dedicated to producing blades, both of which came from pit [93205], one being single platformed and other with a keeled platform. This pit also produced the highest proportion of blades, indicating that blade production was an important aspect of the core reduction strategy.

The extent to which the flake cores had been reduced varies considerably; the most common type have been minimally reduced, having only a small number of flakes removed before discard, often due to the presence of thermal (frost fracture) flaws. The second most common type however is multi-platformed and most of these have been extensively reduced with new platforms being created when the old ones failed and also with flakes being removed rather opportunistically, from whatever direction seemed the most appropriate at the time. Single platformed cores only account for 17% of the total, which contrasts with the scar patterns recorded on the flakes that indicate two-thirds were struck from such cores. This may also indicate that some cores were removed from the site, particularly those that had not been fully reduced; alternatively, many of the flakes with uni-direction dorsal scars may have been struck from cores with single platforms that had subsequently had new platforms added as reduction progressed.

Four of the keeled cores, two from pit [93206], one from [93208] and the other from [93233], are dome-shaped and have centripetal removals somewhat reminiscent of Levallois-like cores, which are normally found in Middle and Later Neolithic assemblages, although none had the ‘Levallois’ flake removed. The remaining keeled examples are relatively thin and have been bifacially worked, being comparable to discoidal types which are typically found in Later Neolithic industries.

## RETOUCHED IMPLEMENTS

A total of 221 retouched implements, along with ten spalls struck from burins, were recovered from the pits, representing 5.5% of the macrodebitage (Table 14). The proportions present varied considerably between the pits, from 1.8% in pit [93208] to 7.3% in pit [93205], although the former

*Table 12: Principal dorsal surface attributes of the selected flakes and blades.*

**Dorsal Scar Pattern (%)**

| *Scar Alignment* | ***Pit 93201*** | ***Pit 93205*** | ***Pit 93206*** | ***Pit 93208*** | ***Pit 93233*** | ***Combined*** |
|---|---|---|---|---|---|---|
| Multi-Directional | 6.7 | 18.0 | 18.6 | | 13.3 | 8.8 |
| Opposed | 4.2 | 2.0 | | | 8.9 | 3.6 |
| Orthogonal | 16.1 | 8.0 | 18.7 | 21.0 | | 15.9 |
| Parallel | 0.8 | 28.0 | 10.2 | 2.7 | 8.9 | 4.6 |
| Uni-directional from distal end | 0.9 | 2.0 | | 2.7 | | 0.9 |
| Uni-direction from proximal end | 71.3 | 42.0 | 52.5 | 73.6 | 68.9 | 66.2 |

**Cortical Dorsal Surface (%)**

| *Proportion covered* | ***Pit 93201*** | ***Pit 93205*** | ***Pit 93206*** | ***Pit 93208*** | ***Pit 93233*** | ***Combined*** |
|---|---|---|---|---|---|---|
| None | 22.1 | 21.2 | 17.7 | 25.3 | 26.3 | 22.3 |
| 1–33% | 49.3 | 44.4 | 58.2 | 47.7 | 58.4 | 50.0 |
| 34–66% | 11.7 | 1.8 | 10.2 | 7.9 | 8.4 | 11.2 |
| 67–99% | 10.9 | 2.7 | 10.2 | 6.4 | 2.7 | 10.2 |
| 100% | 6.0 | 4.6 | 3.7 | 12.7 | 4.2 | 6.3 |

**Dorsal Flake Scars (%)**

| *No.* | ***Pit 93201*** | ***Pit 93205*** | ***Pit 93206*** | ***Pit 93208*** | ***Pit 93233*** | ***Combined*** |
|---|---|---|---|---|---|---|
| 0 | 2.6 | 3.7 | 1.7 | 2.5 | 2.0 | 2.4 |
| 1 | 41.9 | 18.5 | 11.5 | 22.5 | 22.0 | 35.3 |
| 2 | 40.3 | 48.2 | 45.9 | 57.5 | 36.0 | 43.7 |
| 3 | 11.9 | 14.8 | 27.8 | 7.5 | 36.0 | 16.5 |
| 4 | 2.5 | 7.4 | 9.8 | 10.0 | 4.0 | 1.1 |
| 5+ | 0.8 | 7.4 | 3.3 | | | 0.4 |

contained high proportions of burnt and fragmented pieces which may have masked the true totals. The varying quantity and range of tools is perhaps an indication of the different emphases being placed on particular tasks; each pit or even each separate depositional event may reflect changes in flintworking requirements during different periods of occupation.

The proportions and composition of the retouched implements are consistent with what may be expected from broad-based settlement type activities (e.g. Clark *et al*. 1960; Wainwright 1972; Healy 1988; Garrow *et al*. 2005). There is a wide range of implements represented, including two types, burins and mini-rods, which are rarely reported from Neolithic assemblages. Also of interest are the transverse arrowheads, all but one of which comprises petit tranchet types, the remainder being an oblique example from pit [93205]. Burins form the most common retouched type, accounting for over a third of all implements. More typically, simple edge retouched flakes and blades form the second largest component at just under a quarter of the retouched assemblage, with scrapers coming in third and contributing 13% of the total.

**Arrowheads (*Figures 4.19–4.28; see also Figures 4.11, 4.52, 4.54 abd 4.66*)**

A relatively high number of arrowheads were recovered and they were found in all pits. Eleven finished examples were identified and a further four appear to have been discarded before completion (Figure 4.11, 4.20 and 4.22). A few small flake fragments with abrupt retouch could represent broken arrowheads (Figure 4.21) and it is possible that at least one and maybe more had been re-used as burins (Figure 4.52 and 4.66; see below). All but one is the petit tranchet variety of the transverse arrowhead type (Clark 1934; Green 1980). These have been made by obliquely snapping the proximal and, in most cases,

*Table 13: Classification of all complete cores.*

| *Type* | *Single Platform* | *Opposed platform* | *Multi-platform* | *Keeled / Bifacially worked* | *Core made on a flake* | *Minimally reduced* | *Total* |
|---|---|---|---|---|---|---|---|
| ***Clark et al. 1960 type*** | ***A2*** | ***B1*** | ***C*** | ***D + E*** | **-** | **-** | |
| Pit 93201 | 4 | 2 | 4 | | | 4 | **14** |
| Pit 93205 | 1 | | 2 | 1 | | 2 | **6** |
| Pit 93206 | 8 | 1 | 6 | 4 | 2 | 8 | **29** |
| Pit 93208 | | 1 | 3 | 1 | 1 | 3 | **9** |
| Pit 93233 | | | 8 | 2 | | 9 | **19** |
| **Total** | **13** | **4** | **23** | **8** | **3** | **26** | **77** |

distal ends off of long, narrow and probably blade-like flakes that have sharp lateral margins,. The resultant break scars were subsequently abruptly retouched to form the characteristic triangular / trapezoidal implements with their cutting edge and base formed by remnants of the unretouched lateral edges (cf Anderson-Whymark 2011; Allen *et al.* 2013, 380–382).

Petit tranchets are the least common of the transverse arrowhead types although examples have been found across Britain with notable concentrations that include the Avebury / Windmill Hill area of Wessex (Green 1980, 103; table VII.6). However, whilst other transverse types seem well represented on Salisbury Plain, the petit tranchet variety only contributed 7 of the 153 transverse arrowheads recovered during the Stonehenge Environs Project (Riley 1990, tables 129, 130).

The remaining arrowhead is an oblique transverse type (Clark 1934; Green 1980). This was also made by obliquely snapping the proximal end of a narrow flake but, by using abrupt inverse retouch, an asymmetrical tang was formed whilst further retouch helped define a curved but sharp point at its distal end, leaving the longer lateral edge unretouched (Figure 4.19).

Transverse arrowheads are most commonly associated with Peterborough Ware and Grooved Ware pottery although due to the low numbers of petit tranchets recorded it unclear how these relate either to specific pottery types or to wider chronological developments during the Neolithic (Clark 1934, Green 1980). The very clear association here of the petit tranchet variety with the Fengate sub-style of Peterborough Ware is therefore of particular interest as it indicates not only that the transverse arrowhead type were being made before the end of the 4th millennium BC but also that these may be the earliest forms of transverse arrowheads, although it is also likely that this type continued to be produced, albeit in low numbers, throughout the remainder of the Neolithic. The only non-petit tranchet is an oblique transverse type. The presence of this is of interest as this type is often regarded as relatively late in the sequence and is most frequently associated with Grooved Ware sites; this appears be one of the earliest securely dated examples so far documented (Green 1984; Riley 1990). A similar example was found at the Middle Neolithic occupation site within the West Kennett Avenue, but within an assemblage dominated by petit tranchet and chisel transverse types (Smith 1965, fig.83, F258), whilst it becomes the dominant arrowhead type at Durrington Walls during the Later Neolithic (Chan 2009; 2010).

The presence of arrowheads would

*Table 14: Quantification of retouched types by fill.*

| Pit / Fill | Arrowhead | Burin | Burin spall | Edge retouched | Mini-rod / needle - like point | Notch | Piercer | Scraper | Serrated flake | Truncated flake | Core-tool - chopper | Core tool -Notched | Core-tool - pick-like | Total | Implements as a proportion of the macrodebitage (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *PIT 93201* | | | | | | | | | | | | | | | |
| 93202 (no.) | | 1 | | | | | | 1 | | | | | | 2 | |
| 93211 (no.) | | 1 | | | | | | 1 | 1 | | | | | 3 | |
| 93212 (no.) | | 3 | | 1 | | | | 1 | | | | | | 5 | |
| 93213 (no.) | 5 | 67 | 9 | 18 | 9 | 1 | 1 | 11 | 2 | 2 | | | | 126 | |
| **93201 (no.)** | **5** | **72** | **9** | **20** | **9** | **1** | **1** | **14** | **3** | **2** | | | | **136** | **7.2** |
| **93201 (%)** | **3.7** | **52.9** | **6.6** | **14.7** | **6.6** | **0.7** | **0.7** | **10.3** | **2.2** | **1.5** | | | | **100** | |
| *PIT 93205* | | | | | | | | | | | | | | | |
| 93244 (no.) | 1 | | 1 | | | | | | | | | | | 2 | |
| 93237 (no.) | 1 | | | 4 | | | | 2 | | | | | 2 | 9 | |
| 93242 (no.) | 1 | 1 | | 4 | | 1 | 1 | | | 3 | | | | 11 | |
| 93247 (no.) | | | | | | | | | | | | | | - | |
| **93205 (no.)** | **3** | **1** | **1** | **8** | | **1** | **1** | **2** | | **3** | | | **2** | **22** | **7.3** |
| **93205 (%)** | **13.6** | **4.5** | **4.5** | **36.4** | | **4.5** | **4.5** | **9.1** | | **13.6** | | | **9.1** | **100** | |
| *PIT 93206* | | | | | | | | | | | | | | | |
| 93220 (no.) | | 1 | | 1 | | | 1 | 2 | 1 | | | | | 6 | |
| 93222 (no.) | | | | 2 | | 1 | | 4 | 3 | | 1 | 1 | | 12 | |
| 93227 / 93224 (no.) | 1 | 1 | | 3 | 1 | | | | 2 | | | | | 8 | |
| 93223 (no.) | | | | | | | | | | | | | | - | |
| 93225 (no.) | 2 | | | 4 | | 1 | | | 2 | | | | | 9 | |
| 93231 (no.) | | | | | | | | | | | | | | - | |
| **93206 (no.)** | **3** | **2** | | **10** | **1** | **2** | **1** | **6** | **8** | | **1** | **1** | | **35** | **4.3** |
| **93206 (%)** | **8.6** | **5.7** | | **28.6** | **2.9** | **5.7** | **2.9** | **17.1** | **22.9** | | **2.9** | **2.9** | | **100** | |
| *PIT 93208* | | | | | | | | | | | | | | | |
| 93226 (no.) | | 1 | | 3 | | | | 1 | | | | | | 5 | |
| 93228 (no.) | | | | | | | | | | | | | | - | |
| 93229 (no.) | | | | 1 | | | | | | | | | | 1 | |
| 93230 (no.) | 1 | | | 1 | | | | | 1 | | | | | 3 | |
| **93208 (no.)** | **1** | **1** | | **5** | | | | **1** | **1** | | | | | **9** | **1.8** |
| **93208 (no.)** | **11.1** | **11.1** | | **55.6** | | | | **11.1** | **11.1** | | | | | **100** | |
| *PIT 93233* | | | | | | | | | | | | | | | |
| 93234 (no.) | \ | 2 | | | | | | 2 | | | | | | 4 | |
| 93236 (no.) | 2 | 1 | | 10 | 3 | | | 5 | | | | | | 21 | |
| 93235 (no.) | 1 | | | 2 | | 1 | | | | | | | | 4 | |
| 93238 (no.) | | | | | | | | | | | | | | - | |
| **93233 (no.)** | **3** | **3** | | **12** | **3** | **1** | | **7** | | | | | | **29** | **4** |
| **93233 (%)** | **10.3** | **10.3** | | **41.4** | **10.3** | **3.4** | | **24.1** | | | | | | **100** | |
| **All Pits (no.)** | **15** | **79** | **10** | **55** | **13** | **5** | **3** | **30** | **12** | **5** | **1** | **1** | **2** | **231** | **5.5** |
| **All Pits (%)** | **6.5** | **34.2** | **4.3** | **23.8** | **5.6** | **2.2** | **1.3** | **13.0** | **5.2** | **2.2** | **0.4** | **0.4** | **0.9** | **100** | |

traditionally be taken to indicate hunting activities, although their deposition may also hint at ritualised/symbolic uses, as has been suggested for the arrowheads from the later occupation site at Durrington Walls (Albarella & Serjeantson 2002).

**Burins (*Figures 4.29, 4.30, 4.31, 4.39, 4.45–4.48, 4.51–4.66*)**
Of particular interest are the burins which are most commonly present in Upper Palaeolithic or Mesolithic industries and occasionally in those of the Early Neolithic (e.g. Clark *et al.* 1960, 223–224). Altogether 79 were identified and, although burins were present in all five pits, 72 came from pit [93201].

They were made using flakes of a variety of shapes and sizes although most are quite sturdy and a few have remnant cortex that may have aided handling. Spalls were removed longitudinally and transversely (to the detachment axis of the flake), the majority of both types being removed either from retouched edges or snapped surfaces. Some have a combination of both longitudinal and transverse removals, forming dihedral or carinated varieties (Figures 4.39, 4.48, 4.52 and 4.56). The length of the burin spall scars varies from 5mm to 36mm and from 1mm to 9mm in width. This compares with the ten burin spalls identified, which average 35mm in length by 6mm wide.

As well as the 'true' burins, a number of flakes have small, short flakes removed which also result in a chisel-like edge, with wear indicating they may have been used in a similar manner to the burins (e.g. Figure 4.51). A few flakes also have long, thin removals taken across one of the main faces; although this resembles invasive retouch, wear around the edges suggests these too may have been used like small chisels on hard materials (e.g. Figure 4.63). Other 'odd' examples include two abruptly retouched flake fragments that resemble the petit tranchet arrowheads, but which have burin-like removals taken across the sharp, leading edge (e.g. Figures 4.52 and 4.66).

Burins are considered to have been used for graving, cutting and scraping but in some cases could also have been intended as 'bladelet cores' (Stafford 1977; Barton *et al.* 1996; Tomášková 2005) (see Figure 4.59 for example). This latter use is of interest as some of the detached spalls appear to have been used to make the 'mini-rods' found in the pits (e.g. Figures 4.32, 4.37, 4.38 and see below). However, as many have macroscopic traces of light wear, rubbing and striations around the burinated edge, it is likely that most were deliberately made and used in a similar fashion to those from earlier industries; as chisel-like tools applied to hard materials such as hard wood, bone or antler.

Burins are not normally regarded as being a Middle Neolithic tool type although recently a few have been recovered from similarly dated pits in the area, most notably a single pit at Old Sarum Airfield (Wessex Archaeology 2015). Even when identified they are often in insufficient quantities to be able to exclude residual incorporation (M Leivers, pers. comm.) but the numbers present at West Amesbury would rule this out, allowing burins to join the repertoire of Middle Neolithic tool types in this part of Wessex.

**Core tools**
Four core tools were recovered, two each from pits [93205] and [93206]. Of the two from pit [93206], one had been bifacially worked and is reminiscent of a chopping type tool and the other has a shallow notch cut into one side. Both of those from pit [93205] are relatively large, have spalling and abrasion to their ends and may have been used in a similar way to a pick, possibly even having been used to help excavate the

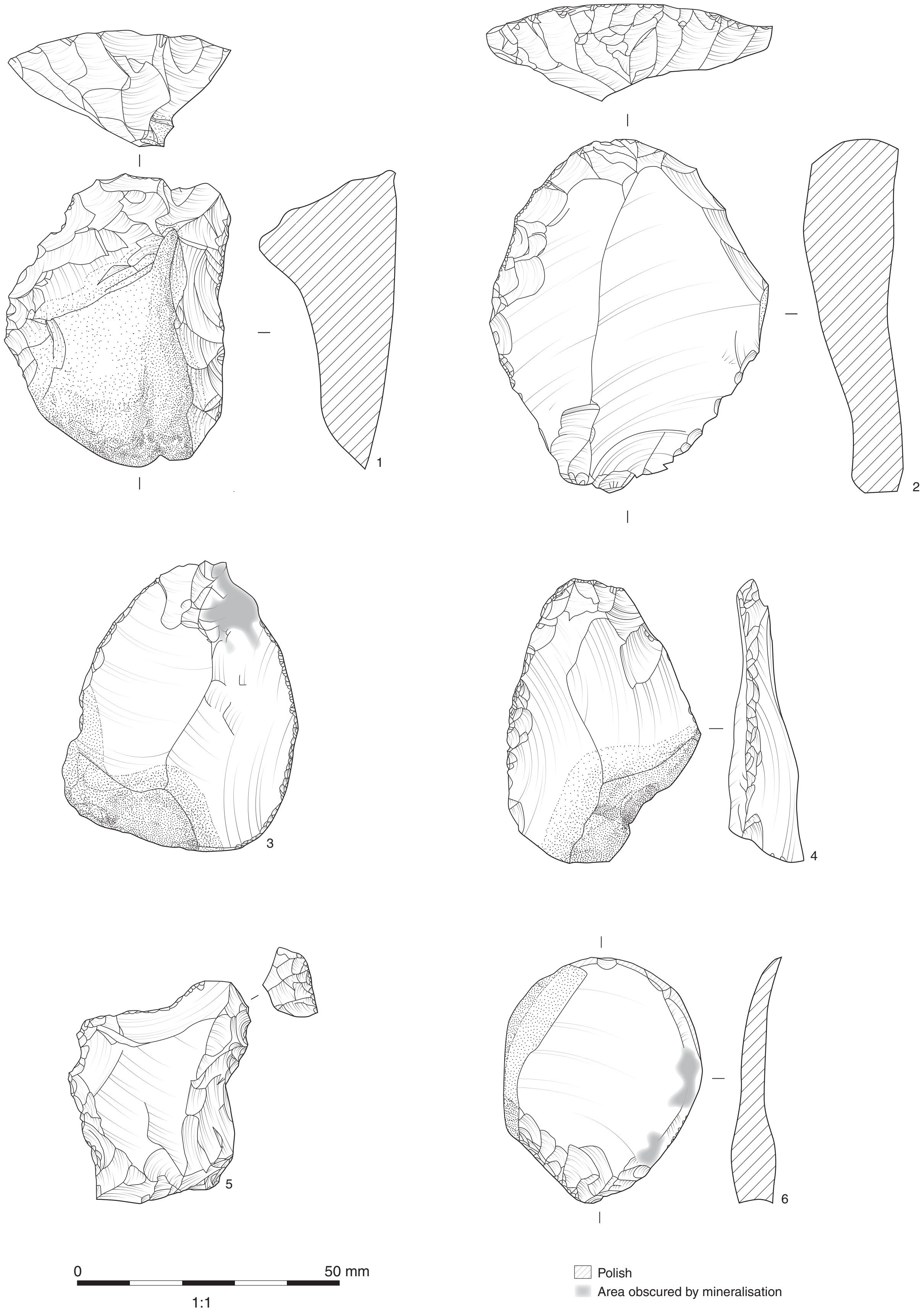


*Figure 4: Selected cores and retouched implements as mentioned in the text.*

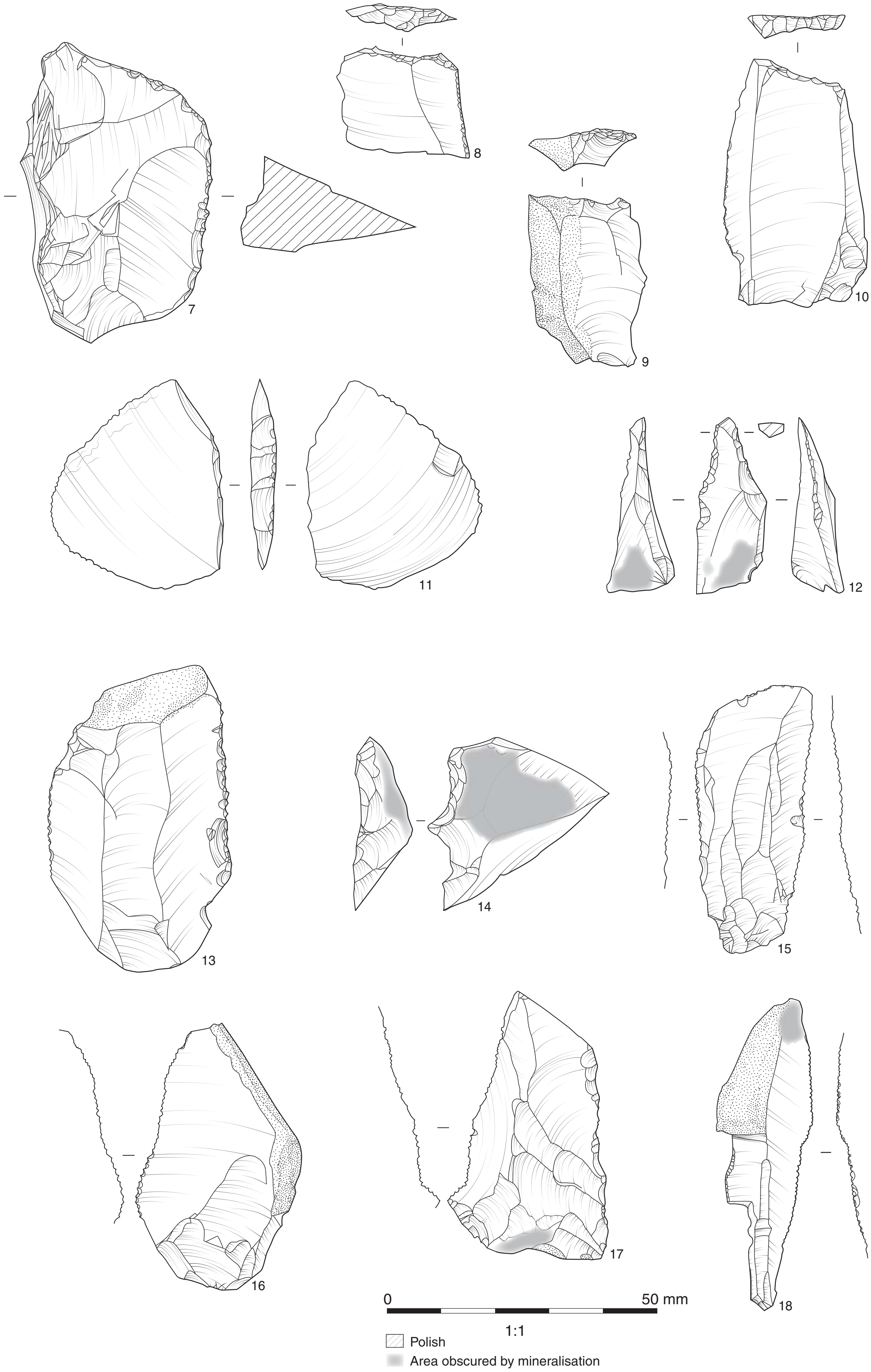


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

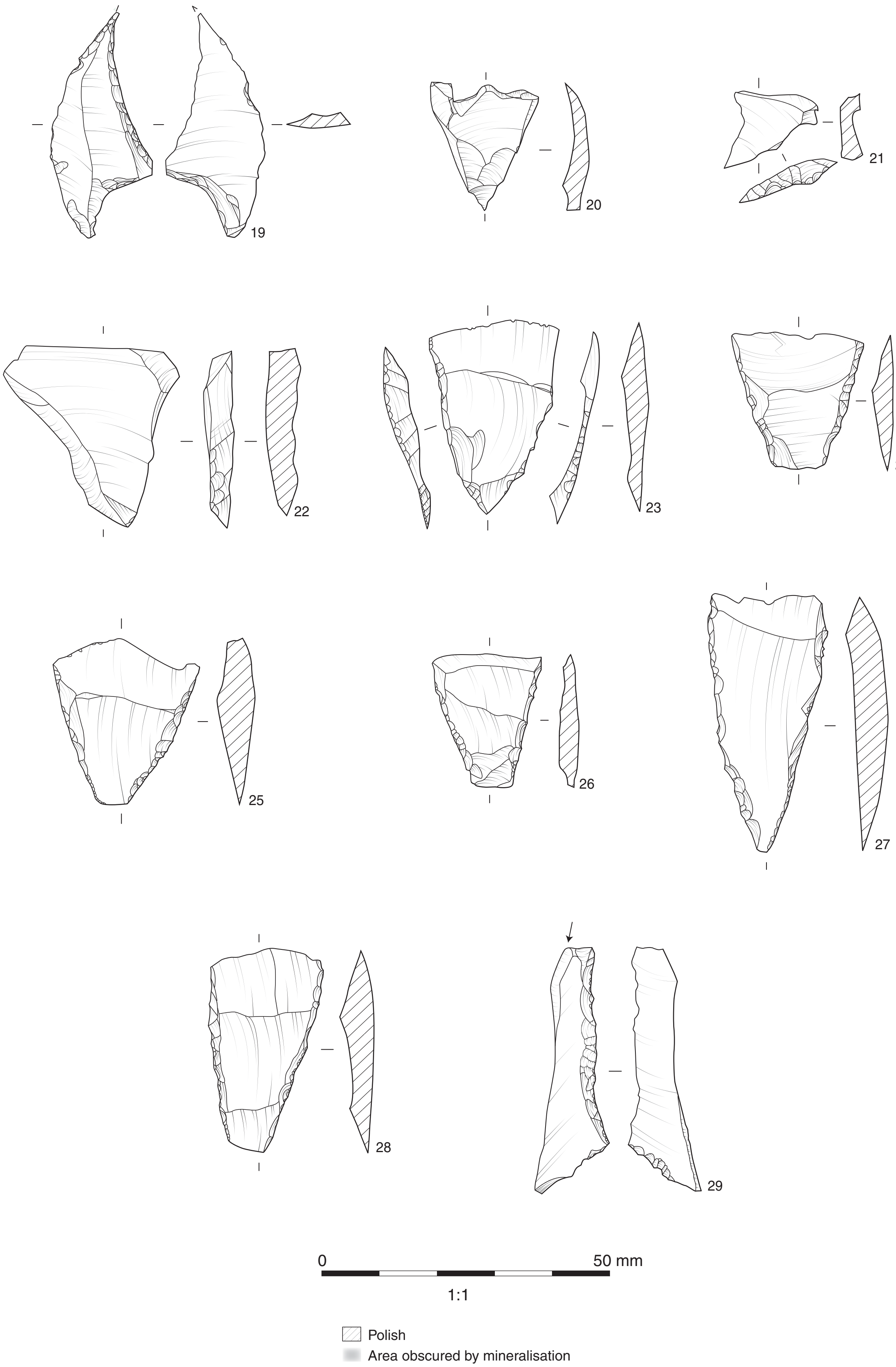


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

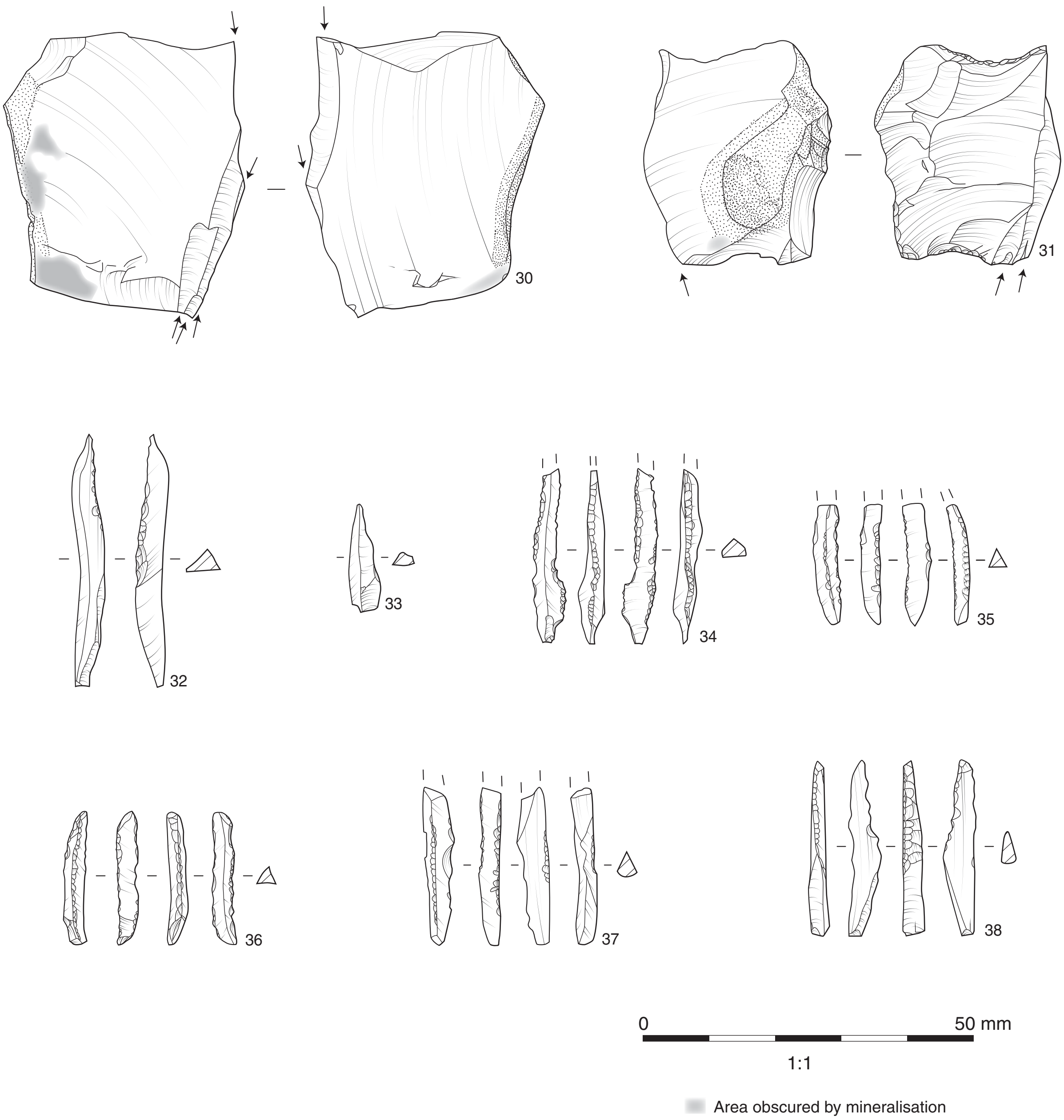


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

pit (cf Saville 1981) (Figure 4.49).

**Edge-trimmed flakes and blades**

The edge-retouched pieces comprise flakes and blades with light or moderate retouch along one or more margins but which largely retain their original morphology. They comprise the second most common implement type, providing nearly a quarter of the retouched inventory, and it is also likely that many other lightly edge-retouched pieces are present but have not been recognized due to recortication or post-use abrasion. It is also possible that many other pieces had been utilised without retouching and left no identifying marks. Of the 55 that were identified, 39 were made using flakes, six on blades or narrow flakes and ten are unclassifiable fragments. The extent of modification is variable although it nearly always focuses on the longer, lateral, margins. It ranges from being limited to short lengths of the edge to encompassing most of the perimeter of the flake, and from being straight, convex or concave to sinuous.

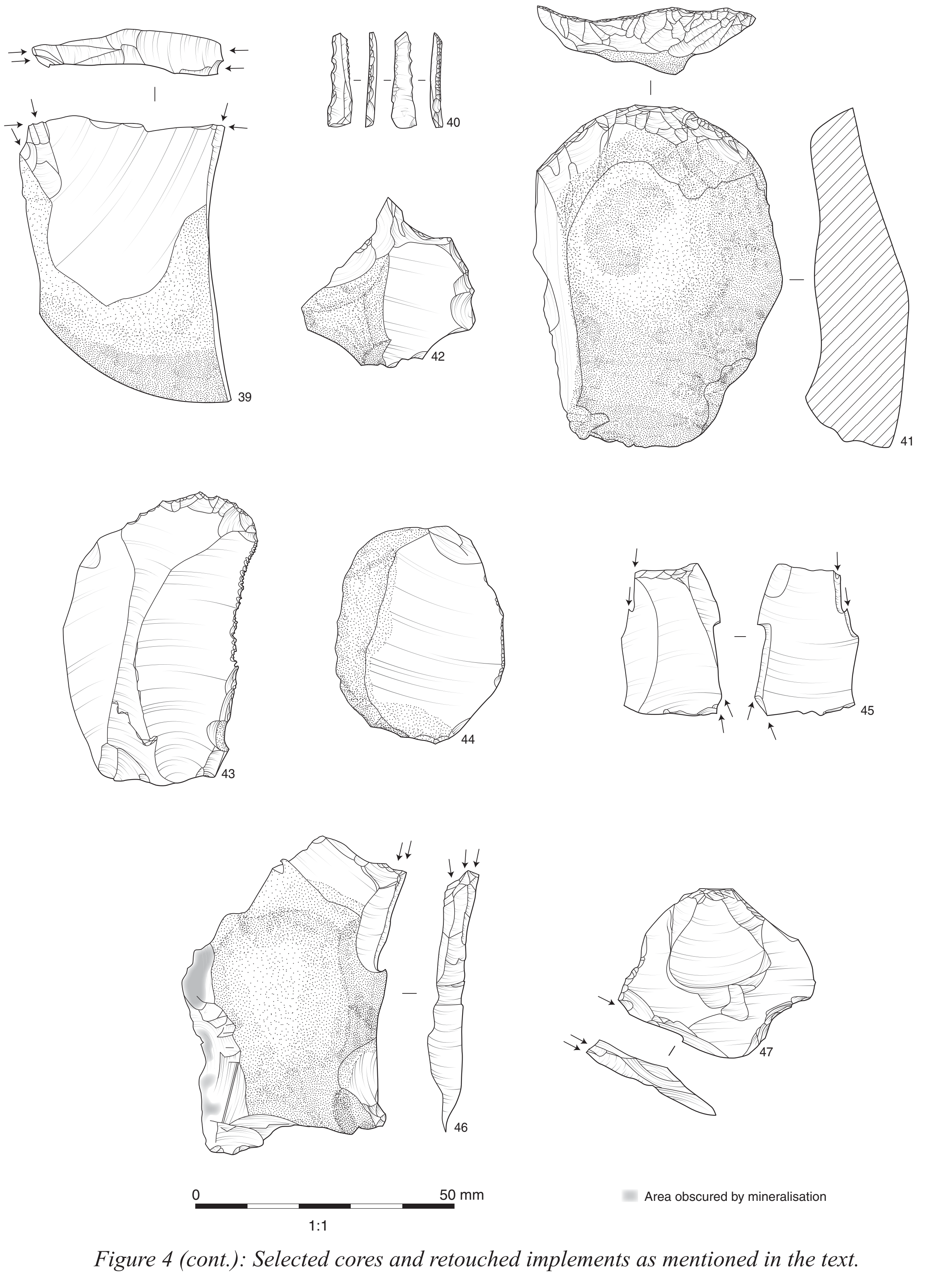


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

In most cases the modification clearly consists of very fine retouching which was usually quite shallow, helping to strengthen an already acute edge and a few of these may actually be worn down serrated implements. Other pieces have steeper retouch blunting the edge and it is likely that this was undertaken to allow them to be safely handled. With some, it is not clear whether the modification was deliberately executed or consists of micro-chipping formed through utilizing the flake as a cutting implement (e.g. Tringham *et al.* 1974). These simple edge-retouched pieces were probably used in a variety of ways and on many different materials but, despite the great variability in the size and shape of the blanks and in the nature of the modification, most are likely to have been used as cutting, sawing or light scraping tools.

**Mini-rods**

A number of very small steeply retouched implements were recovered from three of the pits. They have been termed here 'mini-rods' and are one of the most notable tool forms identified. They comprise small laterally and / or dorsally blunted blades that rarely exceed 5mm in width, forming sharp needle-like points. Altogether, 13 mini-rods were identified, the longest measures 39mm and they average 20mm in length, although most are probably broken to some extent.

These are very similar in form to rod microliths (Jacobi 1978 type 6) and many appear to have been manufactured on burin spalls (Figure 4.32, 4.37, 4.38). However, unlike microliths, the ones seen here have often been inversely worked or have retouch on their dorsal arêtes similar to the way the 'tails' on long-tailed transverse arrowheads are formed (Figures 4.35 – 4.38) (Bishop *et al.* 2011).

Whilst the examples here were initially identified as microliths, the sheer numbers present in some of the pits, the absence of any other Mesolithic flintwork and differences in the ways they were formed, makes it very likely that they represent a rare, or at least rarely identified, Middle Neolithic tool type. At present, they appear to be unique to the West Amesbury pits. Their recovery is due in large part to the sampling strategy that enabled such small pieces to be recovered, and it remains to be seen whether more will eventually turn up in other Middle Neolithic contexts.

One of the mini-rods has clearly been retouched to form a 'point' and it is possible that they were used is a comparable way to needles, creating small holes to help stitch or mend clothes and hides. It is also possible that they were used like drills and employed to make the holes in the bone and shale beads that were also recovered from the pits, which have similarly sized bores to the width of the mini-rods, although further research is needed to confirm this (Roberts *et al.* 2020).

**Notches**

Five notches were identified, three of which consist of flakes with simple notches cut into their lateral sides, and two which have two adjacent notches, possibly to form spur-like points (Figure 4.14; see below).

**Piercers**

Three piercers were recovered from three separate pits. They include two narrow flakes or flake fragments that have been edge retouched to accentuate converging distal ends to form sharp but sturdy points (Figure 4.12), and one example that has been retouched to form a broader, spur-like point on its lateral margin (Figure 4.42). This latter example is comparable to the 'double notches' (see above; Figure 4.14) and both may have performed similar functions.

**Scrapers**

Thirty scrapers were identified, these forming the third most common group of implements. The complete examples are variable in form and range from 72mm to 27mm in length and between 60mm and 15mm in breadth. They include end-, side- and end-and-side types and, whilst all have convex working edges, these vary from slightly curved to almost pointed or 'nosed' in form (Figure 4.5). Two of the short-end examples were made on what appears to be an otherwise unstruck thermally (frost)

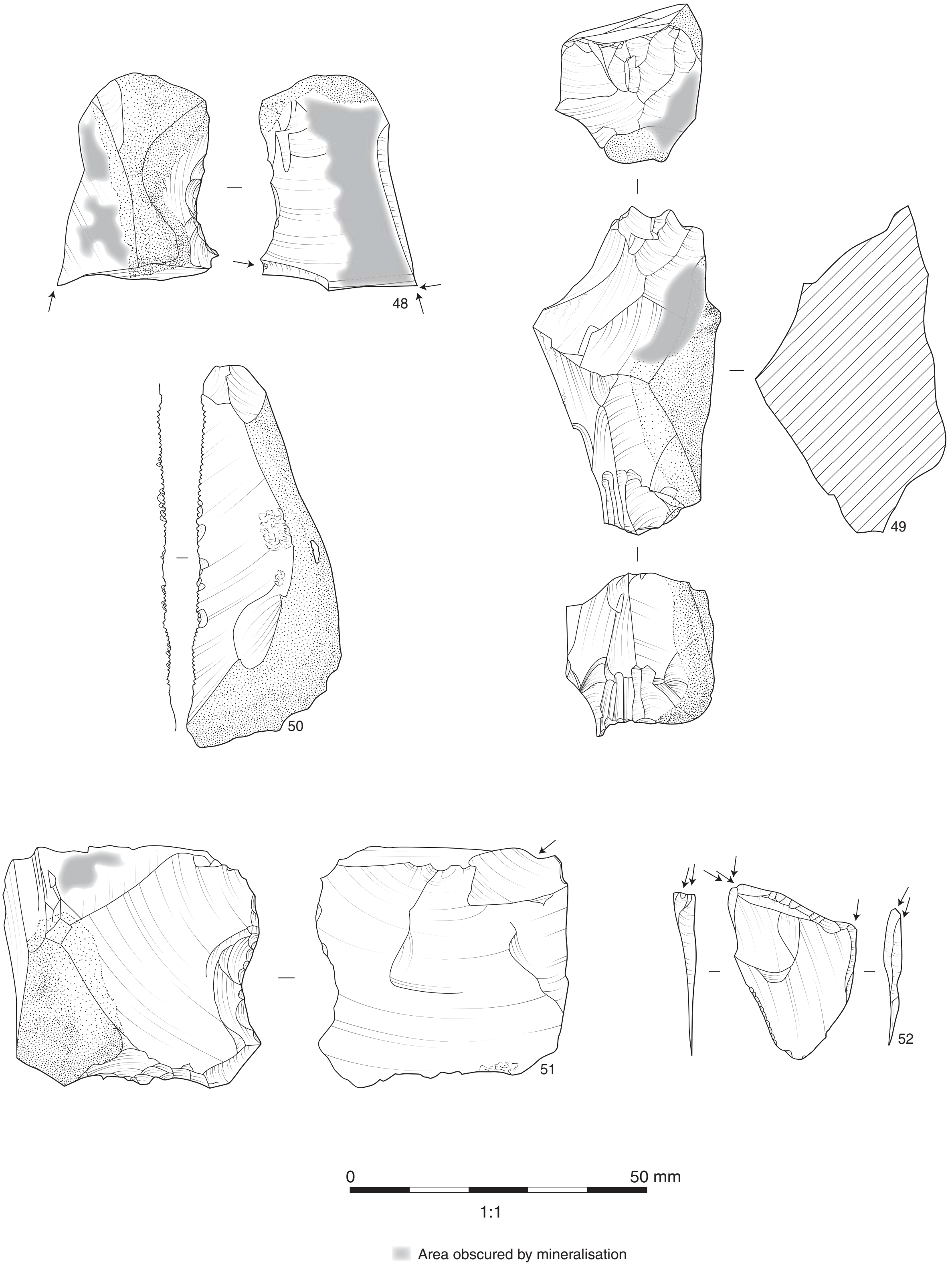


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

shattered 'potlid' spalls. The most unusual example is a flake that has a finely ground and bevelled distal end, the grinding being present on both the dorsal and ventral surfaces, demonstrating it had not simply been struck from a polished implement but deliberately made (Figure 4.6). It has been included here as a scraper as it would be ideally suited for fine rubbing, burnishing or working on delicate hides. In the Neolithic

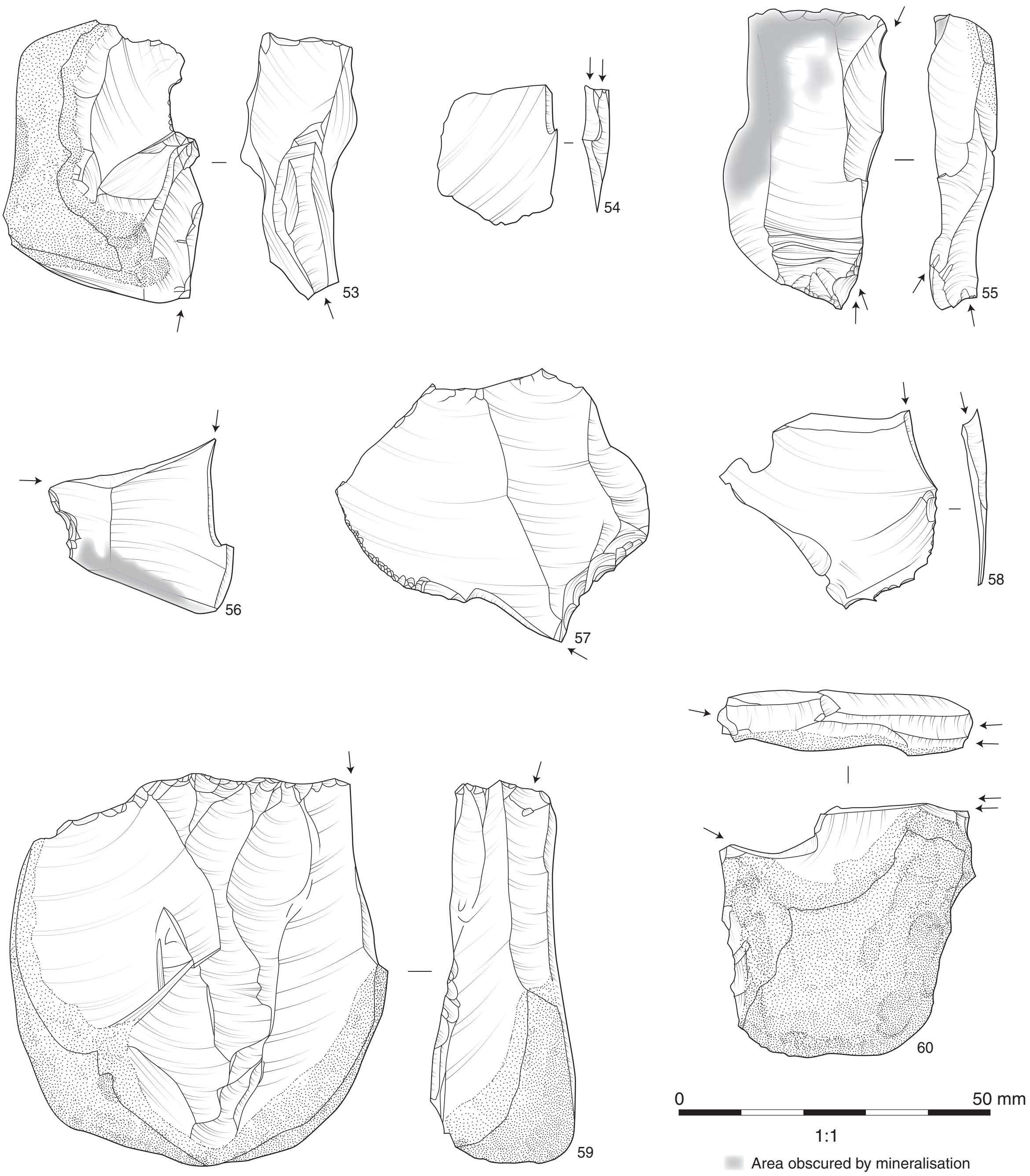


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

period the grinding and polishing of stone tools is largely confined to large bifacial implements, but during the Later Neolithic a small number of other implements, mainly knives but occasionally scrapers, were also ground and polished along their working edges (e.g. Smith 1965; Manby 1974).

Scrapers are ubiquitous in Holocene lithic assemblages and are traditionally regarded as implements used to process hide. It is entirely possible that some or many of those recorded here were used as such although ethnographic and experimental work has shown that, as with many tool types, they may have been used for a variety of different tasks, including cutting, graving, chopping and even as projectile points; often the same tool can be used for different purposes at different times (Odell 1981; Andrefsky 1998).

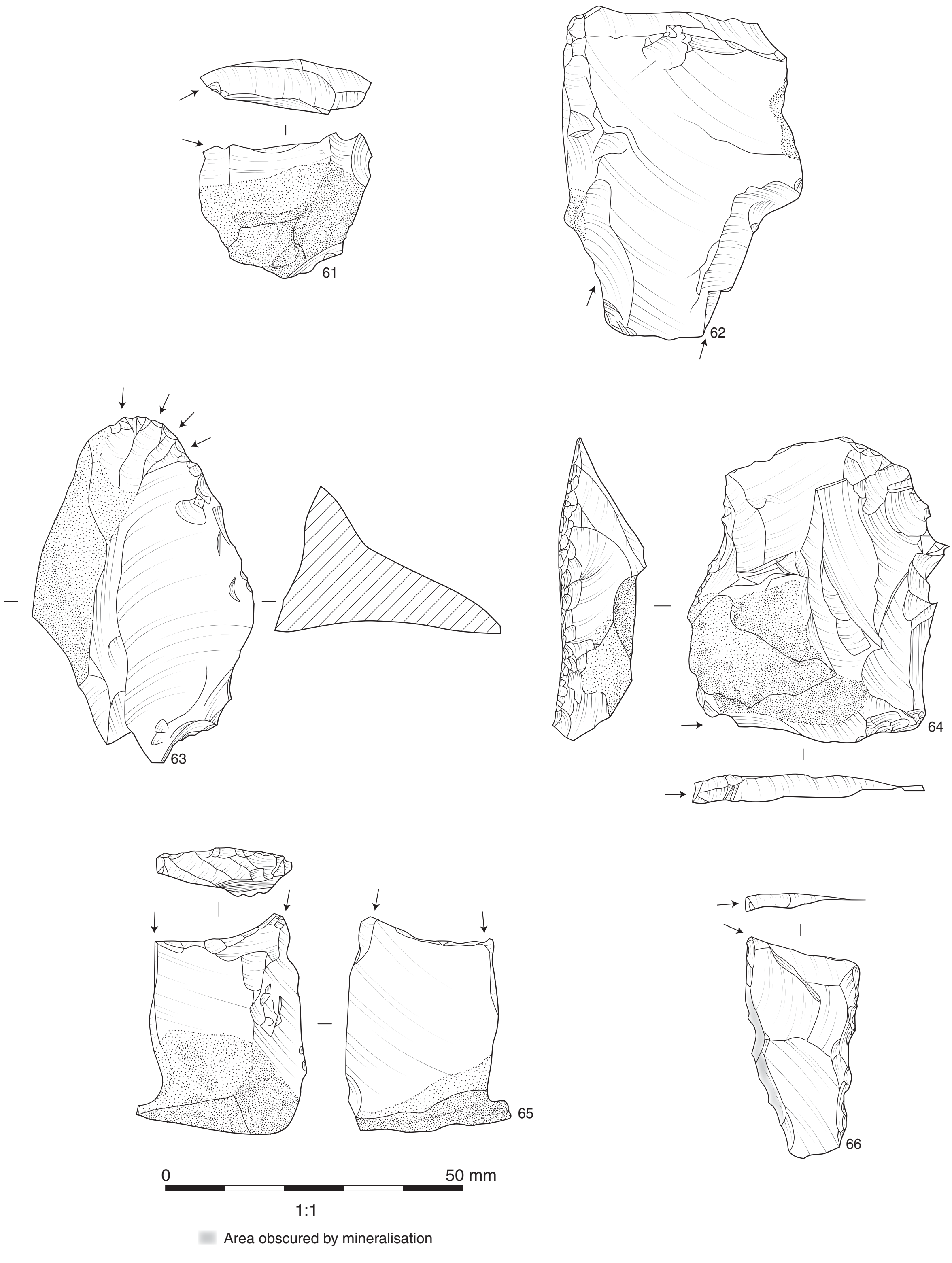


*Figure 4 (cont.): Selected cores and retouched implements as mentioned in the text.*

**Serrated flakes**

Twelve serrated implements were recovered from three of the five pits. All but one (Figure 4.15) is unilaterally serrated and they all have between c. 10 – 15 per cm of fine nicks along their edges. Half have been made on blades and remainder on relatively narrow flakes, although they vary in size, the complete examples ranging from 63mm to 28mm in length and 14mm to 43mm in breadth.

Traditionally, serrated implements have been associated with the harvesting of cereals and whilst an association with plant processing has been confirmed by micro-wear experiments (Grace 1992; Levi-Sala 1992; Donahue 2002, 84-85), this is more likely to involve the stripping the fibre from plants to make textiles and cordage (Juel Jensen 1994; Hurcombe 2007).

**Truncated flakes**

Five pieces, all from pits [93201] or [93205], have truncated and retouched ends. Four have their distal ends truncated with one being proximally truncated (Figure 4.11). This latter example may be an unfinished arrowhead and it is also the only one made on a relatively broad flake. The others are made on blades or narrow flakes which vary considerably in size, from 22mm to 60mm in length and 18mm to 31mm in breadth, and have transverse or slightly obliquely truncated ends formed by abrupt retouch (Figures 4.8 – 4.10). The examples here are similar to end scrapers and may have been used as such, although, and particularly with the obliquely truncated examples, could alternatively been used as blunt points for piercing or graving (cf Ellaby 2004, 20).

## TECHNOLOGICAL STRATEGIES

The strategies used to produce the flintwork can be seen as bound within a single tradition but one that was complex and multi-facetted. A diverse suite of technological strategies were used to obtain a wide range of blanks suitable for conversion into a variety of tool types, with these differences being apparent in the characteristics of the assemblages from the separate pits. In this respect, the size and complexity of the lithic assemblage concords with other developments in lithic technology that can be seen to flourish during the Later Neolithic but which here at least appear to have begun before the end of the fourth millennium BC (Edmonds 1998).

Much of the assemblage was flake-based and produced using fairly simple and expedient forms of core working, as is typical of Later Neolithic and Bronze Age industries. This mostly involved the parallel removal of short sequences of flakes until the face was exhausted. Following this, further platforms were often created, but rarely involving any significant modifications to the core. A further technique involved bifacial reduction which resulted in discoidal, keeled and centripetally worked cores, and a few bifacially worked examples do resemble ‘Levallois-like’ cores, although none had had their ‘main’ flake removed and it is uncertain whether this would have been regarded as a distinctive reduction technique by the knappers. Levallois-like cores have often been associated with producing blanks used for chisel type transverse arrowheads and the absence of these may explain the paucity of such cores. Neither is there any evidence for axehead manufacture, either from pre-forms or as distinctive debitage such as thinning flakes. More-systematic attempts at reduction, involving the production of high proportions of blades and blade-like flakes, core rejuvenation flakes and platform trimming chips generated from the careful maintenance of platforms, can also be detected in all of the pit assemblages but are particularly apparent in [92305]. Such techniques are more commonly seen within Mesolithic and Early Neolithic industries and, whilst the material here may show somewhat of a decline in the care taken towards reduction than seen in earlier periods, it does provide important evidence that such techniques continued to shortly before c. 3000 BC.

The retouched component is large and diverse with a wide range of tool forms represented. Of particular interest is the presence, in significant numbers, of both petit tranchet arrowheads and burins; the former being strongly associated with Middle and Later Neolithic industries whilst the latter are not normally encountered after the Early Neolithic and even then are rare. Again, and as with the mixture of both flake and blade-based reduction strategies, the assemblage appears to be firmly rooted in past practices, but also shows considerable innovation with the appearance of many features that were to become important aspects of flintworking during the third millennium BC. There are also some features of the assemblage that appear confined to this Middle Neolithic assemblage. The high proportion of burins is not easily matched from any period and the mini-rods are so far unique and not seen in assemblages of either earlier or later date, although the abrupt, tri-facial retouch is reminiscent of that used to form the 'tails' of the 'long-tailed oblique' arrowheads of the Later Neolithic (Bishop *et al.* 2011).

The analyses have also drawn attention to differences between the assemblages from the pits; although they all have supplied elements from the same range of technologies, there are differences in the extent to which these were manifested. Whilst the assemblages can be regarded as stemming from a single tradition, the differences between the individual pit assemblages demonstrates the need for caution when trying to extrapolate generalised models of flint working from single assemblages, even if they are substantial and contain elements from all stages in the reduction sequence.

## DISCUSSION OF THE LITHIC MATERIAL AND ITS DEPOSITION

The struck flint assemblage from the five Neolithic pits is substantial and represents a specific set of practices that involved the deliberate interment of part of the residues from flint working and use, along with many other artefact categories (Roberts *et al.* 2020). The assemblage represents all of the knapping sequence and it is likely that the abundant, if rather poor knapping-quality, raw materials were obtained close-by and prepared at the site, along with the reduction of cores and the manufacture of flakes and blades, some of which were turned in to tools that were used and subsequently discarded. It includes high proportions and a wide range of retouched implements that might be expected from relatively broad-based settlement type activities. Whilst broadly comparable, there are some differences apparent in the reduction stage composition and technological attributes of the material from the separate pits and between the fills of individual pits, which includes the relative range and proportions of retouched implements.

The wear exhibited by the implements and variations in the assemblages' conditions, consistent with limited weathering, some trampling and occasional burning, indicates that the assemblages had experienced complex pre-depositional histories. They were not knapped directly into the pits, but must instead have been selected from a 'pre-pit' context (Garrow 2006). The compositions of the assemblages from the different pits and their fills are idiosyncratic and it is less certain whether they were gathered from a single but internally variable accumulation of knapping debris or represent relatively discrete episodes of flintworking that was deposited into separate pits.

Substantial lithic assemblages associated with Peterborough Ware from well-contexted and dated pits are relatively rare, certainly if compared to those associated with earlier and later Neolithic pottery types (e.g. Ard and Darvill 2015). However, recent work has started to reveal comparable sites in this area, placing the pits at West Amesbury as part of a wider tradition of pit digging seen throughout Wiltshire (Roberts and Marshall 2020). Perhaps the closest parallel is a pit recorded at Old Sarum Airfield (Wessex Archaeology 2015). This contained a complex series of material deposits including Peterborough Ware and a large lithic assemblage that was dominated by knapping waste but with a large and varied tool inventory that included burins. Another site that has produced comparable flint-work to West Amesbury is the scatter at Wilsford Down; whilst clearly multi-period it also included eleven burins (Harding 1990). Further away, the large assemblage recovered from the West Kennett Avenue Peterborough Ware occupation site provides good comparisons (Smith 1965, 236 – 243). Whilst many similarities are evident, differences in the West Kennett Avenue assemblage include the presence of axeheads and heavy duty implements, an apparent paucity of blade and narrow flake manufacture, the use of Levallois-like cores and, possibly associated with the Levallois-like cores, a much greater range of transverse arrowhead types, which are dominated by chisel forms although include some petit tranchet and one oblique type. A single burin but no micro-rods were recovered at West Kennett Avenue. The reasons for these differences are not readily apparent; whilst not closely dated, the West Kennett Avenue site appears to be broadly contemporary with erection of the Avenue's stones and may be slightly later in date than the West Amesbury pits, alternatively, there may be cultural or functional differences in flintworking needs and practices between the Avebury and the Stonehenge area communities. It is also worth noting that the material from West Kennett Avenue was mostly recovered as a surface 'midden' of a kind that might have represented the 'pre-pit' context for the material deposited within the pits (Smith 1965, 210 – 216).

The deposition of flintwork within the pits is comparable to that seen at other pit sites in Wessex and beyond, which are usually thought to represent the surviving traces of the otherwise ephemeral settlement sites of transient Neolithic communities (e.g. Manby 1974; Brown 1991; Garrow 2006; Harding 2006; Lamdin-Whymark 2008; Anderson-Whymark & Thomas 2011). The temporality of settlement that the pits may represent is more difficult to elucidate. Variations in the composition of the individual assemblages suggest subtle differences in the activities represented, which may have implications for the intensity or length of occupation. Unlike at the Early Neolithic site at Kilverstone, Norfolk, where discrete clusters of pits appear to be associated with separate phases of occupation (Garrow *et al.* 2005), the individual lithic assemblages here are sufficiently different from each other to suggest that each might have been filled at different times. This could be seasonal; the radiocarbon determinations suggest a single continuous phase of activity but that could easily accommodate repeated visitation over a period of a few years, perhaps by pastoral groups as has been suggested for the other artefact groups (Roberts *et al.* 2020). Of particular interest is the possibility, indicated by geo-physical survey, that the five pits described here are just part of a much larger tradition of pit digging in this area, which may have witnessed the periodic aggregation of relatively large numbers of people. Whatever temporal rhythms were in operation, the lithic assemblages chime with ideas, such as those of Whittle (1997) and Pollard (1999), that settlement patterns in the Neolithic were probably very varied in terms of mobility, duration, scale and character.

Previous work has generally regarded these artefact-rich features as either representing rubbish pits or as having a primary use, such as for storage, and then being subsequently re-used for rubbish disposal (e.g. Clark *et al.* 1960). The pits here do appear to have been used as receptacles for the debris generated during occupation and the flintwork can undoubtedly be regarded as 'rubbish', in that it principally consisting of knapping waste, burnt and broken pieces and used tools. However, some aspects of the material and its deposition suggest the pits and their contents may represent more complex concerns than simple attempts at tidying up the area. Whilst the symbolic potential of ‘prestigious’ objects such as polished axeheads, arrowheads or finely crafted flint knives are easy to comprehend, even mundane items and the debris from routine activities including flintworking can still hold complex and socially important meanings. This can often be seen in the contexts in which the material was produced, used, re-formed and finally deposited (e.g. Richards & Thomas 1984; Brown 1991; Needham 1993; Hill 1995; Needham & Spence 1997; Brück 1999a; 1999b; Thomas 1999; Chapman 2000; Bradley 2003). Although the precise meanings behind the digging and infilling of pits are unlikely to be recovered, practices that involve placing cultural material back into the ground are likely to revolve around the people and events associated with the period of occupation during which the pits’ contents were generated. It also seems at least plausible that the contents were only part of the story that was being conveyed. Many choices would have gone into depositing materials into a pit; as Thomas suggests, the materials employed as pit deposits and the details of their arrangement and interment may have acted as a material language, albeit one that was highly localized in its meaning (1999, 69). The lithic assemblages here may simply represent the residues of routine everyday living, fragmented and mixed together, and can be seen as generalized symbols of domestic life (Thomas 2010; Rowley Conwy & Owen 2011). In the context of mobile communities periodically moving through the landscape, it is certainly plausible that pit digging and their infilling with cultural material was a means of creating identities, both of particular places and of the people who stayed there; in a way, to mark the place and convey stories about the people and the things that happened whilst they were there.

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# THE LOWER PALAEOLITHIC ARTEFACTS OF THE BYTHAM RIVER SYSTEM OF CENTRAL ENGLAND

Terry Hardaker[1]* and James Rose[2,3]

## ABSTRACT
*The deposits of the Bytham River, that flowed across central England until the Anglian glaciation (Marine Isotope Stage 12) overrode and destroyed it, have been exposed in many places, mostly in the context of gravel extraction, from Waverley Wood near Coventry in the west to Pakefield near Lowestoft on the East Anglian coast. Many of these sites have yielded artefacts. The present paper concentrates on large, detailed samples from Waverley Wood, Feltwell and Warren Hill collected by the late R.J. MacRae and the late Terry Hardaker. These samples draw attention to the fact that during Marine Isotope Stage 13 or earlier, an extensive Lower Palaeolithic population was spread across middle England and those inhabitants made use of whatever raw materials were available on site. The sites reported reflect localities where access to gravel extraction plants was permitted and a long-term watching brief could be maintained. The finds comprise mainly quartzite artefacts from Waverley Wood in the west, quartzite with some flint at Feltwell, and flint at Warren Hill in the east, and provide a perspective on how raw materials influenced artefact design within the region, prior to c. 450,000 yrs BP.*

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**Keywords:** Lower Palaeolithic, Bytham River, midland and eastern England, bifaces, handaxes, flakes, choppers.

## INTRODUCTION

The Bytham River was identified by Rose (1987, 1994 & 2009) following on from preliminary work by Hey (1976) and Clarke & Auton (1982). The evidence takes the form of sands and gravels, sands and silts located in a buried valley that extends from the area of Stratford upon Avon near Coventry eastwards to Pakefield, near Lowestoft, on the present North Sea coast and indeed beyond into the present region of the North Sea (Figure 1). The deposits that provide the evidence for this river system are distinctive in that they are composed, almost entirely, of material derived solely from the palaeo-catchment and free of materials transported into the region by glaciation. Hence, their pre-glacial age attribution and their restricted range of source lithologies suitable for artefact production are relevant for our understanding of early Palaeolithic artefact production. 'Pre-glacial' in this context is understood as Marine Isotope Stage (MIS) 13 and earlier, as the Anglian glaciation (MIS 12) is interpreted as that which overrode the area and terminated the river system, and destroyed the catchment by erosion and burial beneath glacial deposits (Perrin et al. 1979; Rose 2009).

The palaeo-valley system comprises three parts: a western part that ends east of Castle Bytham; a central part that no longer exists because the landscape has since been eroded

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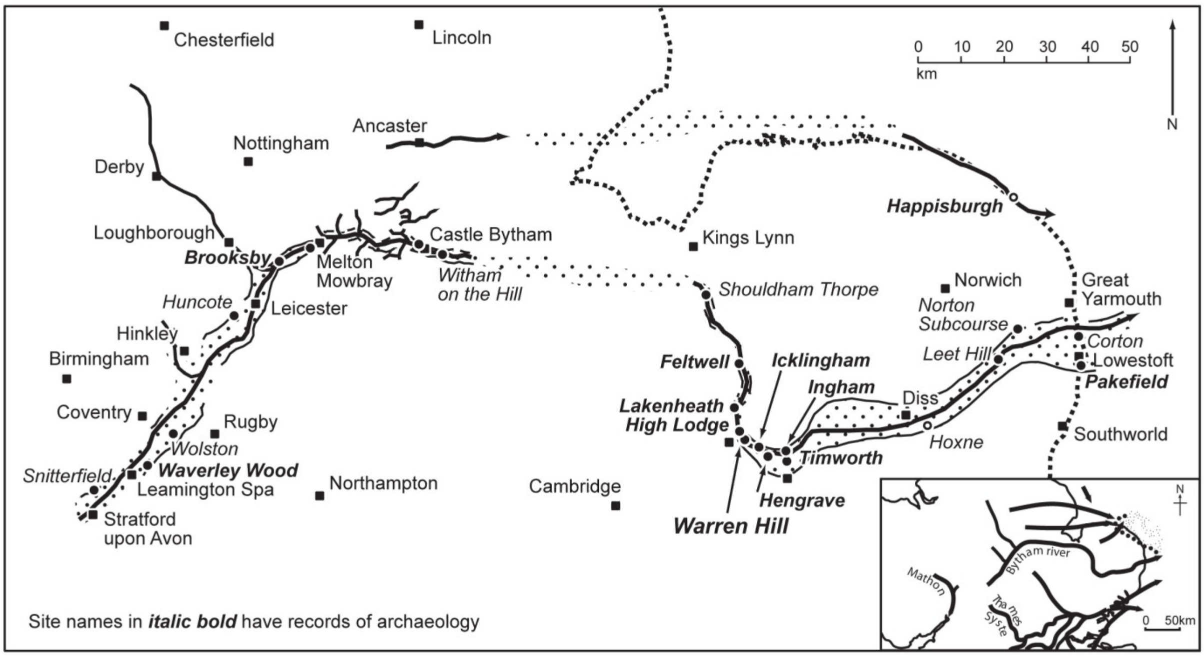


*Figure 1. The location and course of the Bytham River, showing the extent of evidence available and sites with archaeological remains. The inset figure shows the wider context of the river system (taken from Rose (2009), with permission).*

by glaciation, and now forms the Fen Basin; and an eastern part beginning at Shouldham Thorpe and extending to the North Sea coastline (Figure 1). Alternative views have been published concerning the origin of the deposits attributed, in this paper, to the Bytham River system and readers are referred to these, along with independent critiques of such interpretations (Gibbard et al. 2009, 2012 & 2013; Bridgland et al. 2014; West et al. 2014; Westaway et al. 2015).

The sediments of the Bytham River system reflect the fluvial processes operating along the catchment. The sands and gravels are the products of extensive braid plains or, at significant bends in the valley, massive point bars; the sands are the products of deposition by a lower energy river system in the form of sub-aquatic dunes or ripples; and the silts, at sites like High Lodge, are overbank deposits of a meandering river. The sedimentary processes in operation in the Bytham River are important for this study, as active braidplains and subaquatic dunes and ripples are unsuitable sites for human occupance, and artefacts found in these sands and gravels and sands are likely to have been derived from erosion of an existing braidplain or valley side. Alternatively, the overbank deposits which comprise the material of a typical vegetated floodplain have a high probability of being a host locality for in situ artefact production or usage. A case can be made that braidplains are suitable for occupation when they become vegetated, although such deposits are subject to reworking and the derivation model referred to above is still likely to occur. Should derivation not occur and an in situ artefact assemblage survive from a braidplain location, then the character of the evidence will depend upon whether location was on a palaeo-bar or at a palaeo-pool. When located on a palaeo-bar vegetation and soil development will have developed and the context for the archaeology will be characterised by sand and gravel altered by soil material. When located at the margins of a pool or material that has been washed into a pool, the archaeology will be hosted in finer-grained sediment and organic material and the potential will exist for the

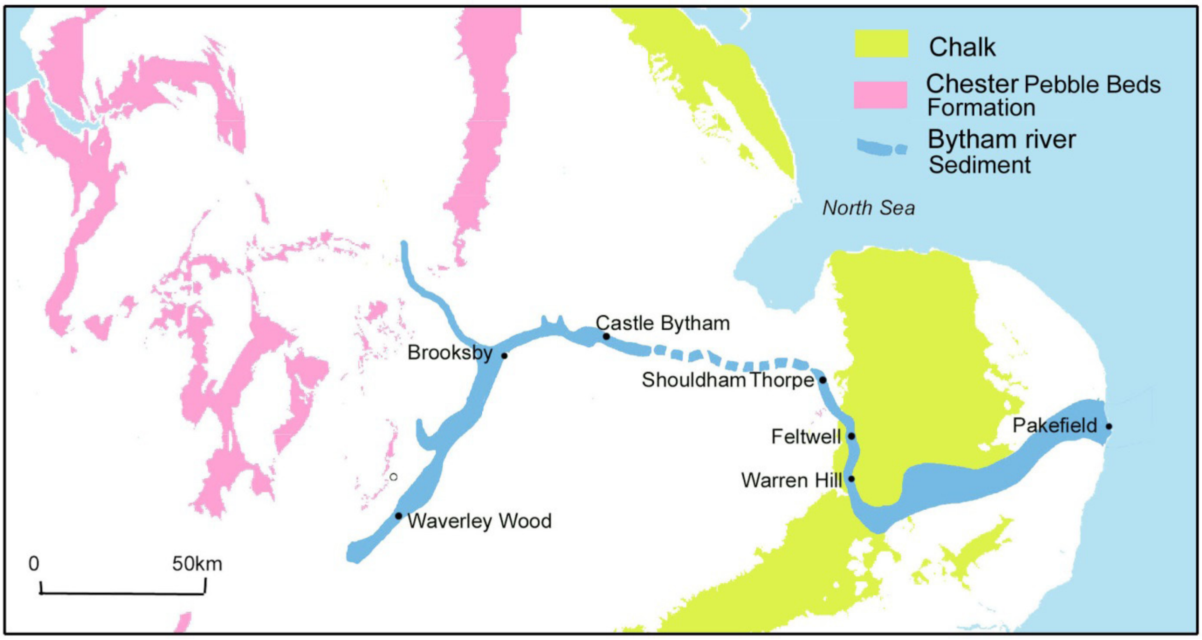


*Figure 2. The present-day distribution of Chester Pebble Beds (Bunter) and Chalk lithologies. These rocks are the sources, respectively, of the quartzite and flint raw material for artefacts found at sites along the track of the Bytham River.*

identification of other human activity, such as in the form of trampling.

Hitherto the artefacts associated with the Bytham complex have not been considered as a whole. Sites with recorded archaeology are shown in Figure 1, and individual studies of the artefacts have been published for a number of these sites. These consist of (from west to east) Waverley Wood (Shotton & Wymer 1989; Shotton et al. 1993; Lang & Keen 2005), Brooksby (Stephens et al. 2008), Feltwell (MacRae & Moloney 1988; MacRae 1999), Lakenheath (Ashton & Lewis 2005), High Lodge (Ashton et al. 1992), Warren Hill (Wymer 1985; Wymer et al. 1991; Hardaker 2012 & 2017), Icklingham (Wymer 1985; Bridgland et al. 1995), Hengrave (Rose & Wymer 1994), Ingham (Wymer 1985), Timworth (Wymer 1985) and Pakefield (Parfitt et al. 2005). Other sites have been observed by the authors but are not yet recorded in reviewed literature.

This paper chiefly compares three assemblages where the late Terry Hardaker (TH) and the late R.J. MacRae have collected items: Waverley Wood, Feltwell and Warren Hill (Tables 1 & 2). Artefacts from these sites provide a good cross-section of the pre-MIS 12 Lower Palaeolithic artefact style in central England, varying as they do according to the available raw material. Their interest lies in the effect raw material had on the typology of the tools produced.

**Source materials and artefact type**

In the region of the Bytham River catchment two contrasting source materials were preferred for the manufacture of stone tools by the Palaeolithic inhabitants of MIS 13 or earlier. In the west, the Bunter quartzites from the Triassic beds (Chester Pebble Beds Formation of the Sherwood Sandstone Group) were the main source. In the east, flint from the Cretaceous Chalk was used (Figure 2). Additionally, the Bytham River carried quartzites downstream of their outcrop so that occasional quartzite artefacts are also found as far east as the Warren Hill site and beyond.

Table 1 compares the numbers and

*Table 1. Summary of artefacts from Waverley Wood, Feltwell and Warren Hill.*
*Red = >5%; bold red >10%.*

| Material | Type | Waverley Wood | | Feltwell | | Warren Hill | |
|---|---|---|---|---|---|---|---|
| | | no. | % | no. | % | no. | % |
| **HANDAXES** | | | | | | | |
| Quartzite | Pointed handaxe | 8 | 3.8 | 2 | <1.0 | 0 | 0 |
| Flint | Pointed handaxe | 1 | <1.0 | 29 | **12.7** | 0 | 0 |
| Quartzite | Pointed biface | 2 | <1.0 | 0 | 0 | 2 | <1.0 |
| Flint | Limande handaxe | 0 | 0 | 2 | <1.0 | 0 | 0 |
| Flint | Ovate handaxe | 0 | 0 | 24 | **10.6** | 7 | 1.6 |
| Flint | Cleaver | 0 | 0 | 2 | <1.0 | 0 | 0 |
| Andesite | Handaxe | 5 | <1.0 | 0 | 0 | 0 | 0 |
| Flint | Handaxe tip | 1 | <1.0 | 0 | 0 | 0 | 0 |
| Flint | Handaxe butt | 0 | 0 | 2 | <1.0 | 0 | 0 |
| Flint | Handaxe roughout | 0 | 0 | 5 | 2.2 | 3 | <1.0 |
| ***TOTAL Handaxes (n = 95)*** | | ***17*** | ***8.2*** | ***66*** | ***29.1*** | ***12*** | ***2.8*** |
| **CORE/CORE TOOLS** | | | | | | | |
| Quartzite | Core | 86 | **40.9** | 5 | 2.8 | 0 | 0 |
| Flint | Core | 0 | 0 | 15 | 8.3 | 18 | 4.2 |
| Quartzite | Chopper core | 30 | **14.3** | 1 | <1.0 | 0 | 0 |
| Quartzite | Split Cobble core | 44 | **21** | 2 | 1.1 | 0 | 0 |
| Quartzite | Core/knife | 3 | 1.4 | 0 | 0 | 0 | 0 |
| Quartzite | Core or point | 1 | <1.0 | 0 | 0 | 0 | 0 |
| Quartzite | Blade core | 1 | <1.0 | 0 | 0 | 0 | 0 |
| Quartzite | Chopper | 5 | <1.0 | 2 | 1.1 | 0 | 0 |
| Quartzite | Trihedral point | 7 | 3.4 | 0 | 0 | 0 | 0 |
| ***TOTAL Core/core tools (n = 220)*** | | ***177*** | ***85.1*** | ***25*** | ***11*** | ***18*** | ***4.2*** |
| **FLAKE-BASED** | | | | | | | |
| Quartzite | Retouched flakes | 2 | <1.0 | 1 | <1.0 | 0 | 0 |
| Flint | Retouched flakes | 0 | 0 | 3 | 1.7 | 27 | 6.3 |
| Quartzite | Flake | 7 | <1.0 | 10 | 5.5 | 1 | <1.0 |
| Flint | Flake | 0 | 0 | 119 | **66.1** | 342 | **79.7** |
| Quartzite | Worked point | 1 | <1.0 | 0 | 0 | 0 | 0 |
| Quartzite | Scraper | 2 | <1.0 | 0 | 0 | 0 | 0 |
| Flint | Scraper | 0 | 0 | 2 | 1.1 | 14 | 3.3 |
| Flint | Notched piece | 0 | 0 | 0 | 0 | 13 | 3 |
| ***TOTAL Flake-based (n = 544)*** | | ***12*** | ***5.8*** | ***135*** | ***59.5*** | ***397*** | ***92.5*** |
| **OTHER** | | | | | | | |
| Flint | Hammerstone | 0 | 0 | 0 | 0 | 2 | <1.0 |
| Quartzite | Debitage | 1 | <1.0 | 0 | 0 | 0 | 0 |
| Flint | Proto-Levallois Core* | 0 | 0 | 1 | <1.0 | 0 | 0 |
| ***TOTAL Other (n = 4)*** | | ***1*** | ***<1.0*** | ***1*** | ***<1.0*** | ***2*** | ***<1.0*** |
| ***GRAND TOTALS*** | | ***207*** | ***100*** | ***227*** | ***100*** | ***429*** | ***100*** |

* A possible proto-Levallois core

percentages of artefacts from the three sites in terms of their lithology and whether they are handaxes, cores and core tools, flakes and 'others'. The difference between pointed handaxes and pointed bifaces is that the biface tool is less worked than the handaxe. The flake category includes flakes, retouched flakes, worked points, scrapers and notched pieces, whilst the 'others' consist of hammerstones, a possible proto-Levallois core and debitage. Table 2 shows the percentages of raw materials from each site. It is clear that all sites have yielded large samples and that there are three quite different populations. These findings, which provide a substantial basis for further analysis, are discussed below.

## WAVERLY WOOD

The archaeology from Waverley Wood, prior to 2006 was published by Keen et al. (2006) when 79 artefacts had been found. Further regular searches by TH were carried out until the pit closed in 2012, yielding a current total of 207 artefacts (Table 1). The geology of the site is described in Shotton et al. (1993) and Keen et al. (2006). The Quaternary succession overlies Mercia Mudstone bedrock into which the Bytham River valley has been eroded. The Bytham River Baginton Formation deposits, located in the palaeo-valley consist, from the base upwards, of Waverley Wood Member red brown muddy sands forming a bar structure dissected by channels with organic remains and archaeology. This is overlain or cut-out by the Thurmaston Member gravel and the Brandon Member, well sorted sands. The succession is completed by the reddish brown Thrussington Member Till of the Wolston Formation deposited by a glacier moving from the northwest during the Anglian Stage (MIS 12).

The site first received attention when Shotton and Wymer (1989; see also Shotton et al. 1993) reported the earliest artefact finds. This sample was taken from a channel at the base of the river-transported sediments, which also included climate-proxy evidence showing that the landscape at the time of deposition had developed in a temperate climate. However, although there is no evidence that any of the artefacts are derived from the location where they were manufactured or used, the sensitivity to erosion of the climate-proxy evidence, the fact that there exists a cluster of artefacts composed of a similar distinctive lithology (andesite), and the fact that the handaxes are fresh, suggests that transport distances were minimal. Visually, the assemblage was dominated by a large, symmetrical, pointed handaxe made of andesite (Figure 3), together with two other andesite handaxes and a few quartzite tools. Subsequently, despite a watching brief, no further reports of stone tools occurred until 2004 when a further handaxe turned up from excavation of a channel in another part of the quarry (Figure 4) (Lang & Keen 2005). In the meantime, the publication by MacRae and Moloney (1988), the standard work on non-flint artefacts in the British Isles, began to awaken archaeologists to the fact that not all Palaeolithic stone tools were made of flint, especially away from the geological flint sources in the southeast.

From 2004 TH began paying regular visits

*Table 2. Percentage raw materials of the artefacts from the three study sites*

| *Site name* | *% quartzite* | *% flint* | *% other* |
|---|---|---|---|
| Waverly Wood | 99.71 | 0.05 | 0.24 |
| Feltwell | 10.1 | 89.9 | 0 |
| Warren Hill | 0.07 | 99.3 | 0 |

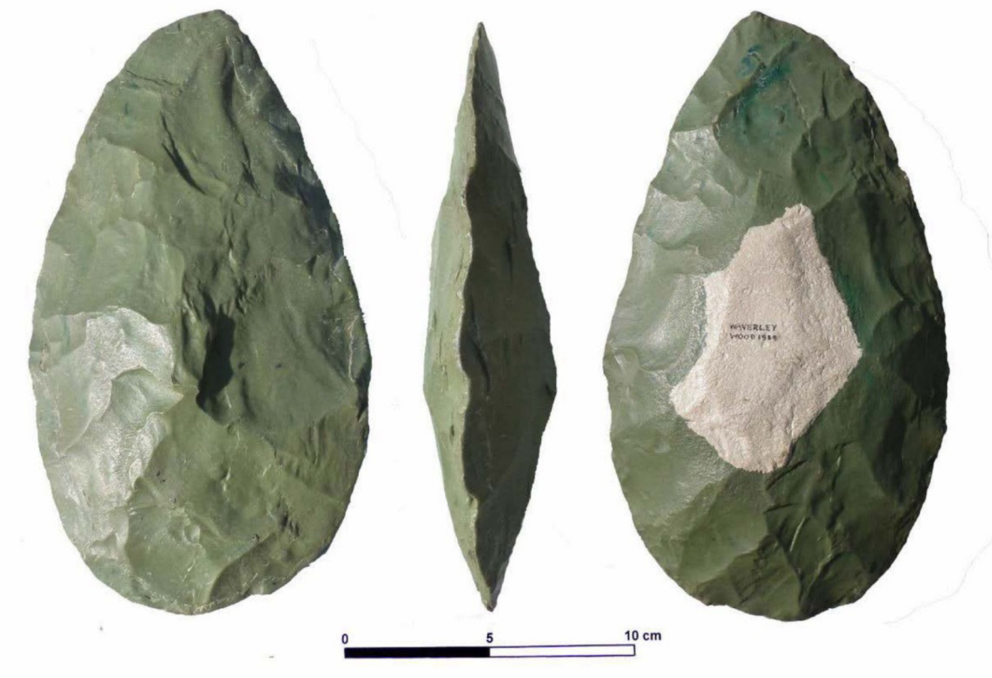


Figure 3. A cast of a finely made andesite handaxe from Waverley Wood.

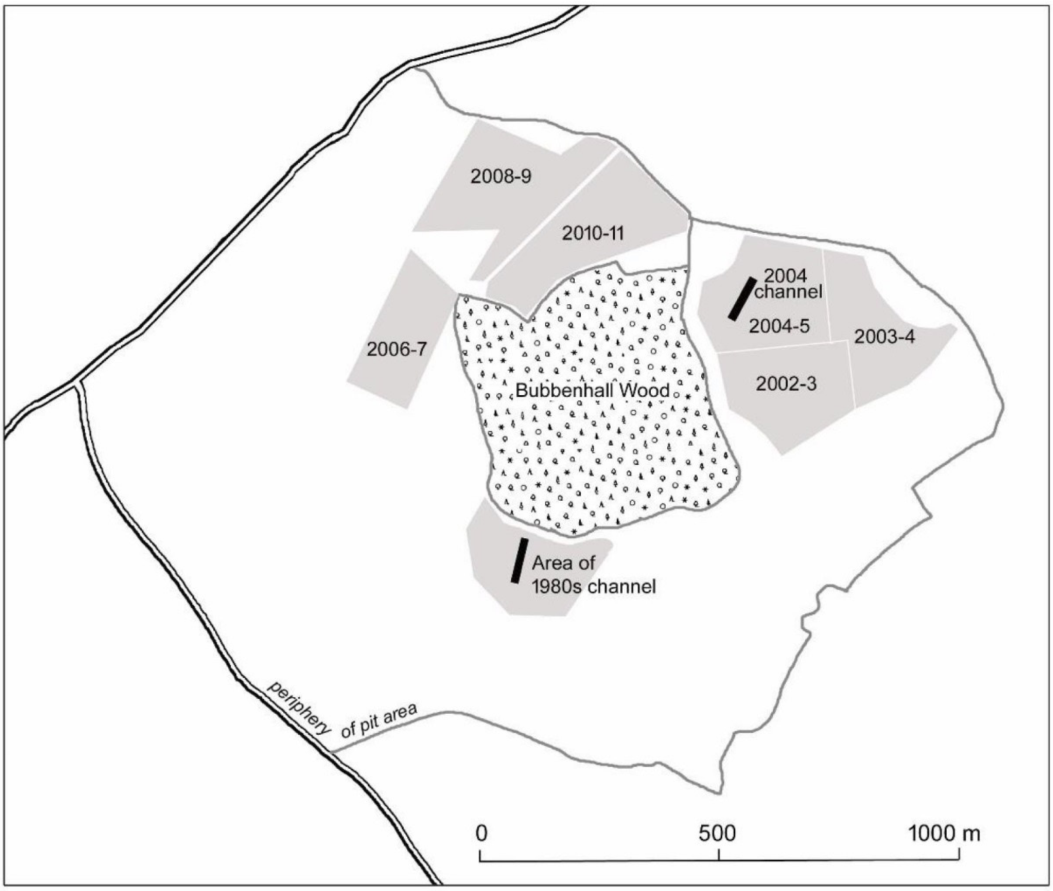


Figure 4. The Waverley Wood quarry complex showing relevant excavation stages. The earlier stages are unshaded.

to the quarry and immediately began finding large numbers of quartzite tools. It is suspected that the previous watching brief had concentrated on the search for the spectacular handaxes without being aware that there were less obvious artefacts of quartzite coming from the pit.

Searches included an examination of the reject heaps. At Waverley Wood these reject heaps comprise the clasts over 40 mm diameter which do not go through the grading plant (Figure 5) and are composed mainly of quartzite cobbles, quarried from the palaeo-surface that represents the interface between the bedrock in the area (Mercia Mudstone) and the overlying Bytham River gravels (Thurmanston Member of the Baginton Formation: Maddy 1999). Over the period 2004–2013 artefacts found in the reject heaps were over 99% quartzite (Tables 1 & 2). These artefacts were not derived only from a channel context, but from over a wide region as gravel extraction moved across the quarried area (Figure 4). This is at variance with the conclusions of Keen et al. (2006) when it was proposed that all the artefact finds were associated with the channel and it is now clear that artefacts were distributed over a wider region in the vicinity of the channel.

Weathering and abrasion of the quartzite artefacts varies from sharp to very rolled, suggesting some have been transported from their original location while others have not moved far. And there is a notable absence of smaller artefacts such as flakes, indicating that smaller clasts have been winnowed away or removed during the grading process used during aggregate production (Table 1). Transport of the artefacts would have been in the form of sorting by the Bytham River as it shifted its bedforms and/or by meltwater rivers associated with the oncoming glaciation causing channel scour

*Figure 5. A typical reject heap, Waverley Wood pit, showing preponderance of Bunter quartzite cobbles from the pit floor, derived from the Triassic, Chester (Bunter) Pebble Beds Formation.*

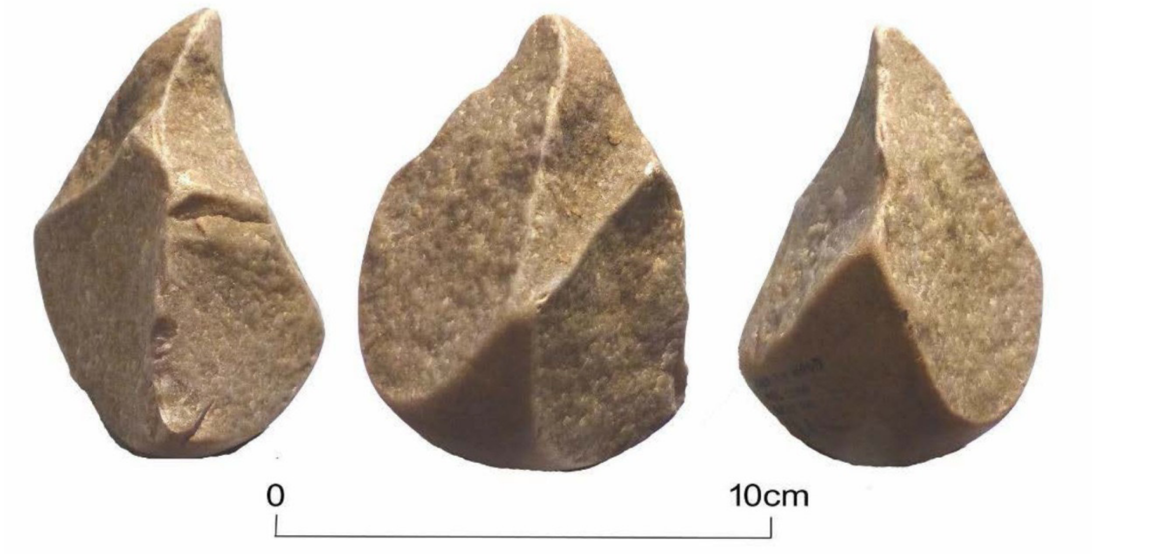


*Figure 6. A typical trihedral point from Waverley Wood.*

and subsequent deposition of the Wolston Formation. The general impression is that human occupation ranged all over this landscape although it was never far from the river.

During the period of monitoring by TH (2004–2013) artefacts were found at every visit (14 visits) from an area covering approximately 1 km$^2$ (Figure 4). Eighty-five percent of the 207 artefacts are core-based (Table 1), amongst which there are seven trihedral points and one blade core (Figure 6). The trihedral point seems to have been a speciality at this site. Other examples have come from the Northern Drift in Oxfordshire (Hardaker 2017). There was only one flint artefact in the whole assemblage, a handaxe tip found in 2005. Only 8.2% of the artefacts were handaxes of some type.

In summary, Waverley Wood, the most westerly of the artefact sites associated with the Bytham drainage system, has demonstrated the need for regular inspection of ongoing gravel extraction sites if a representative assemblage of the Lower Palaeolithic archaeology is to be obtained. The manager of Waverley Wood pit, John Green, has taken an exemplary lead in allowing regular visits and assisting with logistics. As a consequence we have a balanced view of the industries of this enigmatic, but important site, showing that pre-MIS 12 occupants were capable of top quality work while at the same time using their skills to fashion intractable quartzite.

## FELTWELL (FRIMSTONE'S QUARRY)

The archaeological site at Feltwell is located to the east-northeast of the village at the lower, western margin of the degraded Chalk escarpment. This site exists because of sand and gravel extraction carried out by Frimstone Ltd until the closure of the quarry in about 2010. The site contains three main sedimentary units overlying Chalk bedrock. The basal unit is a reddish brown sand and gravel with c. 40% quartz and quartzite material, c. 60% flint and traces of far-travelled materials from the Jurassic and Carboniferous rocks of midland England. Sedimentary structures and palaeocurrent directions indicate a river flowing from north to south. Together these properties indicate deposition by the Bytham River flowing in a valley at the west side of what is now the Chalk escarpment. The western side of the river valley has since been removed by the Anglian (MIS 12) glaciation that eroded the Wash and Fen Basin (Perrin et al. 1979).

In places this unit is capped by a clay-rich palaeosol, but usually the upper beds have been removed by erosion. It is from this lower, reddish brown sand and gravel that the in situ artefacts were recovered (Figure 7).

These deposits are overlain in the northern part of the quarry by sub-horizontally bedded sands and gravels with palaeocurrent structures indicating flow towards the west. These beds are composed predominantly of fresh and weathered flint, much of which is angular and the unit as a whole is characterised by very well developed intra-formational ice-wedge casts. This unit is interpreted as periglacial fan gravels, deposited by water flowing from the Chalk escarpment at the east and entraining weathered and unweather flint and, locally, Bytham Sands and Gravels. The age of this unit is not known. It is not known if this unit contains artefacts; however, the unit was quarried at the time that archaeology was being found, and the clast lithology is similar to many of the implements. As many of the artefacts were collected from the reject heaps, it is possible that this unit could be a source of some of the finds. The third unit is located at the southwest of the quarry. Here the Bytham Sands and Gravels are overlain, or replaced, by a complex body of sands, sands and gravels and chalky diamicton. These units have been studied by Gibbard et al. (2012) and are the product of subsequent glaciation of the region. These beds are devoid of artefacts.

The site was monitored from the mid-1990s by R.J. MacRae and TH until its closure about 2010 although small-scale gravel grading continued to work through the excavated

*Figure 7. The base of the Feltwell sand and gravel quarry showing the chalk bedrock overlain by Bytham River sediments (clearly seen in inset). The rounded quartzite clasts are visible along with the reddish brown colour of the sand matrix. The arrow indicates the location of an artefact find. A section in the Bytham Sands and Gravels are is visible below the digger although much of this area is hidden by spoil.*

*Figure 8. R.J. MacRae searching for artefacts on the Feltwell rejects pile in 1999 showing a mixture of flint and quartzite.*

material after closure. Searches included examination of reject heaps (Figure 8). Eric Secker and family from the nearby village of Feltwell also took an interest in the site and were able to make more visits because of their proximity, and their finds up to 1999 are incorporated into the data used in Tables 1 and 2. MacRae (1999) reported that many of the fine pointed handaxes found by the Secker family, that are in sharp condition, were found over a short period, suggesting that there was a concentration in one part of the pit. Eric Secker and family tended to look only for handaxes and thus the relative proportions of typologies in the list may be a skewed towards this form (Table 1).

The artefacts from Feltwell are nearly 90% flint; the remainder are quartzite derived from cobbles transported from the west by the Bytham River (Figures 7, 9 & 10). The quartzite artefacts include two handaxes and ten core tools. Whereas the flint tools are frequently in sharp condition, most of the quartzites show edge abrasion indicating river transport (Figure 9), and indeed in some cases there is evidence of a surface polish caused by wind abrasion (Peter Worsley, pers. comm.) reflecting exposure on a land surface (probably a river bar) during a polar desert climate. However, not all quartzite artefacts are abraded (Figure 10) indicating that they were made close to where they were found.


*Figure 9. An edge-rounded chopper-core from Feltwell indicating transport since formation. The polished surface clearly visible is likely to be the product of sand abrasion whilst resting on an open land surface in polar desert conditions.*

*Figure 10. A chopper-core taken from the base of the Bytham Sands and Gravels at Feltwell. Note the sharp edges and the absence of abrasion since the flakes were removed, indicating minimal or no transport since manufacture. Note also that, as is often the case with sharp quartzite tools, there is no sign of damage through usage on the tip.*

The presence of a possible proto-Levallois core (Figure 11) (Bolton 2015) in the collection is noted here for the sake of future research. The identification and provenance is not secure, but it is possible that it was derived from the upper fan gravel unit at the north end of the quarry.

In summary, the artefacts at Feltwell are dominated by flint, which has a local provenance, although far less easily worked quartzite cobbles, transported to the sites as bedload by the Bytham River are manufactured locally. The activities of local collectors have increased the sample size and contributed to a rich array of flint handaxes.

## WARREN HILL, SUFFOLK

This site was exploited for sand and gravel on a small scale from the late 19th until the mid-20th century and is now an area of spoil heaps and small, low angle exposures. The site lies in the path of the Bytham River but unlike the other sites the artefact source is seen on the present-day surface as well as in buried context. A small test pit excavated in 1991 (Wymer et al. 1991) and extended in 1992, and more extensive excavations by Wymer and Rose in 2002 verified that artefacts occur within the gravels, and are also found at the present-day surface. The geological succession at the site consists of Chalk bedrock overlain by fine, well sorted, silty sands, followed by bedded sands and gravels with flow directional structures towards the east. The artefacts are

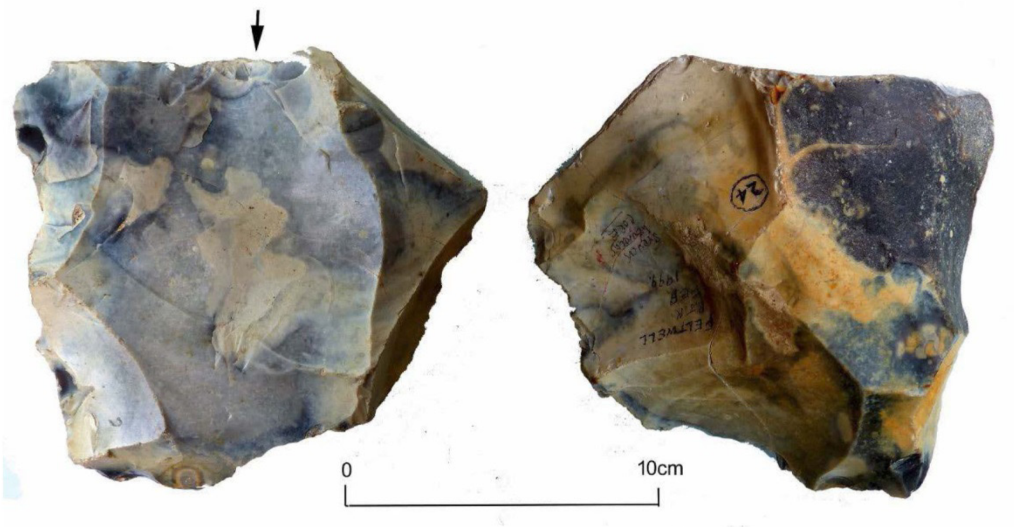


*Figure 11. A possible proto-Levallois struck core from Feltwell. Although the identification of this artefact is not confident, and its provenance to lithological unit is not secure, it is recorded here for future research.*

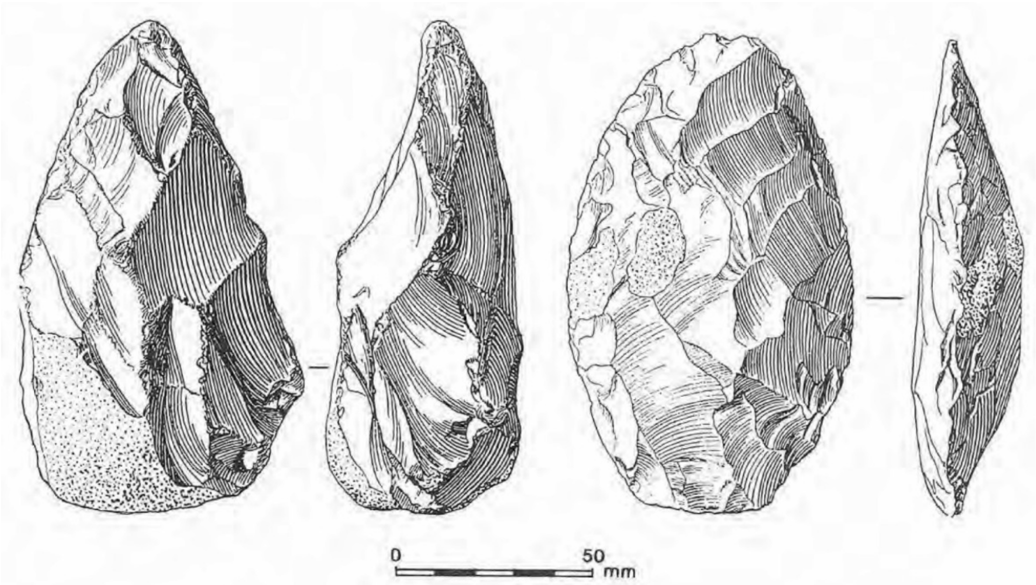


*Figure 12. Handaxes from Warren Hill: crude style pointed (left), refined ovate style (right). Courtesy John Wymer.*

derived from the sands and gravels and the present land surface (Hardaker 2012). This succession is described in Bridgland et al. (1995) who attribute the sands to the Ingham Sands and Gravels which is the regional name for the Bytham River deposits, and Gibbard et al. (2009) who interpret them as of glaciofluvial origin, although without any evidence for glacially sourced material. A detailed description of the sediments and discussion of their implications is are in preparation (Rose et al. in prep.).

A full account of the surface artefacts was published by Hardaker (2012). The two handaxe styles are shown in Figure 11. Solomon (1933) argued that the cruder handaxes were of earlier date, although subsequent finds include examples which seem to be half-way between the two styles. Artefacts found at the surface cannot be attributed to any stratigraphic position.

The fieldwalking programme undertaken from 1998 until 2012 revealed that handaxes or handaxe roughouts comprised 2.8% of the artefact assemblage at Warren Hill (Figure 12), while 92.5% of the artefacts are flake-based (Table 1, Figures 13 & 14). The 19th- and early 20th-century collectors paid money for handaxes, but were not interested in flakes; and photographs from the British Museum, kindly provided by Nick Ashton, show quarrymen sieving for handaxes as a commercial product, thus revealing a process that would provide a biased perception of the frequency of handaxes, relative to flakes and other debitage. This factor was underlined through the discovery during the 2002 excavation of an old 'cache' of discarded non-handaxe artefacts that had been dumped along with datable scrap such as a Swan ink bottle with a metal screw cap datable to the 1920s.

One feature of the Warren Hill artefacts that contrasts sharply with the Waverley Wood and Feltwell assemblages is the lack of winnowing of small artefacts reflecting the absence of reject-heap searches. The majority of flakes have a long dimension between 10 and 50 mm and vary from sharp to rolled (Figure 12). The slight typological clustering of tools from the surface collection (Hardaker 2012) suggests that Warren Hill excavation sites are close to an original living site with degrees of abrasion reflecting the transport path from the point

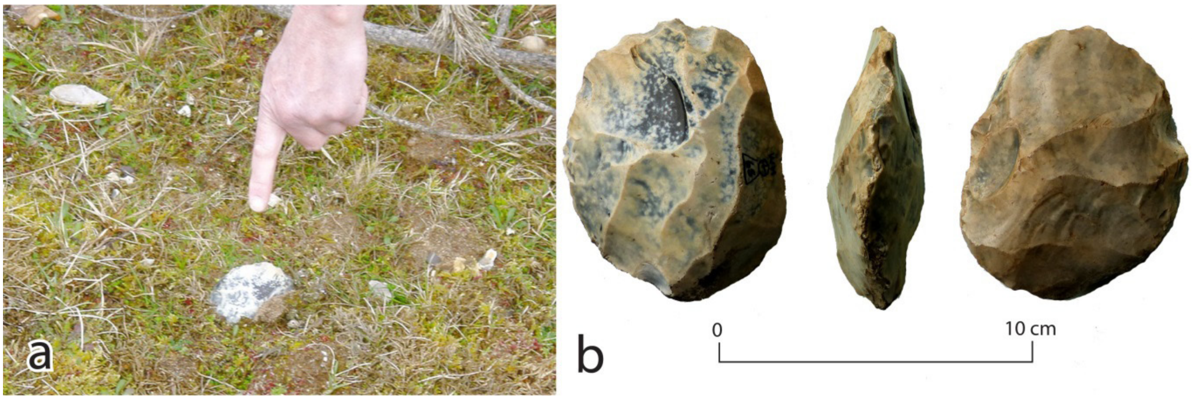


*Figure 13. A surface-find handaxe from Warren Hill. a) The find at the surface before removal. b) The find in suitable photographic position. Note that this is typical of many of the small find handaxes found at Warren Hill..*


*Figure 14. Flakes from Warren Hill showing sharp and rolled examples and different patinations.*

of origin to the final point of deposition.

In summary, the artefacts from Warren Hill are dominated by flint, which is available on the hillsides adjacent to the site and within the Bytham River deposits, but still retains a presence of quartzite (0.07%) which is present as clasts in the river gravels. The long-held belief that the artefact assemblage is dominated by handaxes (over 2000 recorded: Roe 1968) is not verified by the fieldwalking search-process, but the fresh condition of a high proportion of the tools suggests that provenance is local, probably from the adjacent valley bottom and sides.

## DISCUSSION

Examination of the types and composition of artefacts from Waverley Wood, Feltwell and Warren Hill along the catchment of the

Bytham River provide a clear statement of the importance of source material for artefact production (Tables 1 & 2). Local material dominates: quartzite in the west and flint in the east. However, the large sample sizes reveal that other materials are also used, whether it is the highly workable andesite at Waverley Wood or the more difficult quartzites at Feltwell and Warren Hill.

The existence of the andesite handaxes at Waverley Wood introduces a challenge for our understanding of either human activity in terms of the transport of manufactured implements, or Quaternary glaciation in terms of dating the first glaciation of west-midland England. The source of the andesite is attributed by Shotton and Wymer (1989) to the Borrowdale Volcanic Group of the Lake District on the basis of petrographic analysis, although local clasts of glacial erratic andesite (occasionally seen on the pit floor, but with a different colour, appearance and source) were also used. Archaeological experience of artefact provenance suggests that it is improbable that the manufactured artefact would be transported some 250 km from the Lake District to the Waverley Wood locality and that its presence is the consequence of a lucky chance find of an ideal, thin slab of glacially transported, easily-worked andesite that enabled the maker to produce such a fine handaxe. The quality, size and symmetry of the Borrowdale Volcanic andesite handaxe (Figure 3) reinforces the premise that prior to MIS 12, humans in Britain were capable of making finely crafted tools, and thus quality alone is not a very good guide to age.

Within the geological and environmental context (Keen et al. 2006) an alternative explanation for the find at Waverley Wood is that the handaxe was transported to west-midland England from the region of the Lake District by those who manufactured and used the implement. This is not unrealistic as that over the period concerned, the climate of midland England was at times Mediterranean in style (Candy et al. 2010) and the duration of such climates extended over many hundreds of years. Furthermore the distance involved is small compared to that from which the human group had travelled to reach England. Also, there are no other fragments of Borrowdale Volcanic andesite found at Waverley Wood, and an artefact of such quality, relative to those composed of the indigenous quartzite, could have made retention of the implement especially worthwhile. The absence of similar artefacts from further north and closer to the source area is readily explained by glacial erosion of that region during the numerous glaciations that have eroded and changed the landscape of northern England since MIS 13.

Be that as it may, rather than thinking this must have been the work of a separate human group, it simply tells of the latent capability to make fine stone tools that in 99% of cases remained unfulfilled because of the constraints caused by the raw materials available.

A further point about composition of the artefacts is the fact that despite the proximity to flint bedrock, occupants chose to use quartzite for toolmaking. This may suggest that there is a particular quality about quartzite that was not present in flint, possibly a robustness that was useful for heavy duty work.

Examination of the samples used in this study also shows the importance of the resources available for collection. For instance, the involvement of local collectors or commercial sieving for financial reward leads to an artificial concentration on handaxes relative to all other tools. Likewise searches based on reject heaps lead to a preference towards material greater than a given size. Cultural perception also plays a part and the lack of attention given to the quartzite tools prior to the work of MacRae and Moloney (1988) also leads to a bias in the record from a locality. Likewise, the importance of surface collection (Hardaker 2012), depending upon the transfer of clasts/artefacts to the land surface by soil and geomorphological processes provides a relatively unbiased concentration of potentially suitable host material.

The relative abundance of artefacts along the course of the Bytham River demonstrates the importance of this major river system for early human activity, and although none of the material can be defined as in situ with respect to the point of manufacture, the relative abundance of un-abraded material, from a variety of lithologies indicates that transport distances are small or very small and those responsible for manufacturing the implements were present in the vicinity, reinforcing the findings from the floodplain site at High Lodge, only 1 km to the north of Warren Hill, where in situ manufacture did take place (Ashton et al. 1992). This abundance of artefacts leads to the proposition that the Bytham River system was a preferential habitat for early humans, and this would be supported by the fauna recorded at other sites such as High Lodge (Ashton et al. 1992) and Waverley Wood (Shotton et al. 1993). However, care must be taken with such an assumption, as storage and preservation is preferential in sediments deposited along the main course of a river catchment relative to sediment-free headwater valleys, adjacent hillside slopes and plateaux.

What the artefacts do show is that human occupation occurred prior to the Anglian glaciation. The artefacts probably give us the best cross-section we have of artefact manufacture in MIS 13 or earlier through a substantial slice of middle England. They go a long way to proving that even at this early time humans were present outside the southeastern flint zone where so much of our Lower Palaeolithic story has previously been played out. They suggest that although flint was by far the favourite raw material of early humans, absence of flint was not a barrier to artefact manufacture. Whatever was available was used, whether the easily-worked but rare andesites from Waverley Wood or the more ubiquitous Bunter quartzite cobbles found along the whole stretch of the Bytham River course. That message is echoed worldwide in the Lower Palaeolithic: lack of suitable raw material seldom prevented humans from making tools wherever they were, in Africa, the Middle East, Asia or Europe.

The Bytham River assemblages, together with the sterling work performed by Ron Waite in the midlands (Graf 2004 & 2011), are strong pointers to the need for more attention to be given to discovering the extent of early human occupation in middle England (Howard et al. 2007). How far north did they go? When were they first there? Isolated sites like the Neanderthal Pontnewydd cave in north Wales (Aldhouse-Green et al. 2012), the Lincolnshire Wolds (Hardaker 2017) or Bramcote Hill in Leicestershire hint that more awaits discovery, as demonstrated by the recent archival study of north-midland England (Bridgland et al. 2014).

## CONCLUSIONS

- A quantitative assessment of archaeological finds is provided from three sites located along the pre-MIS 12 Bytham River of midland and eastern England.
- The types of artefacts that constitute these finds reflect the search processes adopted: the use of reject-heaps, selection of aesthetically attractive objects, fieldwalking and the record of surface finds.

- The influence of financial gain by the sale of handaxes, or the lack of awareness of a given type of tool, such as a quartzite chopper has also influenced the composition of records.
- The discovery of a fine implement made of Lake District andesite introduces a disciplinary debate with conflicting models requiring either glacial transport of source rock to the findspot (and hence manufacture) site, or human transport of artefact from the source-rock locality (and hence manufacture) to the find site.
- The quantitative study verifies the fact that local rock provides the dominant source of material for the production of artefacts at each locality.
- A conundrum is highlighted by the fact that the ready availability of suitable material (flint) does not preclude the use of apparently less-suitable material (quartzite) when this is also available, maintaining the challenge of what factors determine material selection.
- The Bytham River catchment was a suitable environment for the pre-MIS 12 inhabitants of midland England.

## ACKNOWLEDGEMENTS

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# AN ANDESITE LEVALLOIS POINT FROM THE JAVAKHETI HIGHLAND (NORTH-WESTERN LESSER CAUCASUS, GEORGIA)

P. Biagi and R. Nisbet[1]

## ABSTRACT

*This paper describes and discusses an andesite Middle Palaeolithic Levallois point discovered on the surface of Javakheti Highland in the Lesser Caucasus of Georgia at 2130 m of altitude during the surveys carried out in the summer of 2017. Though andesite Acheulian hand-axes were already recovered along the slopes of Mt. Chikiani during the Soviet period, the new find shows that this raw material was employed also for knapping Levallois tools, despite the rich obsidian sources available from the volcano. The discovery would suggest that the tool is older than the beginning of exploitation of the obsidian sources that, according to the available data, started to be utilised around the end of the Middle Palaeolithic.*

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**Keywords**: Lesser Caucasus, Javakheti Highland, Levallois technique, Middle Palaeolithic, Andesite, Obsidian

## INTRODUCTION

The scope of this paper is to illustrate and discuss a so far unique andesite Levallois point found in the Javakheti Highland during the surveys carried out in the summer of 2017.

The Javakheti Highland is located in the Tsalka district of north-western Lesser Caucasus (south-western Georgia). It consists of a volcanic structure that formed during several phases of Quaternary magmatic activities, the more recent of which is dated between 2.8 and 2.4 Myr (Lebedev *et al*. 2008; Lebedev & Vashakidze 2015; Nomade *et al*. 2016). The prevailing rocks are represented by rhyolites, obsidians and perlites that form the cone of Mt. Chikiani volcano previously known as Koyun Dağ, still reported with this name in most official maps in Russian. Along the eastern side of the mountain dacites prevail, while basalts and basalt andesites constitute most of the northern sector (Nasedkin *et al*. 1983).

Since Soviet times, Chikiani is well known as an important source of excellent quality obsidian of different colours, whose archaeological distribution covers a large area that extends from the shores of the Black Sea, in the west, to the uplands of Iran and the Caspian Sea plain, in the east (Badalyan *et al*. 2004; Badalyan 2010: Fig. 4), following the recovery and characterization of Chikiani obsidian artefacts from sites of different ages located throughout the aforementioned area. According to the available evidence, the exploitation of the obsidian sources began around the end of the Middle Palaeolithic. This is demonstrated by the artefacts uncovered from the Late Mousterian layers of Ortvale Cave in north-western Georgia (Le Bourdonnec *et al*. 2012; Moncel *et al*. 2015: 118, Fig. 17). It continued at least until the Iron age, as is shown by the discovery of well stratified obsidian flakes from the 1st millennium BC layers of Grakliani Hill, ca 50 km north-west of Tbilisi (Licheli 2011). These data reinforce the impression that during the late

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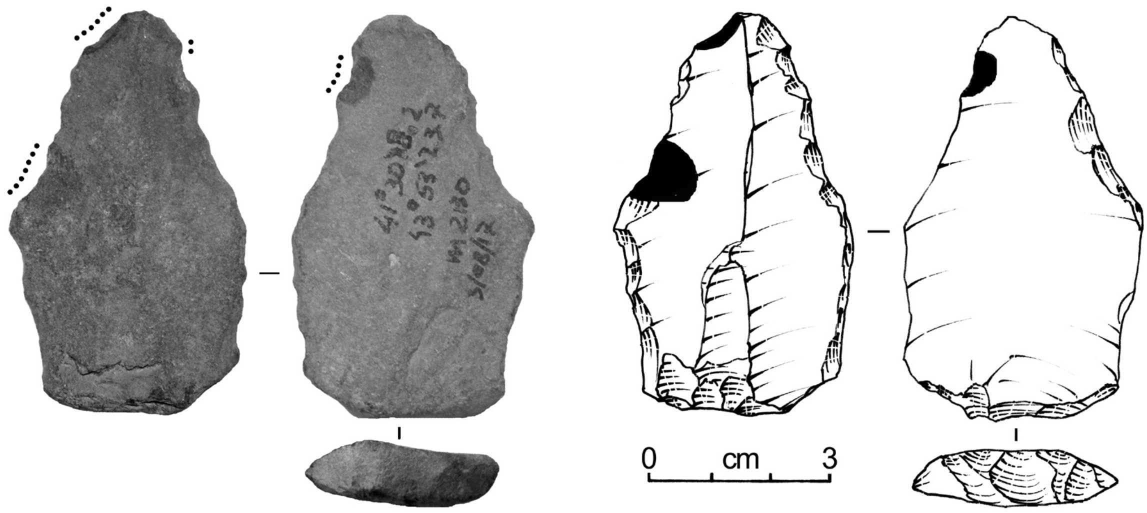


*Figure 1: The Javakheti Highland east of Mt. Chikiani with the location of the place where the Levallois point was recovered (black dot), the area with main concentrations of Bronze Age obsidian mining pits (yellow rectangles), and the suggested place where Z.K. Kikodze collected Acheulian andesite hand-axes (blue rectangle) (map by P Biagi).*

Middle Palaeolithic "*obsidians were also sporadically transported by Neanderthals from sources located between 200-250km and 350-400km from sites*", though "*the area of resource exploitation usually did not exceed a radius of about 0-5km from a site*", even when the material exploited was not of a good quality (Doronicheva & Shackley 2014: 581)

The surveys carried out by Ca' Foscari University of Venice in collaboration with I. Javakhishvili Tbilisi State University between 2012 and 2017, led to the discovery of clusters of hundreds of Bronze Age obsidian mining pits distributed mainly along the northern and eastern slopes of Mt. Chikiani (Biagi & Gratuze 2016; Biagi *et al*. 2017a; 2017b). Moreover, the same surveys demonstrated that the entire upland was intensively exploited in different periods of prehistory (Fig. 1). This fact is shown by the presence of hundreds of archaeological features among which are various types of small, large, and corridor *kurgans* made of andesite and obsidian boulders, megalithic alignments, and one standing stone (*menhir*). Other structures consist of complex villages with stone-walled houses and andesite quarries that were exploited to build the same settlements. Most of the aforementioned features are most probably to be attributed to a period comprised between the end of the Neolithic and the Iron Age (Biagi & Nisbet 2018).

## THE LEVALLOIS POINT

A typical Levallois point was incidentally found on the surface of the north-western edge of the Javakheti Highland, at 2130 m of altitude, more precisely at 41°30'18.2" N - 43°53'23.7" E (Fig. 2). The tool consists of a typical, triangular, second order Levallois point (Debénath & Dibble 1994: 50), detached from a dihedral/facetted platform andesite flake of dark grey colour (5Y4/1), with a simple, marginal, alternate retouch along both sides, one central ridge and triangular negative scar at the base. The tool measures 66x39.5x11 mm (length, width and thickness). The edges and arises are rounded by weathering. The point is in a good state of preservation apart from three, clearly visible, small concassage detachments at the distal edge and along the left side, most probably due to recent

*Figure 2: The Javakheti Highland photographed from Mt. Chikiani and the location of the place from which the andesite Levallois point was collected (black dot) (photograph by P. Biagi).*

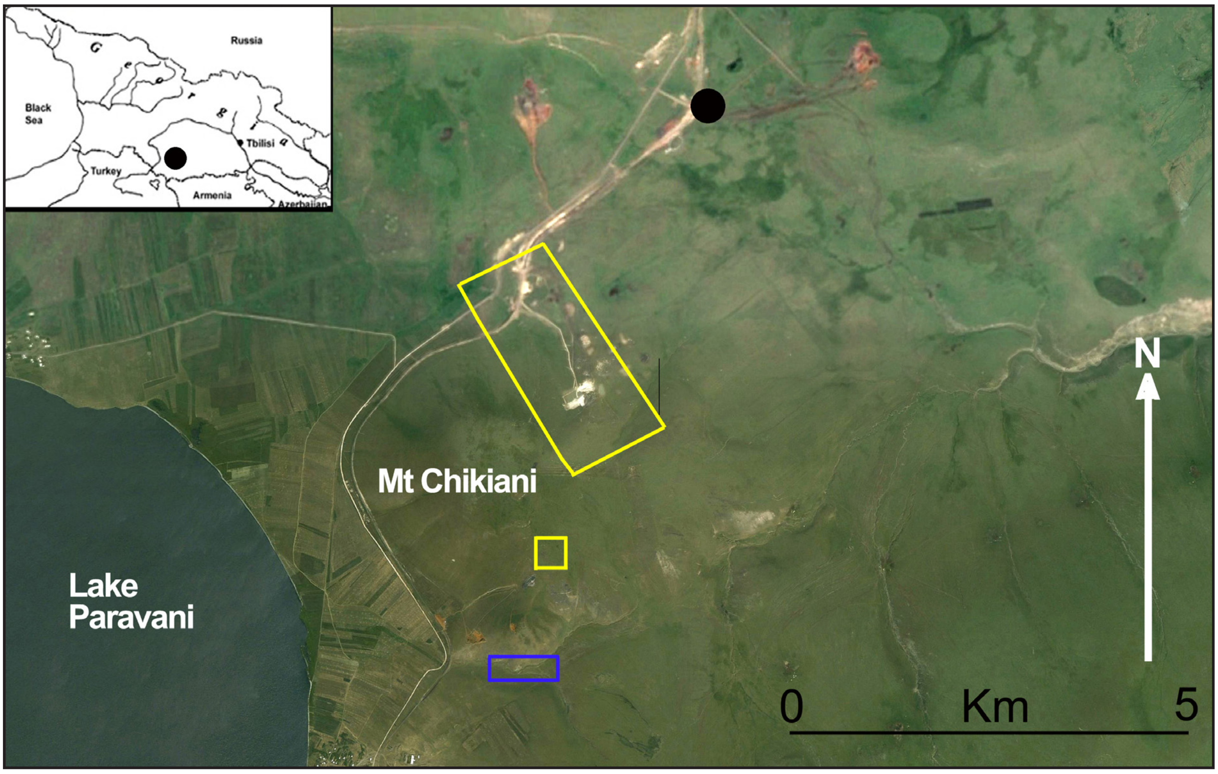


*Figure 3: The andesite Levallois point from the Javakheti Highland. The black spots show the presence of concassage detachments due to trampling marked by small black dots (photographs and drawings by P. Biagi, M. Ferrandi and E. Starnini).*

post-depositional trampling that exposed the real colour of the material employed for its manufacture is very dark grey (5Y3/1) (Fig. 3).

## DISCUSSION

Andesite tools were discovered for the first time along the southern slopes of Mt. Chikiani in 1977. They were published a few years later by Z.K. Kikodze (Kikodze 1983) who attributed them to the Acheulian Lower Palaeolithic (Kikodze 1986: 55; see also Gabunia 2000: 46, and Lioubine 2002: fig. 90). As reported in a recent volume published by the National Museum of Georgia, both Acheulian and Middle Palaeolithic tools were recovered on the surface of Mt. Chikiani from point 41°21'57.9" N - 43°51'12.8" E (Gabunia *et al*. 2015: 94), though the above authors did not specify whether the few Middle Palaeolithic specimens they found are made from andesite or obsidian, as their drawings would suggest (Gabunia *et al*. 2015: 95). Moreover, the presence of Acheulian andesite and basalt hand-axes is reported also from a few other high-altitude, open-air sites in the Lesser Caucasus (Lyubin 1998: 150).

To sum up: the available data would suggest that 1) following the typological analysis and proposed chronology of the Early and Middle Palaeolithic assemblages of the Caucasus (Adler *et al*. 2014), the Levallois point discussed in this note is undoubtedly more recent than the andesite Acheulian bifaces published by Z.K. Kikodze in the 1970s. However, according to Le Bourdonnec *et al*. (2012: 1320): "*The Chikiani obsidian was used since the Lower Palaeolithic as evidenced by the bifaces found in the vicinity of the sources* (Kikodze & Koridze, 1978)…". It is important to remark that the latter two authors never mentioned the discovery of obsidian Acheulian hand-axes from the Chikiani area. More precisely, in their 1978 report written exclusively in Georgian, they wrote that near the village of Rodionovka, at the altitude of 2417 m, they uncovered a workshop with an impressive number of knapped obsidian artefacts that they attributed to different prehistoric periods spanning from the Acheulian Early Palaeolithic to the Mesolithic. In the same paper they attributed two thick obsidian scrapers from the same site to the middle Acheulian period because of their typological characteristics (see Kikodze & Koridze, 1978: 24, fig. 4); 2) the new discovery of a characteristic Levallois point raises the problem of the chronology and cultural attribution of the earliest exploitation of Mt. Chikiani obsidian sources. According to the present evidence, we can suggest that it undoubtedly began around the end of the Middle Palaeolithic. Moreover, we know that Mousterian Neanderthal communities are thought to have exploited the knappable stone resources that were available within their activity radius, and that they were not necessarily related with the presence of obsidian (Pleurdeau *et al*. 2007; Frahm *et al*. 2016).

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# AN ANALYSIS OF THE FURZE PLATT HANDAXES AT THE ROYAL ONTARIO MUSEUM, TORONTO

Luke Dale[1]

## ABSTRACT

*Furze Platt, Berkshire, is a crucial Marine Isotope Stage (MIS) 10–8 site in the Middle Thames famous for producing the largest handaxe in Britain. Every major study of Furze Platt has focussed on one locality, Cannoncourt Farm Pit. A second extremely prolific locality, Cooper's Pit, is not represented in UK collections. The Royal Ontario Museum (ROM), Toronto, holds a large collection of handaxes from Furze Platt which may represent the errant Cooper's Pit handaxes, but the collection has never been published and is largely unstudied. The present study uses morphometric and typological analyses to characterise the ROM Furze Platt handaxes for the first time. It combines the results of these analyses with observations on the condition, collection dates and accession dates of the artefacts, enabling three discrete and hitherto unidentified groups to be identified within the collection. Through comparing these results with documentary evidence, this study suggests that a large portion of the handaxes held at the ROM may indeed originate from two phases of collection at Cooper's Pit, along with a very early collection of handaxes from Cannoncourt Farm Pit. The results presented here have wider significance to Lower Palaeolithic research as they offer support to the idea that handaxe morphology is chronologically significant, and that certain morphologies and typologies are particularly characteristic of MIS 9.*

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**Keywords**: Acheulean, Lower Palaeolithic, Collections, MIS 9, Morphometrics.

## INTRODUCTION

The variation in handaxe morphology between British Acheulean sites has been widely studied as a window to Lower Palaeolithic cognition, culture, and society. One of the most significant of these studies was the seminal morphometric analysis of Roe (1964 & 1968a), which sorted handaxe assemblages into morphologically similar groups. Reanalysis of Roe's groups using updated chronological frameworks showed a clear correlation between morphological preference and the occupation of Britain during particular Marine Isotope Stages (MIS) (Bridgland & White 2014 & 2015; White *et al.* 2018; Shipton & White 2020). Roe's Group I, characterised by pointed handaxes and cleavers, was found to occur in deposits dated to MIS 9. Similarly, the co-occurrence of typological ficrons and cleavers in significant numbers has been suggested to be characteristic of many MIS 9 assemblages (Roe 2001; Wenban – Smith 2004 & 2006; Pettitt & White 2012; Bridgland & White 2014 & 2015; Davis *et al.* 2016, Taylor 2019).

Furze Platt, Berkshire, is a Lower Palaeolithic site situated on the Lynch Hill terrace of the Middle Thames, a feature robustly dated to MIS 10–8 (Hare 1947; Bridgland 1994; Harding *et al.* 1991). The Lynch Hill Gravel at the site was found to occur in two divisions, with derived artefacts most abundant in the lower, coarser part (Harding *et al.* 1991). The site consists of two defunct commercial gravel pits only c. 25m apart, Cannoncourt Farm Pit

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and Cooper's Pit (SU 878831). Both were generally only given the provenance 'Furze Platt' in historic collections. Early first-hand investigations at Furze Platt were published in brief reports by Llewelyn Treacher, a respected collector who first visited Furze Platt in January 1889 (Treacher 1896a & 1904; Treacher & White 1909). The site was later described by Lacaille (1940) and Wymer (1968) and was revisited for geoarchaeological investigation published in Harding *et al.* (1991) and Harding & Bridgland (1999).

Furze Platt is a prolific and important site with at least 1693 handaxes held in UK museums (Roe 1968b), and at least 600 held in international institutions, primarily in the Royal Ontario Museum (ROM), Toronto, Canada. The site is also important due to the remarkable size and symmetry of the 39.5 cm 'Furze Platt Giant' handaxe found at Cannoncourt Farm Pit, which has been cited as evidence in a number of speculative but influential studies on the role or 'meaning' of the handaxe in Lower Palaeolithic society (e.g. Kohn & Mithen 1999; Spikins 2012; White & Foulds 2018). Major lithic studies by Roe (1964 & 1968a), Cranshaw (1983) and White (1998) have focussed almost exclusively on handaxes from Cannoncourt Farm Pit, as large collections of handaxes from that locality are held in UK museums. In contrast, Cooper's Pit handaxes are unrepresented in British museums and remain almost unstudied.

**The ROM handaxes**

The current ROM Furze Platt handaxe collection includes 380 complete specimens. Museum records show that many of these handaxes were purchased directly from Llewelyn Treacher, whilst others were purchased from Treacher by the Canadian lawyer Zebulon Aiton Lash and gifted to the museum. Historical ROM accession numbers indicate that multiple 'batches' of acquisitions occurred in 1896, 1897, 1909 and 1910 providing a *terminus ante quem* for the collection of 1910 (C. Copson 2019, pers. comm. 10th July).

The only previous study of the ROM Furze Platt handaxe collection was an unpublished undergraduate dissertation made by William Fox in 1978 (Fox n.d.), who produced a morphometric analysis following Roe's methodology (Roe 1968a). Fox's analysis suggested that the ROM Furze Platt handaxes were evenly split between metrically pointed and ovate types and were predominantly in rolled condition. This was at odds with descriptions of Cannoncourt Farm Pit where the handaxes were invariably described as point-dominated and predominantly only slightly rolled (Roe 1968a & 1981; Wymer 1968; Cranshaw 1983; White & Bridgland 2014 & 2015). Fox reported that the ROM Furze Platt collection dated from 1889 – 1910, a period which predated the most prolific collection phase at Furze Platt by ten years. Based on this evidence, Cranshaw (1983) suggested that the ROM Furze Platt handaxe collection might represent the bulk of Treacher's collections from Cooper's Pit. She tentatively suggested that most of the ROM Furze Platt handaxes were derived from the higher (Boyn Hill) terrace, thereby explaining the reported differences between them and other handaxe assemblages from the Lynch Hill terrace, including nearby Cannoncourt Farm Pit. She also noted that the least rolled handaxes in Fox's sample bore a stronger morphometric resemblance to the 'fresh or only slightly worn' handaxes in Roe's Cannoncourt Farm Pit sample, although she was circumspect in suggesting a truly segregated assemblage given that a wide range of artefact conditions had been reported in most studies of Cannoncourt Farm Pit (Lacaille 1940 & 1961; Wymer 1968; Cranshaw 1983; Harding *et al.* 1991).

Reassessment of Fox (n.d.) revealed a methodological error in the sorting of his

*Table 1: Date ranges and numbers of the ROM Furze Platt handaxe groups. All labelled and dated objects with accession dates of 1910 were removed from Group C.*

| *Group* | *Date(s) of accession* | *Number* | *Percentage of total sample* | *Percentage of handaxes labelled* | *Percentage of labelled handaxes with dates* | *Date(s) of collection* |
|---|---|---|---|---|---|---|
| A | 1896, 1897 | 38 | 11.70% | 78.60% | 90.90% | 1889 - 1897 |
| B | 1909 | 140 | 43.10% | 73% | 84.30% | 1909 |
| C | 1910 | 147 | 45.20% | 0% | 0% | Unknown, before 1910 |

*Table 2: ROM Furze Platt handaxe condition.*

| Condition | Total % | Group A % | Group B % | Group C % |
|---|---|---|---|---|
| 1, ‘very fresh’ | 20.92 | 5.26 | 25.71 | 20.41 |
| 2, ‘fresh’ | 42.77 | 26.32 | 43.57 | 46.26 |
| 3, ‘slightly rolled’ | 32.31 | 57.89 | 27.86 | 29.93 |
| 4, ‘rolled’ | 4 | 10.53 | 2.86 | 3.4 |

morphometric data which exaggerated the ovate component of his sample. This, combined with unresolved questions around the provenance of the ROM handaxes, prompted the reassessment presented below.

## RESULTS

### Collection and accession dates

Three distinct groups emerged through a preliminary analysis of accession dates and labelled collection dates, shown in Table 1. 325 handaxes had known dates of accession: Group A included handaxes accessioned in 1896 and 1897; Group B in 1909; and Group C in 1910. The majority of Group A and B handaxes had labels or label fragments and most of these labels were dated, all written in the same hand on narrow white paper strips. One label was initialled ‘Ll. T.’, and consequently all the labels are assumed to have been written by the collector, Llewelyn Treacher. Fox (n.d.) observed that the ROM Furze Platt handaxes were ‘jumbled and confused through neglect’ in 1978, suggesting that labels are likely to have been lost: it is assumed that every handaxe in Group A and B originally had a label, and that the few unlabelled examples had simply lost theirs. Group C includes only unlabelled handaxes accessioned in 1910. 8.5% (n=14) of the objects accessioned in 1910 were found to have labels (dated 1897 (n=2), 1909 (n=8) and January 1910 (n=4)), but these seemingly related either to later batches sold by Treacher, or to objects which were part of earlier batches but which were not fully accessioned until 1910. Labelled objects with accession dates of 1910 were reassigned to Groups A or B according to their date of collection. Even allowing for the 20 – 25% loss-of-labels suggested for Groups A and B, the great majority of objects acquired in 1910 were clearly not originally labelled.

### Condition

Condition was measured ‘by eye’ using a four-category classification, shown in Table 2. Groups B and C were found to be in similar condition, with most handaxes in ‘fresh’ condition (i.e. minimally fluvially derived) and very few in ‘rolled’ condition. Group A was found to be in mostly ‘slightly rolled’ condition, with more ‘rolled’ and fewer ‘very fresh’ examples than the other two groups, suggesting a greater degree of post-discard movement.

### Morphometrics

Metrics and indices were obtained according to Roe’s (1968a) methodology, using standard measurements shown in Figure 1.

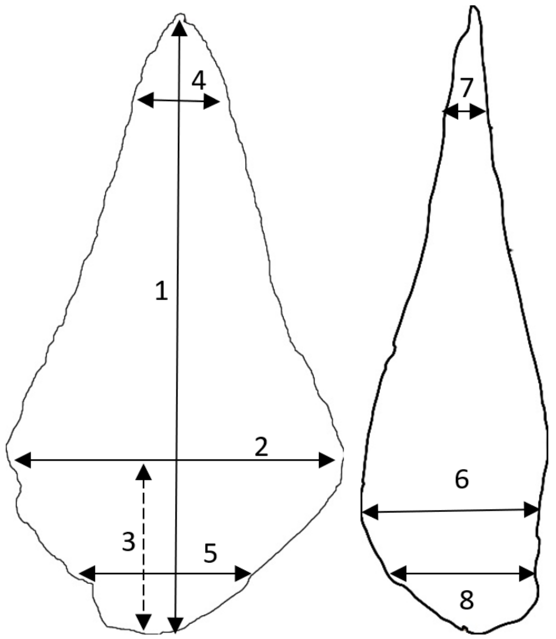


*Figure 1: Measurements taken according to the methodology of Roe (1964, 1968a). Dorsal (left): (1) length, L; (2) maximum width, B; (3) butt length, L1; (4) tip width (at 20% L), B1; (5) butt width (at 80% L), B2. Profile (right): (6) maximum thickness, T; (7) tip thickness (at 20% L), T1; (8) butt thickness (at 80% L), T2.*

Roe's methodology produces shape-descriptive indices which allow handaxe assemblages to be 'sorted' into morphometric groups which have been shown to have strong chronological affinities (Bridgland & White 2014 & 2015; White *et al.* 2018). Principle metrics are shown in Table 3, along with indices derived from these metrics in Table 4.

Group A handaxes were smaller and less massive on average than Groups B and C. All three groups were dominated by pointed planform types with only a small proportion of metrical ovates. The proportion of cleavers was small in Groups B and C but unusually large in Group A, exceeding the proportion of cleavers in all 36 of the sites assessed by Roe (1968a). Morphometric data, presented in a series of shape-descriptive tripartite diagrams, are shown in Figures 2–4. The diagrams show that all three groups have a strong preference for elongate types in all three planform shape categories. Pointed types in Groups B and C show a preference for narrow, roughly triangular shapes with acute or ogee tips, along with 'extreme' pointed types including ficrons. The relatively low scatter, particularly in Group B, suggests a high degree of standardisation. In contrast Group A has no 'extreme' pointed types, whilst still tending towards narrow forms with acute or ogee tips. Ovate types tend strongly towards narrowness in all three groups, with a 'lozenge' shaped form weakly preferred. Groups B and C show some preference for flat-tipped cleavers with moderate elongation, whilst the Group A cleavers are narrower and tend to have bluntly rounded, rather than flat, tips.

All three groups were comprised of greater than 60% metrically pointed handaxes,

*Table 3: Mean average principle metrics for the total sample of ROM Furze Platt handaxes, and for each group.*

| *Group* | *L (mm)* | *B (mm)* | *Th (mm)* | *Weight (g)* | *L1 (mm)* | *B1 (mm)* | *B2 (mm)* | *T1 (mm)* | *T2 (mm)* |
|---|---|---|---|---|---|---|---|---|---|
| TOTAL, n=325 | 127.86 | 71.4 | 39.81 | 337.61 | 37.01 | 38.77 | 64.91 | 14.39 | 34.91 |
| Group A n=38 | 107.71 | 61.82 | 35.87 | 236.34 | 37.42 | 38.24 | 56.18 | 13.82 | 31.55 |
| Group B n=140 | 134.41 | 74.02 | 39.5 | 357.2 | 37.36 | 39.53 | 67.21 | 14.04 | 35.04 |
| Group C n=147 | 126.82 | 71.38 | 41.12 | 345.15 | 36.56 | 38.19 | 64.97 | 14.87 | 35.66 |

*Table 4: Mean average principle indices for the total sample of ROM Furze Platt handaxes and for each group. Planform types are 'pointed' (P), L1/L=0.00 – 0.35; 'ovate' (O), L1/L=0.35 – 0.55; 'cleaver' (C), L1/L=0.55 (Roe 1968a).*

| | ***Refinement (Th/B)*** | ***Elongation (B/L)*** | ***Planform (L1/L)*** | ***Tip Shape (B1/B2)*** | ***X-sectional uniformity (Th1/Th2)*** | ***Planform shape (%)*** | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | ***P*** | ***O*** | ***C*** |
| TOTAL, n=325 | 0.56 | 0.57 | 0.29 | 0.61 | 0.12 | 72.62 | 23.38 | 4 |
| Group A n=38 | 0.58 | 0.58 | 0.34 | 0.68 | 0.13 | 60.53 | 26.32 | 13.16 |
| Group B n=140 | 0.54 | 0.56 | 0.28 | 0.61 | 0.11 | 76.43 | 20 | 3.57 |
| Group C n=147 | 0.58 | 0.57 | 0.29 | 0.6 | 0.12 | 72.11 | 25.85 | 2.04 |

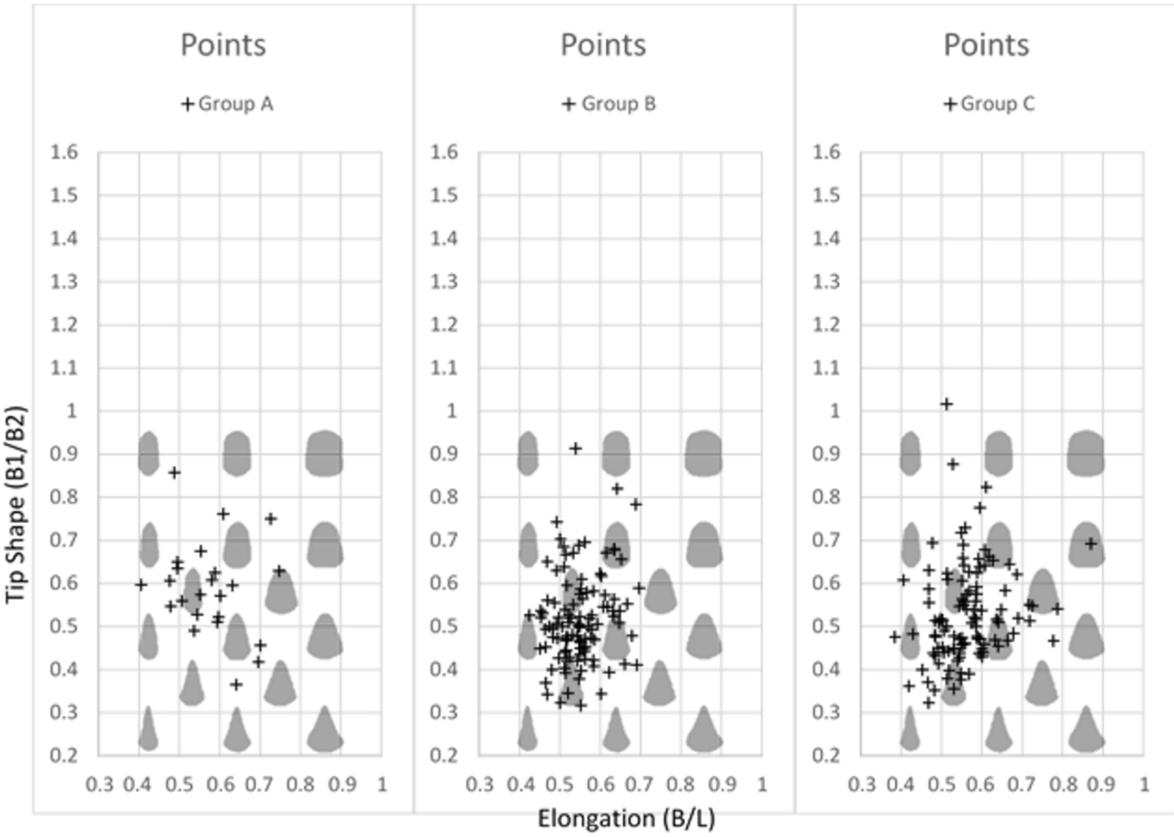


*Figure 2: Tripartite diagram, pointed section. Interpretative key after Roe (1968a) is overlaid.*

enough to be considered 'point-dominated' by Roe's methodology. Sorting of the groups based on average elongation and tip shape values showed a close similarity to other sites in Roe's Group I, which he summarised as 'pointed tradition (with cleavers)' (Roe 1968a). This is shown in Figure 5, which plots the ROM handaxe groups against Roe's other point-dominated sites (1968a). The difference between Roe's Furze Platt sample and the ROM Groups presented here need not be overstated, partly because of the effect of inter-analyst variation and differing samples, but also

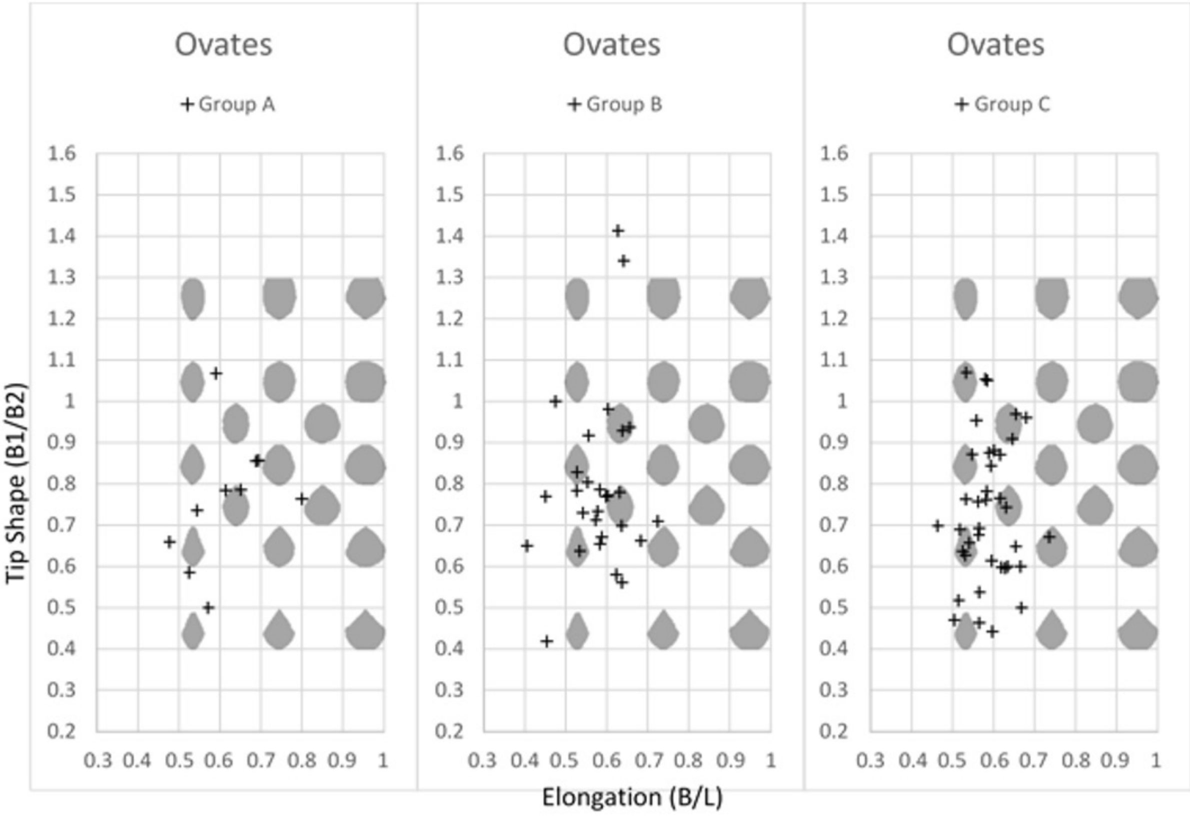


*Figure 3: Tripartite diagram, ovate section. Interpretative key after Roe (1968a) is overlaid.*

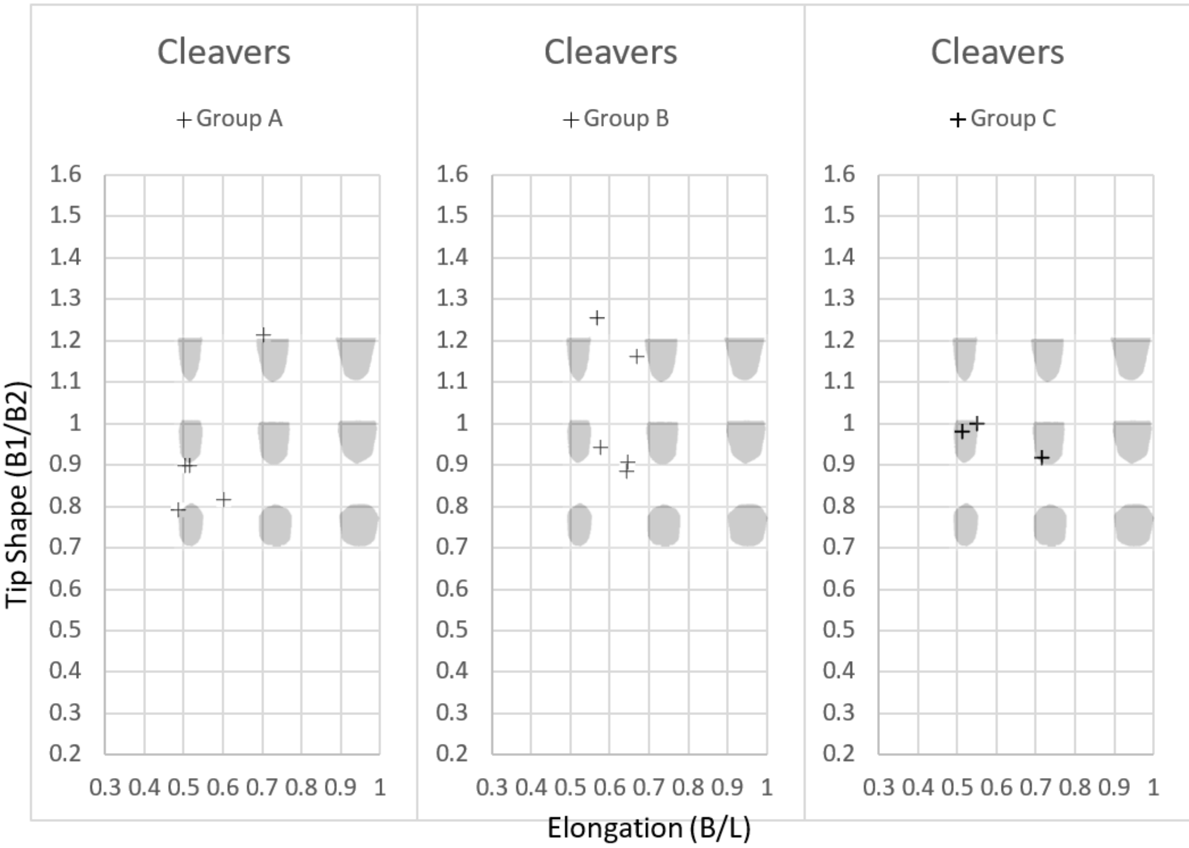


*Figure 4: Tripartite diagram, cleaver section. Interpretative key after Roe (1968a) is overlaid.*

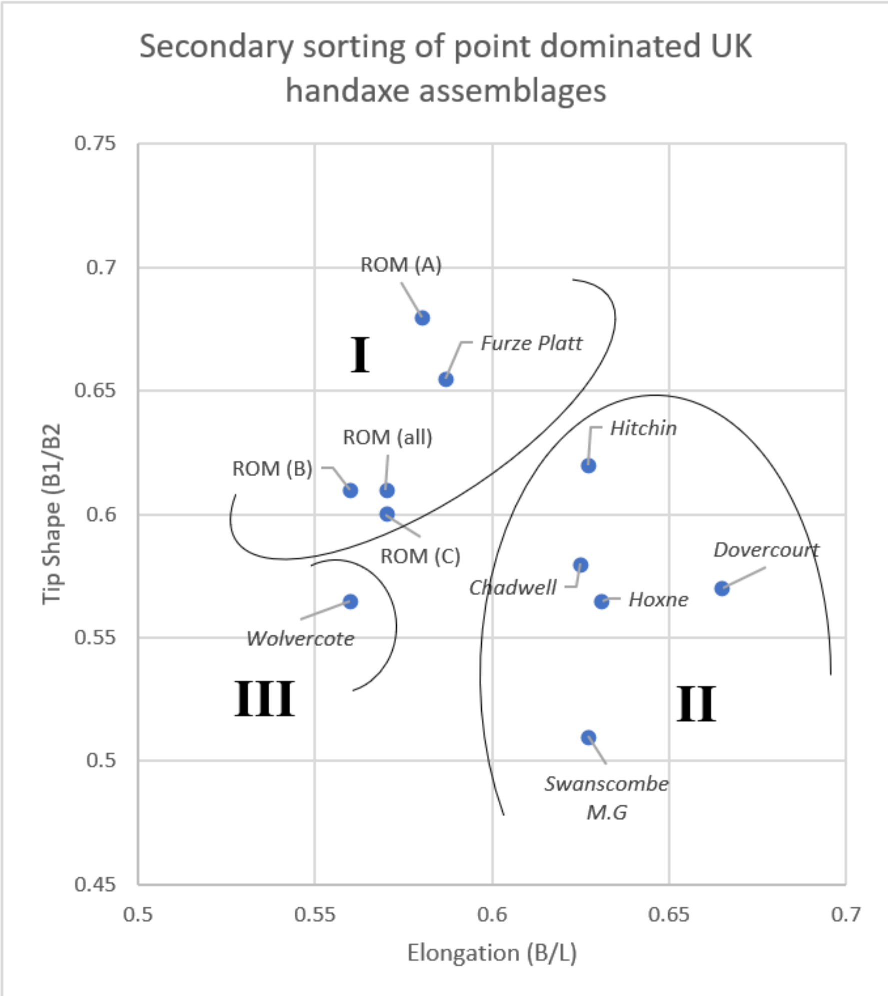


*Figure 5: A comparison of Roe's (1968a) point-dominated sites (italicised) with the ROM Furze Platt groups. The broad 'regions' of Roe's Groups I – III are shown. Note that the other Group I sites (Cuxton, Stoke Newington, Twydall, Baker's Farm and Whitlingham) plotted in the same region, but fell short of being 'point-dominated' and so are not shown here.*

because morphometric groups only indicate broad similarity between sites and are not suitable for 'fine grained' comparison.

**Typology**

Handaxe types were assigned using a pared down version of Wymer's scheme, shown in Table 5 (Wymer 1968 & 1985). Group A was found to be dominated by crude types, with a large proportion of pointed and cleaver types, and a smaller proportion of ovate and sub-cordate types. The only ficron was in notably fresher condition than the rest of the sample and had "In brick earth" inscribed on the label, pointing to a different stratigraphic provenance to the rest of Group A. Group B was found to be mostly pointed, with crude, sub-cordate, ficron and cleaver types represented in roughly equal proportions and very few ovate types. Group C was found to be similar to Group B, but with a greater representation of crude types. Crude types were found to be more rolled overall; ficrons and pointed types were generally found to be in fresher condition.

## DISCUSSION

The provenances of the three hitherto unidentified groups will be considered through the lens of the available documentary evidence, then related to their morphometric and typological characteristics.

*Table 5: Typological analysis of the ROM Furze Platt handaxes, using a condensed version of Wymer's (1968) methodology. The percentage of the sample in 'very fresh' and 'fresh' condition is shown in parentheses.*

| *Typological division* | *Total, %* | *Group A, %* | *Group B, %* | *Group C, %* |
|---|---|---|---|---|
| Crude, D, DF, DK, E, EF | 28.00 (45.65) | 50 (31.58) | 17.14 (45.83) | 32.65 (52.08) |
| Pointed, F, FG | 40.00 (70.77) | 21.05 (25) | 45.71 (67.19) | 39.46 (81.03) |
| Sub-cordate, G, GJ, GK | 8.92 (48.28) | 2.63 (0) | 10.71 (60) | 8.84 (38.46) |
| Ovate, J, JK, K | 4.00 (76.92) | 10.53 (50) | 3.57 (100) | 2.72 (75) |
| Cleaver, H, HK, GH, L | 8.92 (65.52) | 13.16 (20) | 10 (78.57) | 6.8 (70) |
| Ficron, M, FM | 10.15 (90.91) | 2.63 (100) | 12.86 (100) | 9.52 (78.57) |

**1. Group A**

The early collection and accession dates for Group A point to a Cooper's Pit provenance (Treacher & White 1909; Cranshaw 1983). The relatively small number of artefacts in Group A may reflect low artefact yields from the earliest years of collection at Cooper's Pit, as suggested by artefact numbers provided by Treacher. These numbers likely refer almost exclusively to handaxes, as Treacher did not systematically collect large numbers of flakes until the late 1920's (Treacher *et al.* 1948). By 1896 Treacher had found or 'heard of the finding of' at least 200 implements from 'many pits' operating in the Cookham-Maidenhead area, including Cooper's Pit (Treacher 1896a; Cranshaw 1983). The number of objects from the area had risen to 300 by 1897 (Treacher & Allen 1897). The pre-1897 Cooper's Pit collection must therefore have numbered fewer than 300 implements, and perhaps considerably fewer depending on the prolificity of the other pits in the area. The most productive years at Cooper's Pit seemingly occurred between 1897 and 1899 (outlined below), after Group A was collected.

The typology of the Group A handaxes is consistent with the general characterisation of handaxes from the Cookham – Maidenhead area provided by Treacher (1896a), in that he reported they were crudely made, with few ovates or cordates but numerous small pointed types and cleavers. The absence of ficrons from the earliest Cooper's Pit collection may be obliquely inferred from Treacher's (1896a) description, as he made no mention of finding them at Furze Platt but included a reference to 'long narrow points with incurved sides' at the nearby site of Ruscombe in the same volume (Treacher 1896b; Cranshaw 1983). Treacher (1896a) did not note the condition of the handaxes, but did record that he had observed a cluster of four or five implements occurring at the base of the gravel in a layer of "large unrolled flints" along with many flakes, and considered Furze Platt to be the only site in the area 'approaching a Palaeolithic workshop'. Cranshaw (1983) made the important observation that Treacher did not mention the condition of the artefacts themselves and it is certainly possible that the implements described by Treacher were rolled to some degree.

**2. Group B**

The collection and accession dates of Group B point to a Cannoncourt Farm Pit provenance. Wymer (1968) reports that Cooper's Pit may have been commercially worked "until 1909" based on a conversation between Cpt. P.D.R. Williams-Hunt and Mabel Treacher in 1945 (recorded as notes in Reading Museum), but there are two brief references in Treacher's published work which suggest that artefact collection from Cooper's Pit had ceased by 1899. Treacher (1904) recalled that '…there is, or was [a pit] near the hamlet of Furze Platt'. His wording suggests that he had not visited Furze Platt recently, and was certainly not actively collecting from Cooper's Pit by 1904. When he did revisit the area in 1909 he described a field near Cannoncourt Farm containing a disused pit which had been prolific 'from twenty to ten years ago' (i.e. from c.1889 – c.1899), as well as 'a more recently opened pit not far away' where the workman in charge produced 'a few' handaxes (Treacher & White 1909). The former is almost certainly Cooper's Pit and the latter Cannoncourt Farm Pit. Map regression using historical OS maps supports this interpretation, showing Cooper's Pit as an active gravel pit east-south-east of Cannoncourt Farm in 1897, but as an 'old gravel pit' by 1910 (Figure 6). Cannoncourt Farm Pit had been established directly to the south before 1910, consistent with reports of it having opened in 1909 (Lacaille 1940; Wymer 1968).

**3. Group C**

The provenance of the Group C handaxes is unknown, as the date of their accession precludes neither Cooper's Pit nor Cannoncourt Farm Pit as a provenance. The relatively large number of Group C handaxes points to a prolific site: the number of handaxes attributable to Cooper's Pit by 1904 was between 500 – 600 (Treacher 1904), pointing to an increase of at least 200 – 300 between 1897 and 1899 when collection from the pit ceased, and probably many more considering that Treacher's early tallies were based on the yield from multiple pits in the Cookham – Maidenhead area (Treacher 1896 & 1904; Treacher & Allen 1897; Treacher & White 1909). Treacher gave no impression of Cannoncourt Farm Pit being especially prolific when reporting on the site in 1909, and the most productive phase of that pit did not come about until 1919 (Treacher & White 1909; Cranshaw 1983). Assuming Group B does indeed represent early Cannoncourt Farm Pit handaxes, it would have had to yield almost 300 handaxes within the space of a year (and probably more, considering the ROM collection has diminished over time through sales and donations to other museums and individuals). This is by no means an impossible number, but unlikely given that Furze Platt was scarcely mentioned in published literature between 1909 and 1919 (Cranshaw 1983).

Perhaps more significantly, the difference in labelling conventions between Group B and Group C argues against a common provenance. It is reasonable to suggest that all Treacher's early Cannoncourt Farm Pit collections were labelled, in accordance with his personal collecting habits and the importance he placed on provenance (Hosfield 2009), and consequently that the Group C handaxes were not a part of the same collection. It is possible that the Group C handaxes represent objects donated to the ROM by Z.A. Lash in 1910. It is not known when Lash purchased the objects from Treacher, nor when they were originally collected. The limited evidence available leaves open the possibility that the Group C handaxes represent most of the errant Cooper's Pit collection. If the Group C handaxes do not represent the bulk of the 1897 - 1899 Cooper's Pit collection, then its location remains a mystery.

Treacher (1904) noted the small size and low intensity of working of most of the later Cooper's Pit handaxes, but also mentioned 'large and massive' specimens along with points and cleavers. He concluded that there was 'no prevailing type' but that handaxes from the pit could be easily identified. These descriptions are equivocal, but broadly consistent with the character of Group C presented here. Treacher's


*Figure 6: Schematic of the Cannoncourt Farm area, showing the evolution of the working gravel pits in the area. Based on OS Maps Berkshire XXIV.10 (Cookham, Maidenhead), revised 1897 and 1910, published 1899 and 1912.*

omission of any mention of ficron types and his characterisation of the handaxes as 'small' on average fits poorly with Group C, however. If the Group C handaxes do indeed represent Treacher's post-1897 Cooper's Pit collection, historical map regression between 1897 and 1910 (Figure 6) might point to a broad horizontal provenance for the late glut of finds: the small expansion of the pit to the northeast may have met a high concentration of handaxes noted by Treacher to have occurred in gravels "under the lane", presumably referring to Nightingale Lane (Treacher & White 1909).

**Interpretation of the ROM handaxe groups**

All three ROM Furze Platt handaxe groups aligned closely with Roe's Group I, in line with previous measurements of Furze Platt handaxes and offering further support for the chronological patterning of handaxes and the association of Roe's Group I with MIS 10–8 deposits (Bridgland & White 2014, 2015; White *et al.* 2018). This might be expected given the proximity of Cooper's Pit to Cannoncourt Farm Pit and the likelihood that the same 'spread' of Lynch Hill Gravel was present at both localities (Lacaille 1940; Harding *et al.* 1991). Groups B and

C were found to be similar assemblages and included significant numbers of ficrons and cleavers, a typological pairing which has been noted in many other assemblages of MIS 10–8 age (Wenban-Smith 2004 & 2006; Bridgland & White 2014 & 2015; White *et al.* 2018). The most striking difference between Groups B and C was the larger component of crude types in the latter. Group A also had a large component of crude types along with cleavers, but lacked ficrons. The absence of ficrons may be the result of the relatively small number of handaxes in Group A, although pronounced variation in the proportion of ficrons and cleavers has been noted at other MIS 10–8 sites within the broad morphometric bounds of Roe's Group I: the nearby site at Baker's Farm, for example, produced notably fewer ficrons and more cleavers than Cannoncourt Farm Pit (Roe 1968a; Cranshaw 1983). The larger component of crude types in Groups A and C may point to spatial variation of types between Cooper's Pit and Cannoncourt Farm Pit, within the same body of gravel.

All three groups are likely to represent mixed assemblages. The more derived component (most pronounced in Group A) probably represents an earlier occupation upstream and includes a large proportion of crude types. The fresher component (most pronounced in Group B) represents handaxe manufacture and occupation in the immediate vicinity of Furze Platt and includes pointed types with ficrons and cleavers. The greater proportion of more derived material in the two supposed Cooper's Pit groups (A and C) suggests either a higher density of more derived material in that part of the gravel, or a lower density of less derived material. The latter is more likely, given the relatively low numbers of more derived artefacts in the collection. The evidence presented here may point to an evenly distributed low-density scatter of more derived artefacts across both Furze Platt pits, along with unevenly distributed high-density clusters of fresher material, the latter being more common in Cannoncourt Farm Pit. This is consistent with the generally uneven artefact density reported across the site (Treacher 1896a; Treacher & White 1909; Lacaille 1940; Harding *et al.* 1991). The more derived material is likely to be older than the fresher material, although it should also be noted that condition is generally a poor indicator of age, and that the sub-Marine Isotope Stage dating of the site remains unresolved (Hosfield 2011).

## CONCLUSION

The sizable ROM Furze Platt handaxe collection is a poorly studied resource relating to one of the flagship Lower Palaeolithic sites in Britain. Three distinct groups were identified within the collection for the first time, relating to collecting activity from an early phase at Cooper's Pit (Group A), Cannoncourt Farm Pit (Group B) and an unknown pit, potentially representing a later phase of activity at Cooper's Pit (Group C). All three groups originated from Lynch Hill terrace deposits, which are robustly dated to MIS 10–8, and all three align with Roe's morphometric Group I. The different characteristics of the three groups, overprinted onto the broad preference for Group I morphologies seemingly common to most MIS 10–8 handaxe sites, may suggest a chronological variation in handaxe morphology within the MIS 10–8 cycle at Furze Platt. This is supported by previously published observations of variable horizontal artefact density within the Lynch Hill terrace gravels at Furze Platt.

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# THE SAVILLE GRANT AWARD: THE LITHIC ASSEMBLAGE FROM EAST PARK, DRUMOAK, ABERDEENSHIRE FIELD WALKING (2019)

Ann Clarke

## INTRODUCTION

East Park is a farm on the north side of the Dee immediately west of Park Bridge. The site was initially recognised by Dr John Grieve in the 1970s. Between 2016-19 Mesolithic Deeside volunteers walked the field. The lithics report below is based on the 2019 campaign of walking the entire field made possible by the Saville Grant.

The field (field code EP1) encompasses what appears to be three river terraces and test-pitting in 2018 explored some of these geomorphological features. The highest terrace, more than 34m asl, covers the northern part of the field and is a broad glaciofluvial terrace of Upper Palaeolithic age. Grieve's collection came from this terrace surface, in the north-east of the field. Test-pits dug on this terrace surface had thin topsoils on to gravel. However, TP 37 was positioned in a shallow river channel where nearly 60cm of 'clean' sand underlay the topsoil and the evidence suggests there is a high likelihood that Mesolithic artefacts or features may be preserved in areas of thick sand accumulation (Richard Tipping pers comm). The density of finds in Grieve's collection might also suggest this.

Terrace 2 is poorly preserved: it has not been related to sea level and it is not known whether the lithics are in situ. Terrace 3 is around 30m asl. The age of this terrace is not known but is thought, this close to the river, to be post-Mesolithic in age, so the Mesolithic lithics may have been washed onto this surface from above.

PIRSL/OSL data was collected by Tim Kinnaird, University of St Andrews and geological advice was given by Dr Richard Tipping, University of Stirling.

The results of the 2019 lithic collection below have not yet been plotted against the three terraces identified.

A total of 2868 flaked lithics was recovered during field walking of the entire field at East Park in 2019. Preliminary results, presented here, indicate occupation of this area from the Late Upper Palaeolithic through to the Late Neolithic. The lithics were identified and catalogued by material, condition, type, sub-type and classification and measured where appropriate. This report serves as a first step towards the understanding of how and when the lithics were deposited in the area and no detailed analysis has been carried out on the raw materials or tool types present.

## RAW MATERIAL

Most of the flaked lithics are flint and there are nine pieces of quartz or quartzite, three pieces of rhyolite and a flake of chalcedony (Table 1). Most of the flint would have come from gravel sources in the region.

Several colours of flint were identified and summarised into five main colour groups in Figure 1. Grey flint was the most common followed by brown flint and both encompassed many shades and textures including mottled grey and mottled brown flint. Rolled pebble cortex was present on a large proportion of this flint; visible on primary and secondary flakes (Figure 1) as well as the cores, which indicates the main source for this grey and brown flint to be inland gravel ridges such as Buchan.

Some of the identifiable Late Neolithic flint working at East Park used a mottled grey flint and it is possible, though not quantifiable here, that this flint came from a

*Table 1: EP19 assemblage composition.*

| | Flint | Rhyolite | Quartzite | Chalcedony | Total | Burnt Flint | Frost-shatter flint |
|---|---|---|---|---|---|---|---|
| **Blades** | 683 | | | | 683 | 55 | 3 |
| **Flakes** | 691 | | 5 | 1 | 697 | 26 | 9 |
| **Flake fragments** | 469 | 1 | 1 | | 471 | 140 | 25 |
| **Retouched tools** | 92 | | | | 92 | 3 | 1 |
| **Cores and pebbles** | 184 | | | | 184 | 18 | 4 |
| **Small flakes** | 410 | | | | 410 | 46 | 1 |
| **Chunks** | 228 | 1 | 2 | | 231 | 101 | 13 |
| **Spalls** | 98 | 1 | 1 | | 100 | 70 | 19 |
| **Total** | 2855 | 3 | 9 | 1 | 2868 | 459 | 75 |

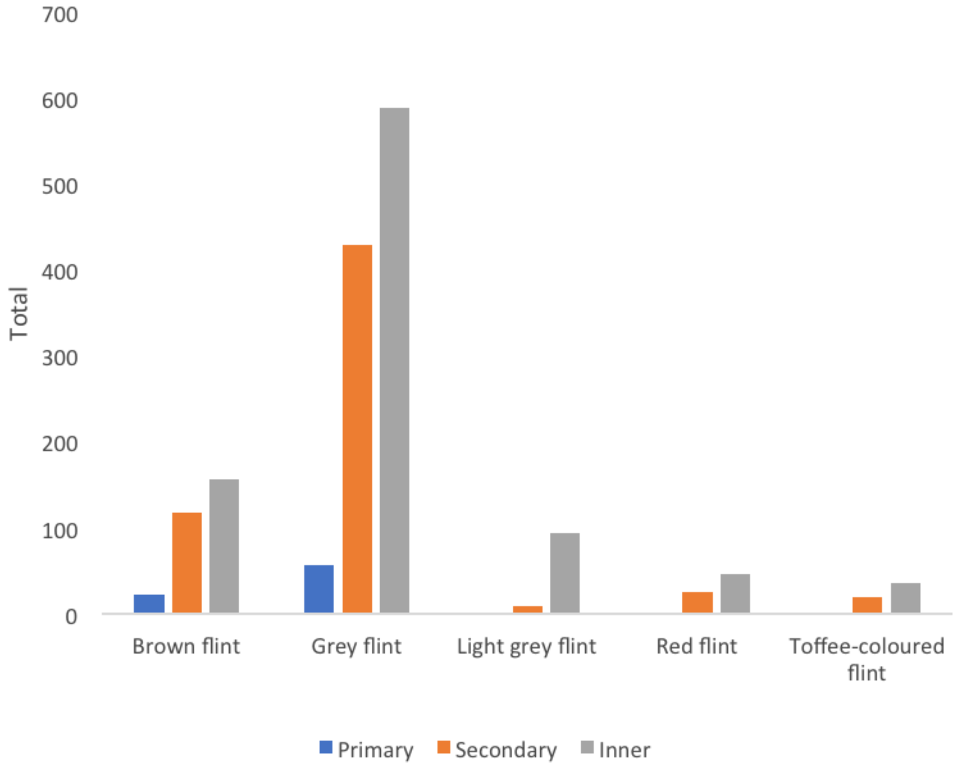


*Figure 1: Flint type and cortex.*

different source to the local gravels and was brought in from outside the area, perhaps further south down the east coast.

A few lithics were made from flint which was not immediately recognisable as being local. These included a core (EP-137-19). Blade tools were made from an unusual banded grey flint (e.g. Illus. 1 607.9, Illus. 2 743.2) (see Discussion).

A specific material - light grey flint - is identifiable from the rest of the grey flint (Figure 1). This material is an almost luminous light grey in colour and mottled with white. It was used mainly for blades and retouched tools (Figure 2) and was likely brought in from outside the region. An unusual pink flint used to make an obliquely blunted blade (Illus. 3 1789.2-19) would also have been acquired from elsewhere.

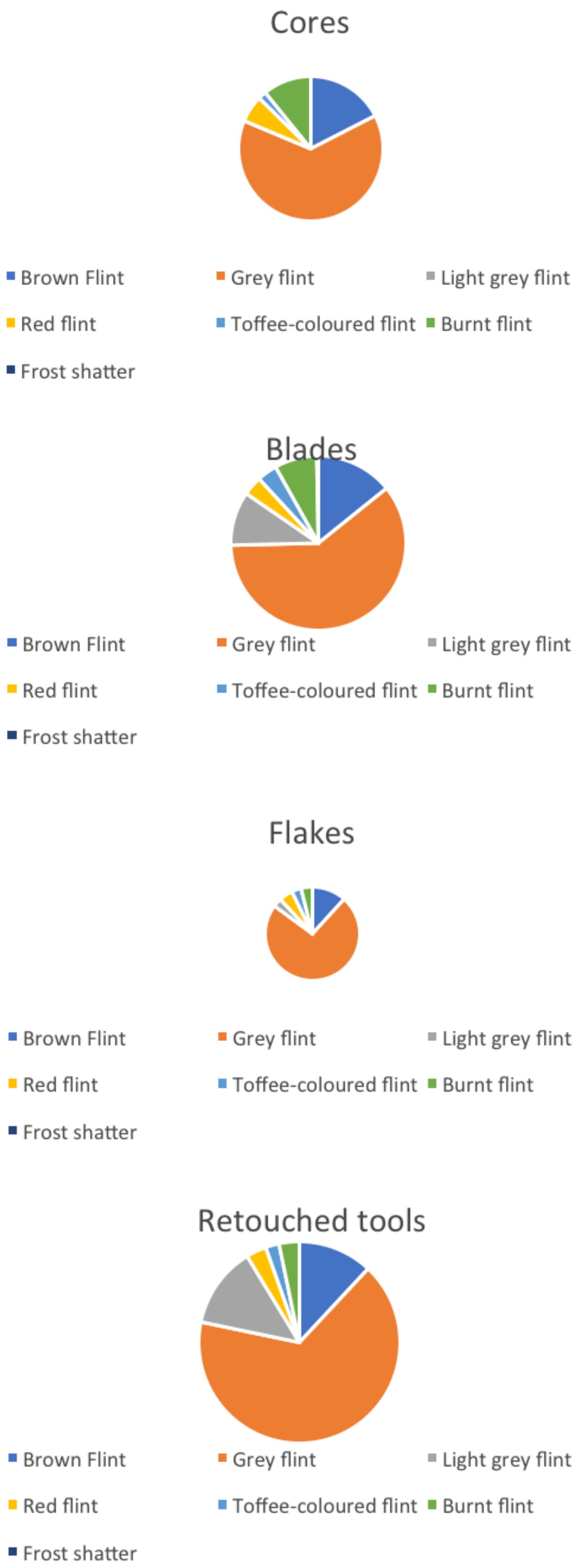


*Figure 2: Proportions of material and artefact type.*

Another source for the flint is the beach deposits along the Aberdeenshire coast from which pebbles of grey, red, yellow and brown flint can be collected. This knapped material cannot confidently be separated visually from the gravel flint as it is a subjective analysis but in general the beach pebble flint is purer in colour and texture than flint from the gravel source.

There is little evidence that rhyolite was exploited. A flake fragment, chunk and spall were identified as well as some natural chunks but nothing suggested the deliberate use of a resource. Pebble cortex on the chunks indicate a secondary source for rhyolite which was likely part of the natural river gravels.

A small amount of quartz and quartzite was knapped (Table 1), including a flake of an unusual quartzite from a broad blade core (EP-180-19).

Chalcedony was present as one flake. This had 'country rock' adhering to it indicating a vein source, as oppose to a rolled source, for the chalcedony.

The assemblage was in reasonable condition: the flints were not heavily rolled, or patinated but 19% had been affected by thermal alteration. Burning clearly affected 16% of the assemblage leaving a white calcined surface and breakage whilst a further 3% were cracked either by frost shatter or heat. All the artefact types had a proportion of burnt pieces but the flake fragments, chunks and spalls had higher numbers because of the breakage and spalling caused from heat damage (Table 1). The burning and frost shatter could have occurred whilst the lithics were on the surface of the plough soil and exposed to crop burning and winter temperatures.

## PRIMARY WORKING

A wide range of cores and flaked pebbles are represented in the collection. The most common type (half of all the cores) is the single-platform core from which blades were removed (Table 2). They were quickly produced by quartering a large pebble and, using one fractured face as the platform to flake from the other fractured face towards the back of the pebble. Initially flakes were removed in order to prepare the core for blade removals (hence the numbers of these cores with flake removals (Table 2)),then blade removal took place around the platform perimeter. The cores were worked towards the back of the quartered nodule and on two-thirds of these cores a patch of pebble cortex remains on the back. Five

*Table 2: Core types.*

| *Core types* | *Blade removal* | *Flake removal* | *Blade and Flake removal* | *Total* |
|---|---|---|---|---|
| **Single-platform core** | 75 | 10 | 6 | 91 |
| **Opposed platform** | 9 | | | 9 |
| **Right-angled platforms** | 2 | 1 | 1 | 4 |
| **Multi-platform core** | | 13 | 2 | 15 |
| **Disc core** | | 6 | | 6 |
| **Bipolar core** | | 10 | | 10 |
| **Core fragment** | n/a | n/a | n/a | 22 |
| **Flaked chunk** | n/a | n/a | n/a | 1 |
| **Flaked pebble** | n/a | n/a | n/a | 2 |
| **Half pebble** | n/a | n/a | n/a | 8 |
| **Quarter pebble** | n/a | n/a | n/a | 15 |
| **Complete pebble** | n/a | n/a | n/a | 1 |

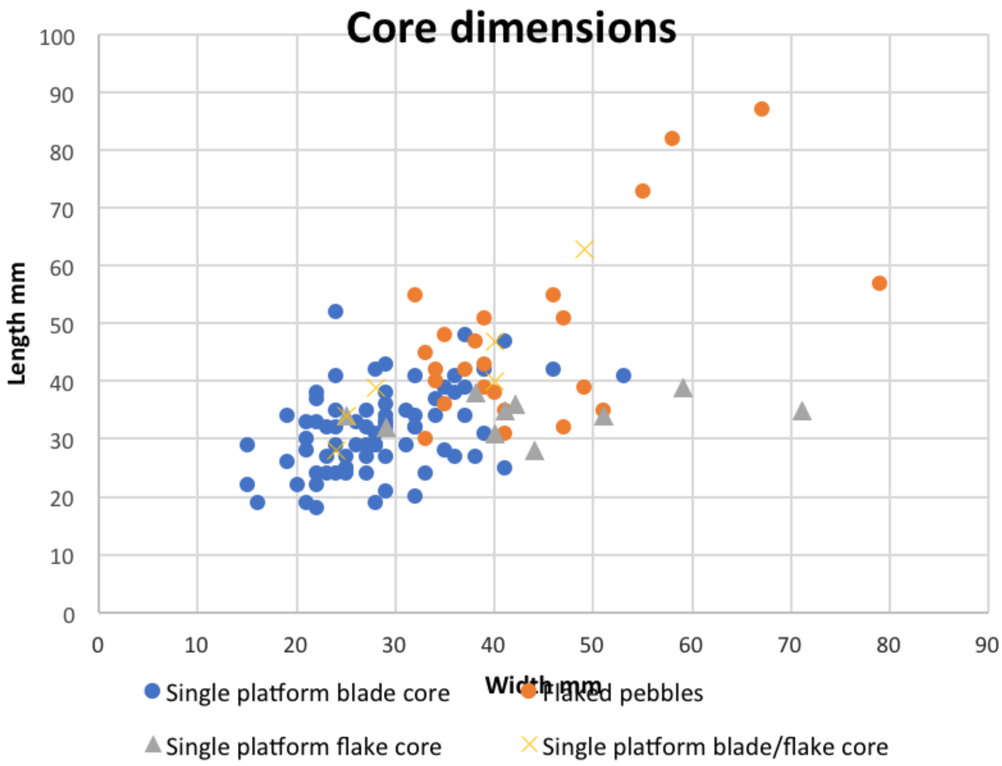


*Figure 3: Dimensions of single platform cores and flaked pebbles (including halved and quartered and lightly flaked pebbles).*

cores were worked towards a prepared flat inner back. The rest were worked around the whole of the platform. All stages in this simple but specialised reduction process are present in the collection including the halved and quartered pebbles (Table 2) as well as the range of single platform cores showing the various stages of removal from flakes to blades. This is well illustrated in Figure 3 which shows how the nodule became reduced in size throughout the knapping process from flaked pebble to single-platform blade core.

Other blade cores are slightly more complex with opposed platform working or with platforms made at right angles to each other (Table 2, Figure 4). These occur in the mid-range of sizes for the single platform cores and were not reduced to the same extent.

The multi-platform cores and disc cores were knapped to produce flakes (Table 2) and are indicative of Late Neolithic flint working. These vary in size but tend to have larger dimensions than the single-platform cores (Figure 4). Ten bipolar cores were also collected (Table 2) and are amongst the smallest of all the cores (Figure 3) reflecting the tendency to use this reduction technique on previously manufactured flakes and chunks.

## THE PRODUCTS OF KNAPPING

Blades were the intended products of single platform and opposed platform core working. There is a wide range of lengths and breadths which suggest the assemblage was produced from different chronological occupations. Lengths of complete blades range from 12mm to 97mm with a concentration between 24mm and 30mm (Figure 6). Half of the blades were broken and these attenuated lengths also show a wide size range.

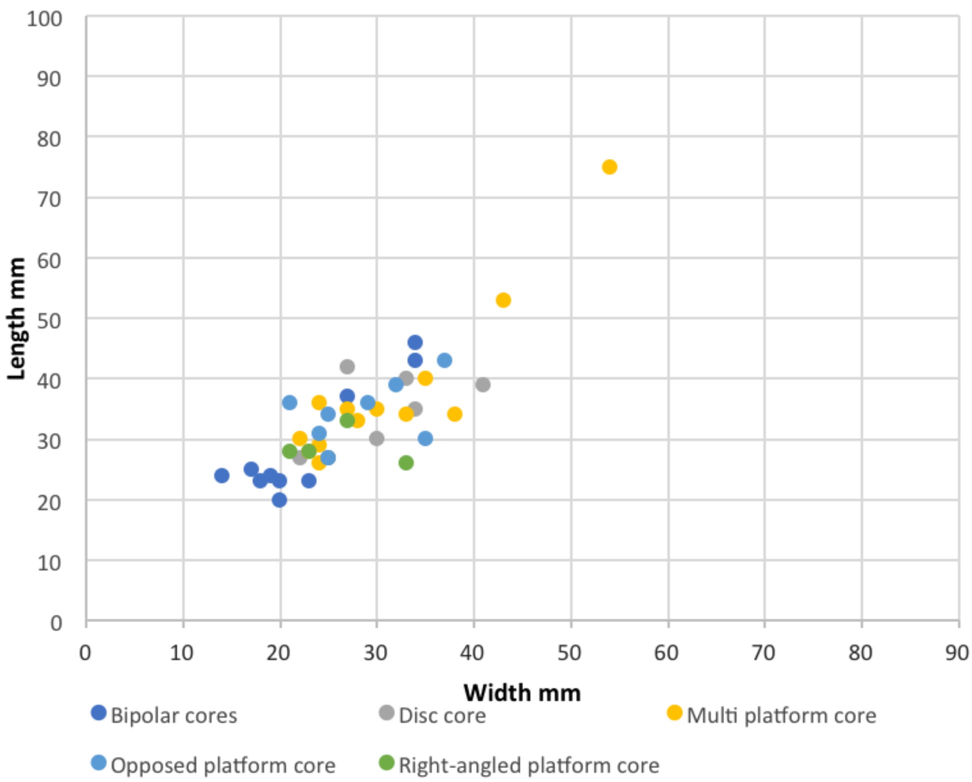


*Figure 4: Core dimensions.*

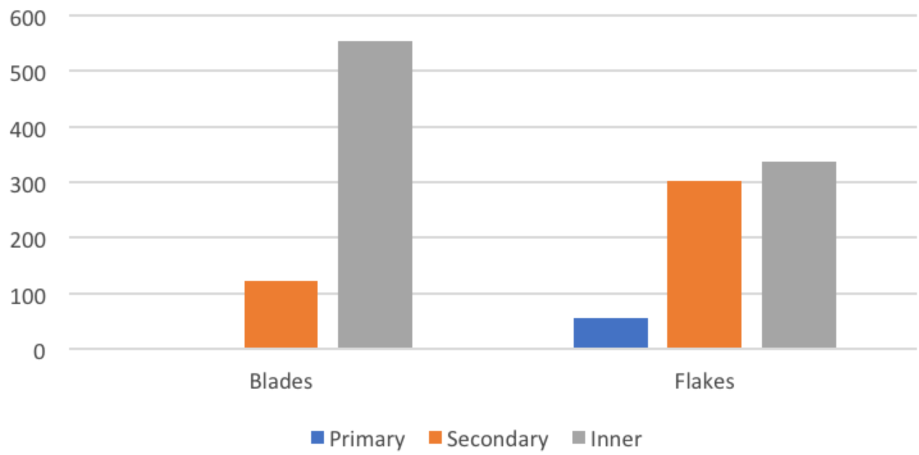


*Figure 5: Cortex on blades and flakes.*

The blade widths had a wide range from 4mm to 33mm with a concentration between 10mm and 14mm (Figure 7). This shows that the blades collected during field walking were in the broad blade category (broad blades are >8mm in width).

The thirteen crested blades are evidence for a specialised means of shaping and controlling the direction of blade removal. These are amongst the widest and longest of all the blades ranging 13mm to 33mm wide and 33mm to 97mm long (Figure 6 and 7 and see Illus. 4 314). The lengths of the crested blades place them at the higher end of the lengths of blade cores and within the size range of the simple halved and quartered pebbles (Figure 3) which demonstrates that most of the crested blades were removed from larger cores than those

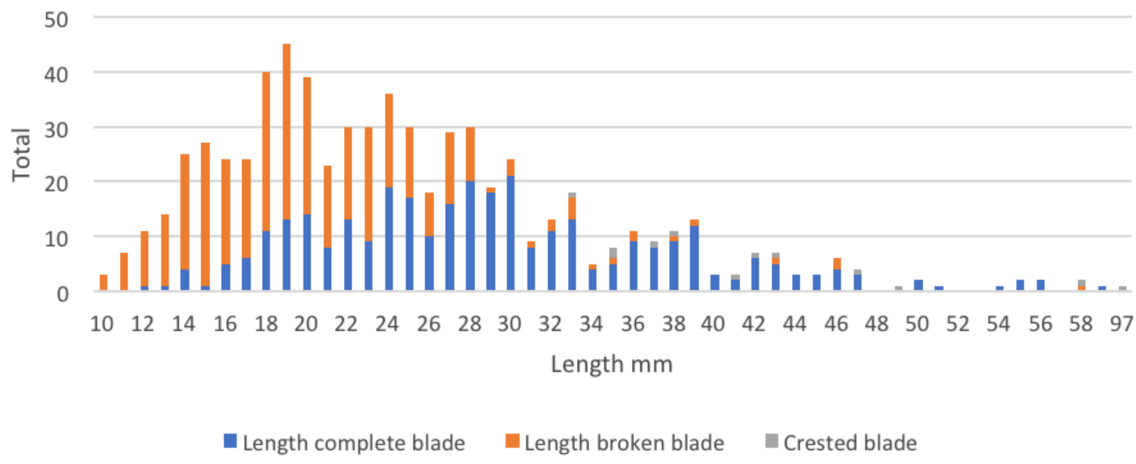


*Figure 6: Lengths of blades.*

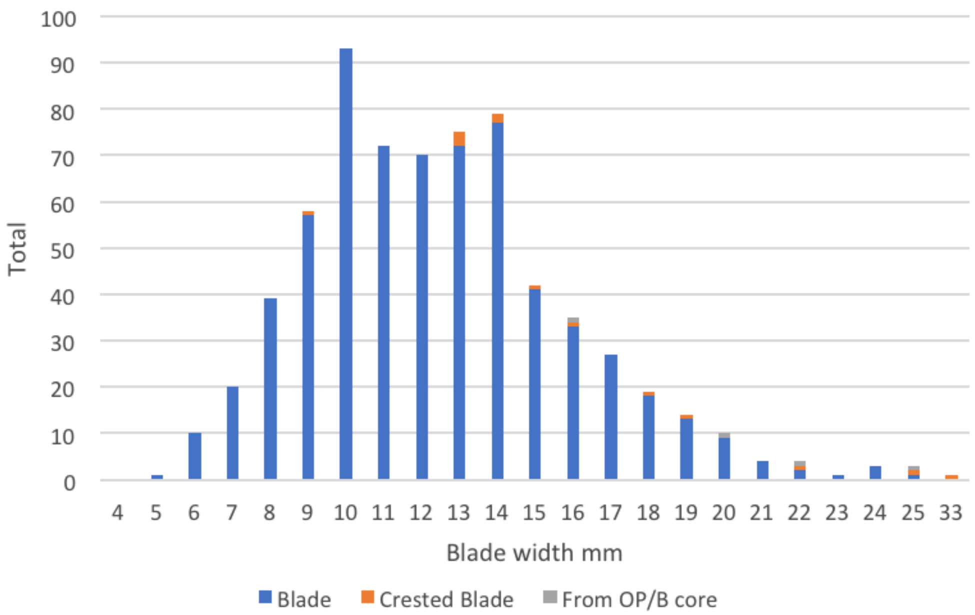


*Figure 7: Blade width.*

found here. This could be evidence for a different blade reduction strategy to the one that is dominant in the collection.

Flakes, excluding flake fragments were as numerous as blades in the collection (Table 1). Primary, secondary and inner flakes are all present and support the evidence for the knapping of pebble flint in the area (Figure 5). There is a wide size range within the flakes 15mm – 66mm in length (Figure 8) and the flakes with cortex (primary and secondary) tend to be the largest in size. There is little evidence for core maintenance flakes – there are just 15 core trimming flakes and one core tablet (EP1-502-19) which, at 48mm x 51mm, is one of the largest flakes (Figure 8) These support the evidence from the cores for a simple knapping strategy. Evidence of faceted platforms on three flakes (1604; 1745.3; 1825.1) and multi-directional flake scars on 11 flakes demonstrates Late Neolithic flint working in the collection.

Small flakes (flakes <15mm in maximum dimension) were also collected and comprised 14% of the total assemblage

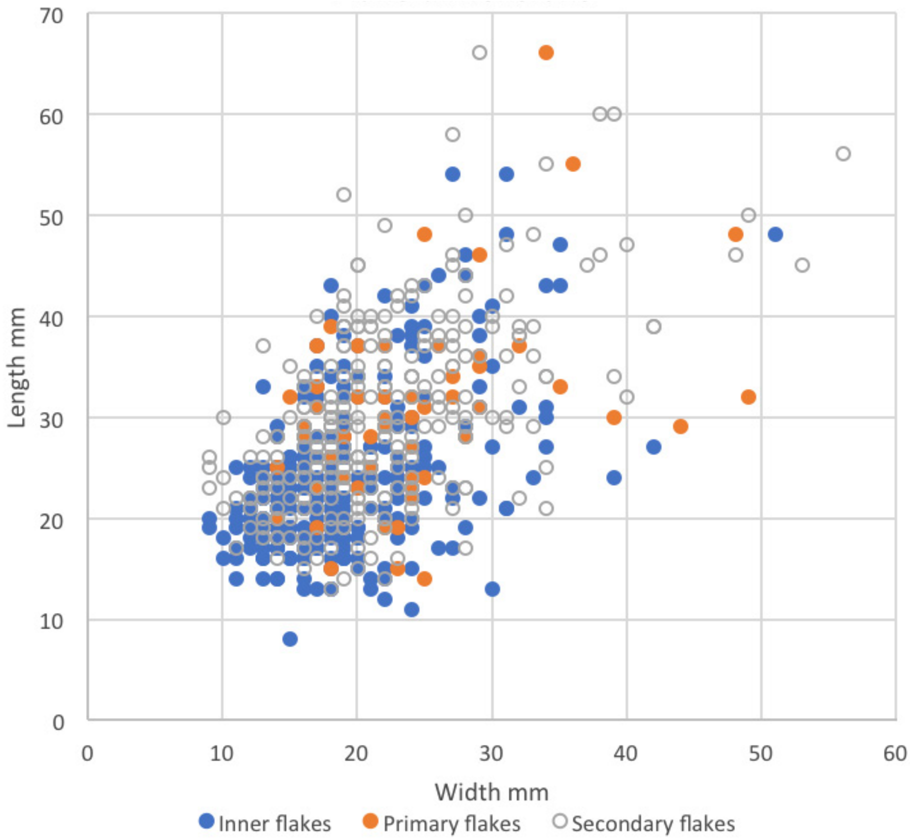


*Figure 8: Flake dimensions.*

(Table 1). The identification of this small fraction demonstrates the thoroughness of the field walkers' collecting method.

**Retouched Tools**

Blades (n=55) and flakes (n=37) were selected for further shaping into formal tools (Table 3).

*Broad blade microliths*

These are made using blades of 9mm to 12mm in width. A broad isosceles triangle (601.1) is the clearest form. Blade 1466.2 has the angled edges of an isosceles triangle but the distal angle is formed of a natural flat, cortical edge. The narrower blade (844) is a large scalene form (Illus. 5).

*Narrow blade microliths*

Three crescents, two backed blades and a scalene triangle are present together with six microlithic fragments. One backed blade (1062.1) is a fine elongated form at 27mm in length.

A lamelles a cran (1465) is waste from the production of narrow blade microliths. A possible microburin (551.3) was also found.

*Backed blades*

The five backed blades are blades with abrupt edge retouch down one side. All are broken and they range from 8mm to 15mm in width.

*Obliquely blunted blades*

Seven blades ranging from 7mm to 15mm in width and 23mm to 29mm in length bear abrupt retouch obliquely across the distal end of the blade (Illus. 3). One (1789) is of an unusual pale pink flint and the oblique edge is not straight but bears a slight convex curve.

*Illus. 1: End scrapers: top 705.2; 607.9; 653; bottom 785; 858.1; 621.2.*

*Table 3: Retouched tool types.*

| | ***Blade*** | ***Flake*** |
|---|---|---|
| Shouldered point | 1 | |
| Bec? | | 1 |
| Broad blade microliths | 3 | |
| Narrow blade microliths: | 11 | |
| Crescents | 3 | |
| Scalene triangles | 1 | |
| Backed bladelets | 2 | |
| Microlith fragments | 6 | |
| | | |
| Backed blades | 5 | |
| Obliquely blunted blades | 7 | |
| | | |
| Knife form | 5 | 3 |
| Edge retouched | 3 | 2 |
| | | |
| Scrapers: | 8 | 31 |
| End scrapers | 8 | 5 |
| Thumbnail scrapers | | 5 |
| Angular scrapers | | 4 |
| Robust scrapers | | 6 |
| Concave scraper | | 1 |
| End and both sides scraper | | 1 |
| Side scraper | | 2 |
| Miscellaneous scrapers | | 4 |
| Scraper fragments | | 3 |

*Illus. 2: Knife form 743.2.*

*Illus. 3: Obliquely blunted blades: 1039; 1789.2; 1072.1; 1828.1; 319.1; 417.*

*Illus. 4: 314; 844; 315.2.*

*Illus. 5: Broad blade microliths 601.1; 1466.2; 844*

*Scrapers*

Scrapers are the most common tool type in the collection (n=39) and there are several different forms are present (Table 3).

Eight end scrapers are made on blades and at least six of these (Illus. 1) are similar to those dating to the Late Upper Palaeolithic at Howburn, Lanarkshire (ref ) . The use of banded grey flint is note for one of these scrapers (607.9) supporting the suggestion that this material was brought in for use at this early prehistoric period.

The rest of the end scrapers are made on blades and broad flakes (Illus. 6). They are less distinguishable by period as those above but Illus. 6 1245 is likely to date to the Late Neolithic.

Five thumbnail scrapers are sub-circular in plan and range from 18mm to 21mm in maximum dimensions (Illus. 7).

A group of six scrapers are made on thick (up to 18mm) primary flakes and present a robust curved scraping edge (Illus. 8).


*Illus. 6: End scrapers top 408; 912, bottom, 1473.5; 1245; 1345.*


*Illus. 7: Thumbnail scrapers.*


*Illus. 8: Robust scrapers*

Three other scrapers are distinctively Late Neolithic in style with invasive steeply flaked sides (Illus. 9).

The rest of the scrapers are made on flakes and present angular, curved and concave scraping edges or are more miscellaneous forms (Table 3).

*Knife forms*
Four blades have light blunting retouch and/or semi-acute edge retouch along one edge of a blade. They are similar in dimensions and were probably used as some form of knife. These most likely date to Late Mesolithic or Early Neolithic.

A robust blade and three flakes were retouched more heavily using acute, semi-invasive flaking to shape the edges (Illus. 10). These resemble Late Neolithic forms of knives.

*Notched blades*
Five blades retained a worked notch on one side of the blade.

*Edge retouch*
Miscellaneous edge retouch is present on three blades and two flakes and is formed of light, irregularly placed flaking forming no clear tool type.

*Shouldered point*
This is a fine shouldered point dating to the Late Upper Palaeolithic (Illus. 11). The exact cultural typology has not yet been assigned for this report.

*Bec?*
This broad flake thick flake has steep edge retouch around the entire piece shaping it to a point on one end (Illus. 12). Initially this was assigned a Late Neolithic date but it resembles a Late Upper Palaeolithic tool called a Bec. The surface has been damaged from burning.


*Illus. 9: Late Neolithic scrapers.*

*Illus. 10: Late Neolithic knives 147; 93.2; 1740.3*

## DISCUSSION

This large field collection has several interesting features which are highlighted below to promote discussion and research in this area.

- The location was used in some form or another throughout prehistory. The evidence from the lithics indicates occupations dating to the Late Upper Palaeolithic (LUP), Early Mesolithic, Late Mesolithic and Late Neolithic.

- The identified Late Upper Palaeolithic lithics comprise end scrapers, a shouldered point, and a possible Bec. Three large unworked blades are likely to date to this early period too. There is almost no evidence that flint was knapped in this location during this period. A core fragment (137) from the base of a multi-direction flake/blade core is of banded grey flint and may date to the LUP but there is no other evidence for the working of large cores.

- The Early Mesolithic is identified from three broad blade microliths. As with the LUP it is not clear if flint was worked in the area at this period or whether the tools were brought in for use.

*Illus. 11: Shouldered point 513.2.*


*Illus. 12: ?Bec 738.2.*

- The most extensive occupations relate to blade production using the gravel pebbles. This is likely to date to the Late Mesolithic and is accompanied by narrow blade microliths.

- The Late Neolithic period is identified through the specific knife and scraper forms as well as evidence for flake core working and faceted platforms. This period is also known for less-organised flint working, particularly the use of bipolar core working on flakes and chunks.

- The location of the gravels from which the flint pebbles came is not clear. Extensive gravels form the Buchan ridge in the NE of Aberdeenshire, some distance from the River Dee. There is a sense from the assemblage that flint was plentiful – as shown by the number of quartered pebbles, and the lack of evidence that many of the cores were exhausted before abandonment. This suggested to members of the Mesolithic Deeside group that there may be flint-bearing gravel sources closer to the site.

- Some flint is not local and was brought in from coastal sources or, in the case of the banded grey flint used in the Late Upper Palaeolithic acquired from yet unknown sources beyond the mainland.

- The dominance of scraper forms, from all main periods, is of interest. This could simply be a function of the identification of larger flints during field walking but it has been demonstrated from the fraction of small flakes and microliths found that these small pieces were also collected.

- Field walking of Nethermills 4, further upstream in 2018 produced a similar sized collection to that at East Park and a similar proportion of retouched tools with almost equal numbers of scrapers. It also had evidence for LUP to Late Neolithic occupation and in most respects the East Park and Nethermills field collections are similar enough to suggest that the River Dee was a resource that was intensively used at several locations, and in a similar manner, along its course throughout prehistory.

- The identification of the full extent of the earliest prehistoric activity is blurred to a great degree by the later extensive spreads of lithics from Late Mesolithic activity. We cannot yet say whether the LUP and EM lithics are from short or long-term occupations, and to what extent they made use of the sources of gravel flint. Excavation would be the only means to understanding the impact that the hunter-gatherers of these different periods had upon this landscape.

## ACKNOWLEDGEMENTS

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## JOHN WYMER BURSARY 2019

# THE LOWER AND MIDDLE PALAEOLITHIC IN NORTHWESTERN AZERBAIJAN: PRELIMINARY RESULTS FROM TEST EXCAVATIONS AT SHISH-GUZEY AND GADIR-DERE

*Birtwistle, R.J.*[1]

The Lower and Middle Palaeolithic record of Azerbaijan is underresearched, and currently contributes little towards the developing models concerning hominin behaviour and migration in the Caucasus Region. Rich sites such as Dmanisi (Gabunia et al. 2000; De Lumley *et al*. 2002), and Kudaro I (Liubin 1959), Georgia, and Nor Geghi (Adler *et al*. 2014), Armenia, are often used as proxies for describing patterns across the entire region. However, Azerbaijan possesses around 40 sites attributed to the Palaeolithic, which although often overlooked, do offer potential for understanding regional and more local patterns in hominin technological behaviour, though very few have been stratigraphically excavated. The country's most famous, and possibly also most ancient site, Azykh cave (Hüseinov 1963; Hüseinov *et al*. 1974), was excavated before the adoption of modern methods, therefore much of the information regularly obtained by archaeologists today has been lost. Other than Azykh cave, only a handful of cave sites are known, primarily Dashsalakhly and Damjili (Hüseinov 1959), Taglar (Djafarov 1983), Gazma cave (Zeynalov 2016), and Buzeir caves (Djafarov 1999). Most other information comes from surface collections found in open environments, where material has been observed eroding out of weathered soils. A large concentration of sites exists in the north-west of Azerbaijan close to the borders with Georgia and Armenia. Most of this material was discovered during extensive survey in the 1960s and 70s along the banks of the north-west to south-east running River Kura. In 2017 fresh research was drafted by the author as part of his doctoral studies at the University of Leicester, aiming to characterise material from a few of these sites to help understand technological markers and chronology of Lower and Middle Palaeolithic tool typologies. This short report will present some initial results of this work.

In 2018, lithic analysis of material from Shish-guzey and Gadir-dere (Figure 1) was undertaken at the Azerbaijan National Academy of Sciences, Baku. The assessment of these assemblages revealed mixed collections of possible Lower and Middle Palaeolithic implements. The sites are in close proximity and are both located on the south-western banks of the River Kura, north-west Azerbaijan. Due to the mixed nature of material and the lack of intrusive site investigation, a period of fieldwork was scheduled for summer 2019 to excavate test pits at each location in order to understand site formation, assess deposits for OSL dating and for the retrieval of further artefacts.

The site of Shish-guzey is positioned at an elevation of 591m on a ridge that looks north-west across the vast River Kura floodplain. Artefacts made on volcanic tuff are eroding out of the surface soil and are scattered across the entire top of the ridge. A test pit was excavated, but produced little evidence for deposition. Instead the soil is

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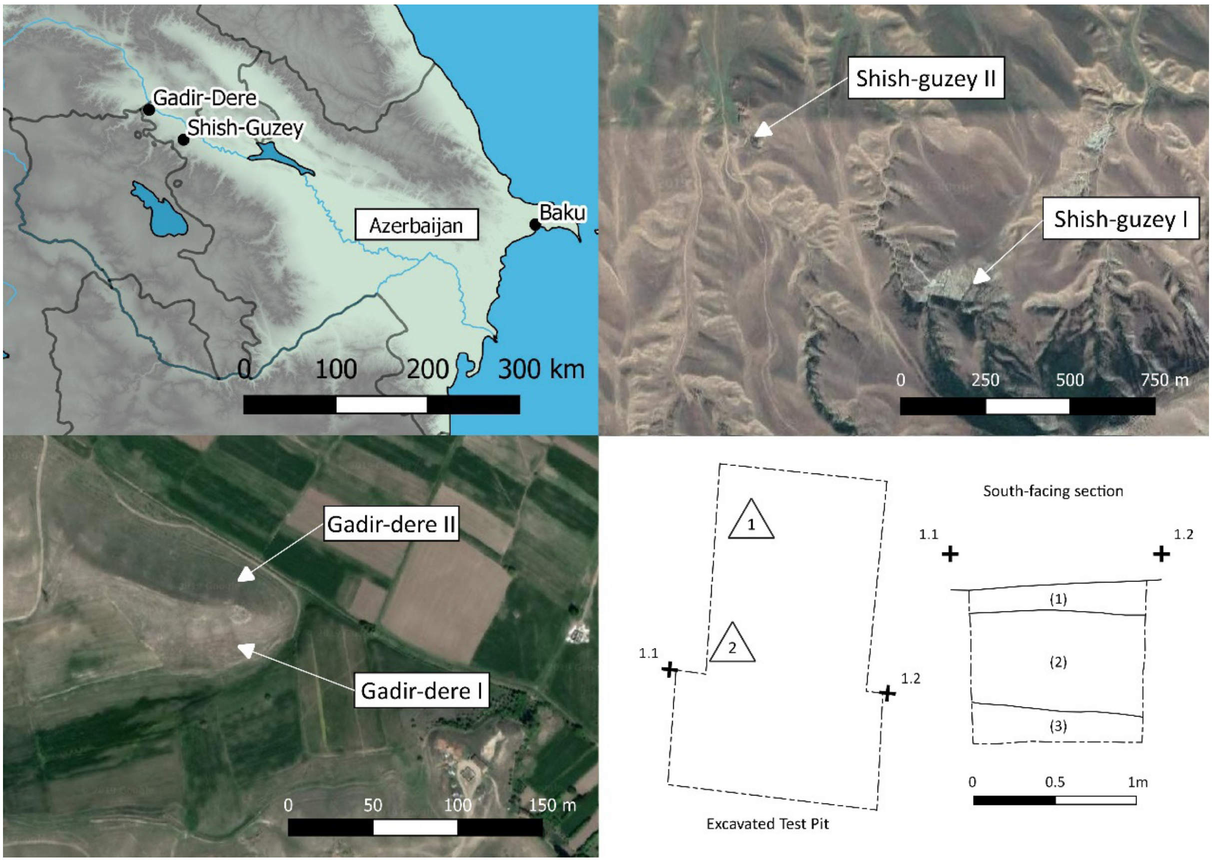


*Figure 1: Top left: map of Azerbaijan showing location of sites, Top right: Shish-guzey sites, Bottom left: Gadir-dere sites, Bottom right: excavated test pit at Gadir-dere I with location of artefacts recovered from layer 3 represented by the numbered triangles.*

formed by weathering of the underlying geology. Survey of the surrounding area revealed a number of other possible sites, most notably, Shish-guzey II, located across a deep valley c. 900 m away to the north-west. The Shish-guzey II site was found near a rocky outcrop and produced a Levallois point, large flakes and a large core. Further bifaces, scrapers and flakes were discovered at the base of large hills and across the valley floor and are likely to have derived from the upper slopes and hilltops in the area. A wide range of raw materials were used to fashion implements, namely volcanic tuff, basalt and obsidian. Further survey and test pitting is required to help distinguish *true* sites from derived material to better understand hominin movement, raw material acquisition and tool curation in this rich area.

Following the work at Shish-guzey, attention was turned towards Gadir-dere, where large handaxes, flakes and scrapers had been recovered in the 1960s. Gadir-dere is situated on the northern bank of an old tributary of the River Kura at the confluence with the main river itself. The site was discovered by the retrieval of artefacts at the base of the bank around 20 m from the valley floor to the south. The artefacts extend along the bank for approximately 80 m and are restricted to a 10 m wide band. The site would have been very attractive to humans and animals seeking resources provided by both rivers. The large bank left by this alluvial system was surveyed on its northern slopes and a second, slightly smaller, but more concentrated site, Gadir-dere II, was identified through the presence of a number of Levallois implements. The artefacts seemed characteristically

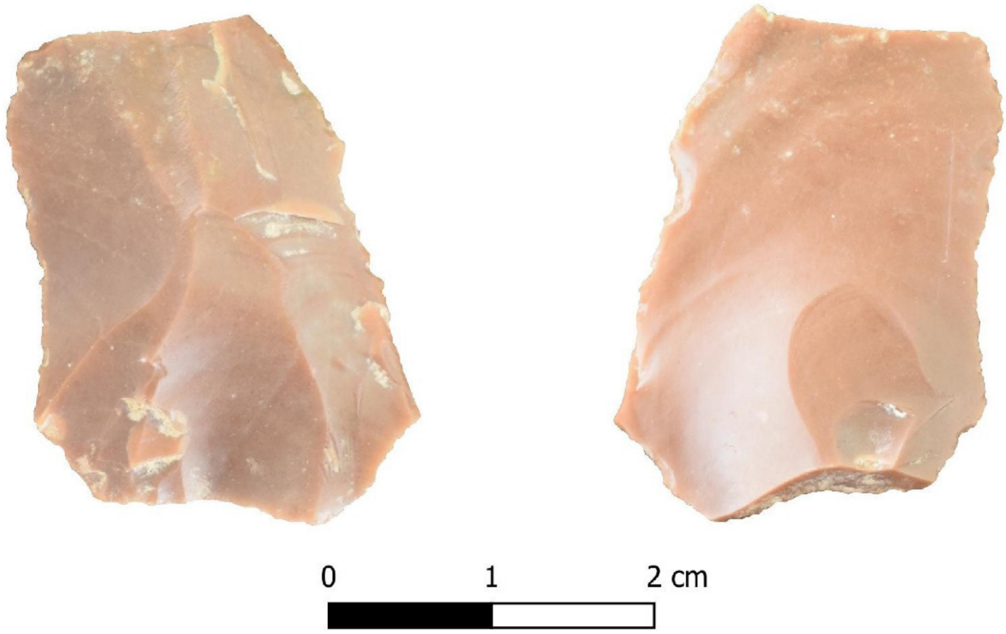

*Figure 2: Broken flake with radial dorsal scars recovered from layer 3 at Gadir-dere I.*

Levallois in nature and not contaminated with Acheulean implements as with Gadir-dere I nearby. A test pit was excavated in the area that produced the highest concentration of finds during survey at Gadir-dere I.

The results were extremely exciting. Three layers were identified, and two artefacts were recovered from the lowermost layer (layer 3): a broken flake with radial dorsal scars and a small flake (Figure 2). The broken flake was made of flint and its radial dorsal pattern appeared indicative of Levallois technology. Some potential retouch is present along the right edge, and the butt resembled a chapeaux de gendarme type. Samples were taken of the sediments in layers 2 and 3, in an attempt produce an OSL date, which will be carried out at the University of Leicester, with results scheduled to be available in early 2020. The discovery of artefacts in the third horizon below the surface is tantalising, and is of high importance to Palaeolithic studies in the region for two reasons: If the artefact bearing sediments are later than the terminus for Acheulean cultures in the Caucasus, then the surface material is derived, but if an early date is realised, then this technology may share affinities with early Levallois material from Nor Geghi in Armenia. Either way, the recovery of these two flakes represents the only occasion where *in-situ* artefacts have been recovered from a stratified open locality in Azerbaijan. The investigations are set to continue in 2020 and will hopefully determine the true age, chronology of events and nature of occupation at Gadir-dere I.

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# BOOK AND CONFERENCE REVIEWS

## ALLEN, J.R.L. 2017 *GEOLOGY FOR ARCHAEOLOGISTS: A SHORT INTRODUCTION*. ARCHAEOPRESS, OXFORD

**ISBN NO. 978-1-78496879 (PB, 141PP., 65 ILLUS £25.00)**

Only during the last thirty years or so have the two fields of geology and archaeology been considered together in collaborative projects and publications. The University of Reading has been leading this area of research with stone provenance studies from nearby Silchester (*Calleva Atrebatum*) (Sellwood 1984; 1989; Shaffrey 2003; Wooders 2000; Wilkinson et. al. 2008). At the forefront of this research has been Professor John Allen with his work on whetstones (Allen 2014), stone tesserae (Allen & Fulford 2004; Allen et. al. 2007) and the town wall (Allen 2013). He has also been integral in establishing a hub of applied geological study centred at Reading along with Professor Martin Bell with the MSc in Geoarchaeology as well as a series of PhD's relating to stone provenancing (e.g. Shaffrey 2006; Hayward 2009). It is appropriate therefore that Professor Allen is the author of this much anticipated reference book on geology in archaeology.

The title *Geology for Archaeologists: A short introduction* is just that, a series of short punchy chapters first summarising the basic principles of this incredibly varied subject as well as the related field of physical geography. Professor Allen sets the scene in an opening section on why geology matters, leaving the reader (especially those with an archaeological background) in no doubt as to why we need to study the earth's history and its impact on and relationship with humankind itself. Rocks (more obviously) formed part of this landscape and were exploited for tool manufacture, for building stone as well as a source of ore for metalworking. Into this narrative Allen also introduces earth science methods and techniques.

Chapters 2-6 look at the fundamental principles of geology. Chapter 2 examines the principal rock forming minerals, their properties and crystal structure, each with an excellent accompanying colour photograph and crystal structure diagram. The rocks which are composed of these different minerals are tackled next (Chapter 3) supported by the effective use of photomicrographs to show the different carbonate, mineral and detrital grains. The information in Chapters 2 and 3 is critical to the archaeologist on two fronts. First, it provides some idea of the different types bedrock that are encountered at an excavation in an area as geologically diverse as the British Isles. Second, it shows what types of materials building stone and portable stone artefacts can be made from. A useful reading list at the end of each chapter ensures that the reader can explore these fundamental principles in much greater detail.

On a macro scale, Chapters 4 (geological maps), 5 (geological stratigraphy) and 6 (geology and landscape) provide the reader an opportunity to examine the sheer breadth and depth of geology that the British Isles has to offer. The fundamental principles of mapping and stratigraphy set out during the 18$^{th}$ and 19$^{th}$ centuries still hold true today. Indeed, some of this information will already be familiar to graduates of archaeology especially with the law of superposition. A guide to where to obtain all this data (mapping, memoirs, journal

[1]*Author details*

articles) is adequately set out, however a listing of web sites relating to the British and Irish Geological Survey, including access to historical quarries on OS Maps, would have helped for quick reference.

Chapter 6 is critical to this book in linking the geological landscape and geomorphological processes (natural) with the impact of direct human intervention (cultural) and is neatly summarised in a flow chart. It also sets the scene for the remaining 6 chapters (7-12) that deal with: specific landscapes on rivers (7) and coasts (8); extractive industries relating to stone for tools and implements, building stone, the fired clay industry (pottery and brick) and metallurgical processes (9-12). There is no one better than Professor Allen himself to describe these chapters given his expertise as one of the world's foremost fluvial and estuarine sedimentologists of the past 50 years and an integral part of the MSc geoarchaeology course at the University of Reading (e.g. Allen & Fulford 1986).

Supplementary to these chapters are a series of case studies in the form of 200-300 word vignettes, lavishly illustrated with maps, photographs and sections. There is also a very useful glossary of geological terms.

This is not a reference book for flint and chert as the subject matter is so broad. Only a short section is covered under stone for tools and implements and other works need to be consulted here.

All in all, this is a must have geological reference book for archaeological departments, commercial units and consultants alike. As a building material specialist in commercial archaeology I can see the enormous benefits that this volume will bring, especially to newly employed graduates archaeologists. Indeed, the lack of geological knowledge throughout the whole profession is something that needs rectifying. This book, along with accompanying hands on practical sessions of rocks, fossils and maps and presentations, will go some way to addressing this.

*Kevin M. J. Hayward*

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# MINUTES AND FINANCES

## Minutes of the Annual General Meeting of the Lithic Studies Society held on Friday 22nd November 2019 12pm at Franks House, 38-56 Orsman Road, London, N1 5QJ

1. **Attendees:** Claire Harris (CH), Rob Davis (RD), Josh Hogue (JH), Josie Mills (JM), Hazel Martingell (HM), Ann Bojko (AB), Spencer Carter (SC) and John Edwin Jarvis (JEJ)

2. **Apologies**: Alex Fensome (AF), Tom Lawrence (TL), Lawrence Billington (LB), Alan Slade (AS), Josh Hogue (JH), Marcus Hatch (MH), Alan Slade (AS).

3. **Minutes of the Last Meeting**: Unanimously accepted.

4. **Matters arising**: None.

5. **Chair's report for the year 2017–18**:

   - RD thanks CH for her work as a committee member for the last 7 years. .

   - RD thanks JM for her work as a secretary for the last 4 years.

   - RD thanks Freddie Foulds for his work as editor.

   - RD thanks Paul Preston for his work as editor.

   - RD thanks Alexandra Fensome for her work in the past year as publicity officer.

   - The society has had a successful year including a number of events. In October we held a 2-day conference in Newark at the National Civil War Centre. The conference celebrated both the 40th anniversary of the society and the contribution of Terry Hardaker to prehistoric archaeology, who sadly passed away before the conference. On Saturday the talks focused on his area of research and we felt that it was a good way to celebrate his work and contribution to archaeology.

   - The Butser knapping event was successful and well attended. There was space for a few more people to attend, we will focus on advertising early again this year to ensure everyone that wishes to can be involved.

   - Thank you to TL who organised the open day with Oxford Archaeology. It was well attended, and SC suggests that other commercial units would be open to joint events in the future.

   - CH and Simon Lewis organised a walk around London focused on the geology of the Thames terraces. It was very popular and well attended.

- As part of the Being Human festival we helped to support an event at Happisburgh in Norfolk. It was a two day event with talks in the first day and a public outreach where we invited some of the collectors who were working on that bit of coastline. John Lord did some knapping and we invited people from the local community to learn more about the heritage on their coast. Overall we have had an active year in terms of events..

- The Lithics journal was published in April. We had a full quota of papers covering a range of topics related to stone tools.

- We handed out the Saville Grant for the first time this year. It was awarded to Diana Collinson who is leading the Mesolithic Deeside project. We are really pleased with how that went, and an overview of the project will be included in a future issue of Lithics.

- The Wymer and Jacobi bursary are receiving very high quality applications. We handed out two Wymer bursaries and one Jacobi Bursary.

- Currently we are without an editor. As things stand we will be taking it on as a committee, sharing this role between us and looking to co-opt someone in the next few months. Next year we will officially vote in a new editor.

6. **Election of Officers and Committee**:

- Paul Preston has stepped down as editor, we thank him for all his hard work over the past year.

- Josie Mills has finished her term as secretary, we thank her for all her hard work over the past 4 years.

- Claire Harris has finished her term as vice-chair and chair, we thank her for all her hard work over the past 4 years.

7. **Committee Elections**:

- Alex Fensome – applying to be Publicity Officer – proposed by JM and seconded by RD - **Elected**.

- Becky Vickers – proposed by JM and seconded by RD - **Elected**

- Jess Bates – applying to be Ordinary Member – proposed by RD and seconded by JH - **Elected**

- Josie Mills – applying to be Vice Chair – proposed by RD and seconded by AB – **Elected**

8. **Treasurer's report for the year 2017–18**:

- JH has sent a report and the finances for the 2018-19 year.

- We have an increase of £925 in terms of our balance from last year.

- We have the means to support events and carry on delivering the bursaries.

- During 2018-19 JH spent time chasing down arrears and establishing people who had not paid for a number of years. Members who had not paid for the society were contacted and if they did not wish to renew membership they no longer receive the journal or membership benefits. This has saved a lot of money.

- We have an increase in subscriptions.

- We spent more on events and committee expenses this year.

- Expenditure on the journal was reduced by £1400 from 2018-19. We reduced the number who were sent out to people who weren't paying their subscription and we found a new supplier.

- We have flexibility to support more events and are in very good financial position.

9. **Secretary's report for the year 2017–18**:

- We have had a very successful year in terms of events and communication with the membership.

- We held committee meetings with good attendance but plan to announce meetings further in advance in 2020 to minimise travel expenses.

- Skype meetings will be trialled and encouraged as we had one successful sub-committee meeting using Skype.

- Bursaries were announced in a timely manner and for 2020 an events and meetings calendar will be drawn up at the beginning of the year in order to continue this.

10. **Editor's report and publications for the year 2017–18**:

- We had a good range of publications covering many different topics.

- The quantity of papers submitted and accepted filled the paper journal and we have papers already lined up for the next issue.

- As we are currently without an editor the committee and editorial committee will support LB and RD who are currently filling the vacancy.

11. **Events programme for 2018–2019**:

- CH and Simon Lewis plan to run another walking event in London and one in Happisburgh, Norfolk. The Norfolk event will tie in with an ID session as there is lots of interest in the local area.

- JM will gauge interest and potential for a guided walk in the north of England.

- We plan to run another event similar to the open day held in Oxford last year, commercial units will be approached.

- Butser is provisionally booked in for the 8/9$^{th}$ of August 2020 and will run as in previous years.

- We hope to plan a one day conference for autumn next year, the dates and theme will be confirmed at the next committee meeting.

- As we are in a good financial position we will aim to reach out to universities, groups, local societies, and individuals in order to lend support to lithic related events.

- We hope to organise events around the country improving accessibility for members.

12. **Website news**:

- The conference website worked well and was advertised on social media. We will create another website for the conference in 2020.

- Our website is currently functional but appears increasingly dated, AB is looking into options to create a new website. SC suggested we look to the Society of Antiquaries, Scotland, website for inspiration.

- AB is using a system that is made for web designers to create websites. It will give us more control than the current WordPress model. AB is currently testing this system and will begin to work on the website in the new year.

13. **Historic England Consultation**:

- The HER consultation for lithic terminology was discussed at the AGM.

- The society have decided to ask for an extension to the end of November deadline in order to pull together responses from the committee, the society, and selected experts. This will form a working group that is able to create an official response to the document. We hope to acquire a new deadline of the end of January.

- SC suggests that Olaf Bayer has a glossary document that may be useful.

14. **Any other business**:

- JEJ suggests that there is an accessibility issue related to Butser, as those who do not drive are expected to pay for a taxi from Petersfield Station to Butser (c. £15 one way). The society acknowledges this is a restriction for some members and will investigate the number of Butser attendees who would benefit from a lift-share arrangement.

- SC highlights the relationship between the Institute of Archaeology, University College London and Butser, suggesting the society may explore this link.

- HM suggests that the society could get in touch with the Rock and Mineral Society, who are very interested in knapping, including stone tools. AF will add their email address to the database of local societies.

- SC suggests that we do feedback forms for conferences and events in order to improve and reflect on performance. This would be useful for Newark and we will circulate an email in the coming week, RD and JM will liaise with AF about this.

- SC asks if the society can provide better information about what each individual committee role entails, for example the editor position. This would encourage those who have not applied due to being unsure about commitments. This would be positive for every committee member and JM will create a provisional document in Dropbox.

- JM will also create a calendar for committee members including key dates occurring throughout the year and individual responsibilities regarding tasks, such as sending out emails.

15. **Date of next AGM meeting**:

- Friday November 6$^{th}$, 2020 (TBC)

## Treasurer's Statement of Accounts (30th September 2019)

| | |
|---|---|
| **2018/19** | |
| **INCOME** | |
| Subscriptions | £3,190.76 |
| Subscriptions (Paypal) | £2,852.29 |
| Subscription (arrears) | £466.56 |
| Publications and back issues | £105.00 |
| Publications and back issues (Paypal) | £191.05 |
| Badges | £6.00 |
| Interest on NatWest reserve account | £5.50 |
| Interest on NatWest current account | £0.00 |
| Events | £1,756.02 |
| | **£8,573.18** |
| **EXPENDITURE** | |
| Events | £1,410.10 |
| Travel | £437.99 |
| *Lithics* | £3,684.62 |
| Wymer bursary | £390.00 |
| Jacobi bursary | £804.00 |
| Saville grant | £500.00 |
| CBA affiliation | £64.00 |
| Paypal charges | £220.34 |
| Paypal refunds | £55.86 |
| Natwest current account charges | £30.00 |
| Natwest current account refunds | £50.50 |
| | **£7,647.41** |
| **Surplus/Deficit** | **£925.77** |
| **Bank Balances** | |
| NatWest current account | £21,892.65 |
| NatWest reserve account | £2,751.93 |
| Nationwide | £1,054.73 |
| PayPal | £3,210.99 |
| | **£28,910.30** |
| Less Creditors | - |
| Plus Debtors | - |
| **TOTAL** | **£28,910.30** |
| **Decrease on previous accounts** | **£925.77** |