CB16: SERF Archive Report: Lithics

Introduction

There are 94 lithics recovered from the CB16 excavations in 2016.

Methodology

The methodology, type and attribute terminologies employed for the analysis of the primary and secondary technologies follows the format devised and adopted for the Southern Hebrides Mesolithic Project (Finlayson et al. 2000). This augmented the research design used for the analysis of the lithic assemblage from the site at Kinloch on Rùm (Wickham-Jones 1990), derived from earlier terminologies and technological classifications (Tixier et al. 1980), and subsequently enhanced (Inizan et al. 1999). This format lends itself to the incorporation of later prehistoric forms such as projectile points, 'knives', certain types of scrapers and Post-Medieval gunflints (cf. Wright 2012b). The database for the typological and technological analysis of the lithics uses Access™ 2016.

Primary Technology speaks to those initial procedures of the chaîne opératoire relating to the choices made in the selection and the obtaining of appropriate raw material, the reduction strategies, the production of blanks, e.g. flakes and blades through to the discard of cores. The knapping reduction strategies undertaken in the past are determined by reference to the detailed analysis of the characteristics and attributes of the cores and debitage products recovered during archaeological fieldwork (Finlay et al. 2000a, 553; Woodman et al. 2006, 78).

Secondary Technology refers to the later stages of the chaîne opératoire, which considers the process of the modification of blanks, their utilisation and discard. Following the removal of a blank from a core, modification is generally achieved by the application of pressure to the edge of the blank. In the case of scrapers, the modified edge functions as the working edge. However, that may not be the case for all retouched artefacts. For example, the modification may be undertaken to facilitate hafting (Finlay et al. 2000b, 571; Wickham-Jones and McCartan 1990, 87). Invasive and inverse retouch are generally particular features of secondary modification during the Neolithic and Bronze Age periods (Ballin 1999 and others).

For individual lithics, the first number is the catalogue reference followed by the small finds number.

Raw Materials

The solid geology comprises Sheriffmuir Sandstone. Glacial till is the principal drift geology, save for alluvium and river terrace deposits in the northeast of corner of the field (Digimap® ED*i*NA Geology Roam).

Flint dominates the assemblage at 88.30%, followed by quartz 5.32%, Chert and andesite at 2.13% each, and agate and jasper at 1.06% each. 15 lithics present with

cortex, of these 11 are flint. All have a cortex variant defined as smooth and chalky rolled hard, which suggests that the flint derives from fluvio-glacial riverine deposits.

There are no known local sources of chert (Wickham-Jones and Collins 1977, Figure 2). The British Geological Survey for the Midland Valley notes the occurrence of quartz, chert and andesite in the Scone Sandstone Formation, i.e. parent unit of Sheriffmuir Sandstone (Phillips 2007, 8-9). There are nodules of chert in dressed sandstone, e.g. the dovecote at Green of Invermay and at Invermay House on the Invermay Estate. It is possible that quartz, chert, agate and jasper eroding out of the solid geology and glacial till may have been available from riverine locations (after Wickham-Jones and Collins 1977, 7).

Character

Table 1 shows the character of the assemblage. There are only three primary flakes, two flint and one quartz. The majority of flakes and blades are tertiary (88.06%); secondary 7.46%. Three (4.48%) of the blanks are regular, comprising one flint flake and two flint blades. A platform flint flake core is the sole core recovered during the excavations.

The modified pieces comprise four scrapers, three of flint and one chert, one chert ‘knife’, one flint denticulate, one flint point/awl, and one flint microlith.

	Total	Flint	Quartz	Chert	Andesite	Agate	Jasper
Tested Split Pebbles	1						1
Chunks	2	1			1		
Cores	1	1					
Flakes	61	54	5		1	1	
Primary	3	2	1				
Secondary	4	4					
Tertiary	54	48	4		1	1	
Primary regular							
Primary irregular	3	2	1				
Secondary regular							
Secondary irregular	4	4					
Tertiary regular	1	1					
Tertiary irregular	53	47	4		1	1	
Blades	6	6					
Primary							
Secondary	1	1					
Tertiary	5	5					
Primary regular							
Primary irregular							
Secondary regular							
Secondary irregular	1	1					
Tertiary regular	2	2					
Tertiary irregular	3	3					
Small Fraction	15	15					
Modified	8	6		2			
Total	94	83	5	2	2	1	1

Table 1: Character of the assemblage.

Condition

The majority of the pieces within the assemblage are fresh (69.15%), burnt 29.79%. A jasper split pebble is the only rolled artefact. The frequency of burnt pieces is probably understated. Experimental work undertaken on flint indicated that some burnt pieces would not be classified as such due to the absence of burnt attributes (Finlayson 1990, 53).

Primary technology

The jasper tested split pebble is the product of a bipolar reduction strategy, as are two chunks, and three flint flakes and one quartz flake. All of the remaining blanks indicate platform reduction. Generally, bipolar blanks will be under-represented

because not all debitage products will present with attributes associated with a bipolar reduction strategy (after Kuijt *et al*. 1995, 117).

There are 49 blanks where it is possible to determine the bulb of percussion. 32 have a diffuse bulb and seven have a pronounced bulb. The former indicates the use of a soft hammer and the latter a hard hammer to remove blanks from cores. 15 blanks present with lip attributes, four each of the artefacts with diffuse and pronounced bulbs, three with pronounced lips and four classified as bulb with lip. Two blanks have a flat bulb and one flint flake with the bulb partly removed when detached from the core. Eight of the non-bipolar blanks, i.e. four flint flakes, three quartz flakes and one flint core rejuvenation blade, have evidence of anvil support. The practice refers to the placing of the platform core on an anvil for support to facilitate blank removals. It suggests that platform and bipolar reduction strategies may have been coeval (cf. Wright 2012a).

The dorsal scars on 64 blanks indicate that 64.06% removals from single platform cores, 31.25% from multidirectional cores, 3.13% have opposed scarring, and 1.56% crossed. The dorsal surface on 68.75% are free from step and/or hinge terminations. This indicates a relatively low level of knapping errors in the reduction strategy. This was achieved with only 17.19% showing evidence of scrub preparation prior to detachment.

70.15% of the blanks are fragmented (Table 2). It is possible that there is a pattern in the removal of the proximal and distal ends, i.e. occurring following detachment from the core. The proximal and distal fragments could not be refitted. Other fragmentations result from the reduction strategy in the removal of the blanks.

	Total	Platform	Bipolar
Complete	20	19	1
Proximal missing	10	7	3
Distal missing	9	9	
Proximal fragment	3	3	
Distal fragment	6	6	
Medial fragment	2	2	
Truncated width 'siret'	4	4	
Proximal spalling	10	10	
Distal spalling	3	3	
	67	63	4

Table 2: Numerical frequency of fragmentation character of blanks.

The recovery locations of the lithics are:

Unstratified
Lithics recovered from the interface of the top soil and sub-soil:

- One fresh, tertiary, irregular, platform, flint flake (1034/16080);
- One fresh, secondary, irregular, platform, flint blade (1090/16258); and
- One piece of flint small fraction debitage (1055/16191).

Pit DF0068
Radiocarbon dates from DF0068 are firstly from carbonised residues on a pottery sherd from (16361), i.e. 3648-3518 cal BC (4789 ± 34 BP; SUERC-75406). Secondly, hazel charcoal from (16437) provides a date of 3640-3521 cal BC (4778 ± 27 BP; SUERC-74698). Thirdly, the date from willow charcoal (16230) is 3635-3378 cal BC (4734 ± 29 BP; SUERC-74695).

Upper fill (16230) of pit [16229]:

- One fresh, tertiary, irregular, platform, flint flake (1041/16034); and
- One fresh, tertiary, irregular, anvil supported, platform, quartz flake (1016/16038).

Fill (16361) underlying (16230) and overlying (16437):

- One fresh, tertiary, irregular, bipolar, quartz flake (1022/16114); and
- One fresh, primary, irregular, platform, quartz flake fragment (1023/16114).

Fill (16437) underlying (14361) (16230):

- One fresh, tertiary, irregular, anvil supported, platform, quartz flake (1094/16268); and
- One fresh, tertiary, irregular, anvil supported, platform, quartz flake fragment (1093/16268).

Decommissioned posthole DF0069
Fill (16020) of decommissioned posthole [16019]. Radiocarbon dates from willow and hazel charcoal are 3638-3384 cal BC (4755 ± 28 BP; SUERC-74705) and 3635-3377 cal BC (4730 ± 28 BP; SUERC-74704), respectively.

- One rolled, primary, irregular, bipolar, jasper test split pebble (1040/16170).

Post alignment DS012/DF0157
Upper fill (16014) of postpipe of posthole [16013]:

- Two fresh, tertiary, irregular, platform, flint flakes (1067/16226; 1068/16226);

- Two fresh, tertiary, irregular, platform, flint flake fragments (1058/16196; 1062/16196):
- One burnt, tertiary, irregular, platform, flint flake (1056/16196);
- One burnt, tertiary, irregular, platform, flint flake fragment (1059/16196);
- One burnt, tertiary, irregular, anvil supported, platform, flint flake (1061/16196);
- One fresh, tertiary, regular, platform, flint blade (1001/16002). Catalogue number 1001 is a true blade with parallel sides;
- One fresh, tertiary, regular, platform, flint blade fragment (1071/16226);
- One fresh, tertiary, irregular, platform, flint blade (1057/16196);
- One burnt, tertiary, irregular, platform, flint blade (1060/16196); and
- Six pieces of flint small fraction debitage.

Post alignment DS012/DF0158
Postpipe fill (16016) of posthole [16015]:

- One burnt, tertiary, irregular, platform, flint flake fragment (1002/16004); and
- One piece of burnt flint small fraction debitage.

Post alignment DS012/DF0160
Postpipe fill (16034) of [16033]:

- Four fresh, tertiary, irregular platform, flint flakes (1072/16229; 1075/16229; 1076/16229; 1077/16229);
- One fresh, tertiary, irregular platform, flint flake fragment (1080/16229);
- One fresh, tertiary, irregular, anvil supported, platform, flint flake (1073/16229);
- One burnt, tertiary, irregular, platform, flint flake (1074/16229);
- One burnt, secondary, irregular, bipolar, flint chunk (1079/16229); and
- One piece of flint small fraction debitage.

Secondary fill (16082) of posthole [16033]:

- One burnt, tertiary, irregular, anvil supported, platform, flint core rejuvenation blade (1027/16041);
- One burnt, tertiary, irregular, bipolar, flint flake fragment (1007/16017);
- One fresh, secondary, irregular, platform, flint flake fragment (1010/16020);
- One fresh, tertiary, irregular, platform, flint flake fragment (1011/16020);
- One fresh, tertiary, regular, platform flint, flake fragment (1026/16014); and
- Two pieces of flint small fraction debitage.

Decay cone (16158) of [16033]:

- One fresh, secondary, irregular, bipolar, andesite chunk (1081/16231).

Posthole DS029/DF0188
Fill (16165) of decommissioned posthole [16164]:

- One fresh, tertiary, irregular, platform, flint blade (1052/16180);
- One burnt, secondary, irregular, bipolar, flint flake fragment (1042/16180);
- One burnt, secondary, irregular, platform, flint flake fragment (1032/16180);
- One burnt, tertiary, irregular, platform, flint flake fragment (1049/16180);
- One fresh, primary, irregular, platform, flint flake fragment (1048/16180);
- Five fresh, tertiary, irregular, platform, flint flakes (1041/16180; 1043/16180; 1045/16180; 1047/16180; 1051/16180); and
- Four fresh, tertiary, irregular, platform, flint flake fragments (1044/16180; 1046/16180; 1050/16180; 1053/16180).

Pit DF0070
One of three intercutting pits, namely DF0070, DF0071 and DF0072. Table 3 sets out the radiocarbon dates from these pits.

Feature	Context	cal BC at 95.4%	Laboratory
DF0072	16081	2862-2573BCE	4104±27BP SUERC-74686
DF0072	16081	2578-2471BCE	4008±28BP SUERC-74690
DF0070	16383	2576-2472BCE	4007±26BP SUERC-74694
DF0071	16088	2571-2466BCE	3984±25BP SUERC-74691
DF0071	16088	2574-2457BCE	3973±26BP SUERC-74692
DF0070	16231	2570-2346BCE	3954±28BP SUERC-74693

Table 3: Radiocarbon dates from DF0070, DF0071 and DF0072.

Primary fill (16231) of [16085]:

- One burnt, tertiary, irregular, platform, flint flake (1018/16092); and
- One fresh, tertiary, irregular, platform, flint flake (1092/16264).

Fill (16383) underlying (16449) (16450), and overlying (16382) (16401) (16231):

- One fresh, tertiary, irregular, platform, flint flake (1091/16262).

Pit DF0072
Fill (16081) of [16448]:

- One fresh, tertiary, irregular, platform, flint flake fragment (1006/16011); and
- One burnt, tertiary, irregular, platform, flint flake (1012/16021).

Pit DF0073
The radiocarbon dates from (16481) are 2834-2481 cal BC (4050 ± 28 BP; SUERC-74706) and 2576-2470 cal BC (4003 ± 29 BP; SUERC-74710).

Fill (16481) of pit [16480]:

- One fresh, tertiary, irregular, platform, andesite flake fragment (1039/16164);
- One burnt, tertiary, irregular, platform, flint flakes (1038/16156);
- One burnt, tertiary, irregular, platform, flint flake fragment (1054/16190);
- One fresh, secondary, irregular, platform, flint flake core (1084/16236);
- One fresh, secondary, irregular, platform, flint flake (1082/16234); and
- One fresh, tertiary, irregular, platform, flint flake (1086/16239).

Fire pit DF0074
Upper fill (16105) of [16104]. The radiocarbon dates from this fill are 2573-2450 cal BC (3967 ± 29 BP; SUERC-74701) and 2573-2349 cal BC (3965 ± 29 BP; SUERC-74700).

- One burnt, tertiary, irregular, platform, flint flake fragment (1003/16005).

Fire pit DF0075
There are two radiocarbon dates from (16129) underlying (16120) (16116) (16154); overlying (16130), namely 2859-2570 cal BC (4093 ± 27 BP; SUERC-74702) and 2830-2470 cal BC (4027 ± 27 BP; SUERC-74703).

Upper fill (16116) of [16115]:

- One burnt, tertiary, irregular, bipolar flint flake fragment (1004/16006).

Posthole DS023/DF0163
Upper fill (16111) of decommissioned posthole [16110]:

- Two fresh, tertiary, irregular, platform, flint flakes (1028/16045; 1033/16075);
- One fresh, tertiary, irregular, platform, flint flake fragment (1031/16062);
- Two fresh, tertiary, irregular, anvil supported, platform, flint flakes (1015/16035; 1028/16048). (1015) is a flake fragment;
- One fresh, tertiary, regular, platform, flint blade fragment (1013/16033); and
- One fresh, primary, irregular, platform, flint flake fragment (1017/16077).

Posthole DS023/DF0164
Postpipe (16196) of [16195]:

- One piece of flint small fraction debitage (1020/16106);
- One burnt, tertiary, irregular, platform, flint flake (1021/16112).

- One burnt, tertiary, irregular, platform, flint flake fragment (1019/16105).

Pit DS019/ [16215]
The allocation of a 'DF' prefix and number for this feature remains outstanding.

Fill (16216) of pit [16215]:

- One piece of flint small fraction debitage.

Posthole DF0246
Fill (16286) of posthole [16285]:

- One fresh, tertiary, irregular, platform, flint flake (1024/16118); and
- One piece of flint small fraction debitage.

Ditch DF0079
Upper fill (16002) of ditch [16001]:

- One fresh, secondary, irregular, platform, flint flake (1030/16055).

Upper fill (16056) of ditch terminal [16055]:

- One fresh, tertiary, irregular, platform, agate flake with edge damage (1029/16049).

Edge damage

DF0079
Agate flake fragment (1029/16049): the left hand side is concave with edge damage recovered from the upper fill (16056) of the ditch terminal [16055].

Secondary technology

DF0068
A chert 'knife' ((1036/16081) recovered from (16230). There is a radiocarbon date of 3635-3378 cal BC (4734 ± 29 BP; SUERC-74695) from willow charcoal.

There is direct, scalar, semi-invasive retouch to the right hand side of a chert flake with the proximal end missing. The extent of the retouch is short and creates a cutting edge, which extends to the full length of the artefact. The left hand side has edge damage.

DF0073
The radiocarbon dates from (16481) are 2834-2481 cal BC (4050 ± 28 BP; SUERC-74706) and 2576-2470 cal BC (4003 ± 29 BP; SUERC-74710).

- Denticulate (1085/16237): the right hand side of a flint flake has a perfunctory defined denticulated edge from the upper median to the distal end. The retouch is direct, scalar and semi-abrupt. There is direct and inverse edge damage to the left hand side.

- Awl/point (1087/16241): both sides of a flint flake fragment, with the bulb of percussion removed have converging retouch creating an awl/point. The retouch is predominantly short, direct, scalar and semi-abrupt. There is inverse retouch/edge damage to the right hand side.
- Denticulate scraper (1037/16144): The distal end of a flint flake with the proximal missing has direct, scalar, semi-invasive retouch creating a denticulated scraping edge. Short, direct, semi-abrupt retouch blunt the right hand side edge. The left hand side has direct and invasive scalar edge damage.
- Short convex scraper (1088/16242): The left hand side of a flint flake has inverse, stepped scalar, semi-invasive retouch, which creates a convex scraping edge. There is also an inverse, scalar, semi-invasive removal at the distal end extending the scraping edge. There is edge damage to the right hand side forming a notch at the median.
- Short convex scraper (1083/16235): The left hand side of the distal end of a chert flake fragment has alternating direct and invasive, scalar, abrupt retouch. Retouch only partly forms the convex scraping edge.

DS012/DF0157

A backed blade microlith (1071/16226) recovered from the upper fill (16014) of postpipe to posthole [16013]. The true blade has parallel sides with the distal end missing. There is direct, abrupt retouch to the right hand side. There is Late Neolithic pottery from this context and other features in the post alignment.

DS015

The allocation of a 'DF' prefix and number for this feature remains outstanding.

The flint scraper (1089/16249) is from the fill (16526) from one of the postholes [16498] to the Iron Age dwelling in Area A. The retouch to the left hand side is short, direct, scalar, and semi-abrupt creating a concave scraping edge. At the butt of the flint flake fragment is inverse, scalar and semi-invasive retouch. The right side has inverse, scalar, semi-abrupt retouch creating a sub-angled scraping edge.

Summary

Apart from the microlith, none of the lithics are diagnostic to any given archaeological period. The microlith is residual with unknown taphonomic events accounting for its recovery location.

Dr Dene Wright
16 April 2018

References

Ballin, T. B. 1999. The Lithic Assemblage in S. Speak and C. Burgess: Meldon Bridge: a centre of the third millennium BC in Peeblesshire. *Proceedings of The Society of Antiquaries of Scotland*, 129: 81-93.

Finlay, N., B. Finlayson and S. J. Mithen. 2000a. The Primary Technology: its Character and Inter-site Variability. In S. J. Mithen (ed.), *Hunter-gatherer landscape archaeology: The Southern Hebrides Mesolithic Project 1988-98. Volume 1: Project development, palaeoenvironmental studies and archaeological fieldwork on Islay. Volume 2: Archaeological fieldwork on Colonsay, computer modelling, experimental archaeology, and final interpretations*: 553-569. Cambridge: McDonald Institute for Archaeological Research.

Finlay, N., B. Finlayson and S. J. Mithen. 2000b. The Secondary Technology: its Character and Inter-site Variability. In S. J. Mithen (ed.), *Hunter-gatherer landscape archaeology: The Southern Hebrides Mesolithic Project 1988-98. Volume 1: Project development, palaeoenvironmental studies and archaeological fieldwork on Islay. Volume 2: Archaeological fieldwork on Colonsay, computer modelling, experimental archaeology, and final interpretations*: 571-587. Cambridge: McDonald Institute for Archaeological Research.

Finlayson, B. 1990. The examination of surface alteration. In C. R. Wickham-Jones (ed.), *Rhum, Mesolithic and later sites at Kinloch: Excavations 198-86*: 53-54. Edinburgh: Edinburgh University Press.

Finlayson, B., N. Finlay and S. J. Mithen. 2000. The cataloguing and analysis of the lithic assemblages. In S. J. Mithen (ed.), *Hunter-gatherer landscape archaeology: The Southern Hebrides Mesolithic Project 1988-98. Volume 1: Project development, palaeoenvironmental studies and archaeological fieldwork on Islay. Volume 2: Archaeological fieldwork on Colonsay, computer modelling, experimental archaeology, and final interpretations*: 61-72. Cambridge: McDonald Institute for Archaeological Research.

Inizan, M.-L., M. Reduron-Ballinger, H. Roche and J. Tixier. 1999. *Technology and Terminology of Knapped Stone*. Nanterre: CREP.

Kuijt, I., W. C. Prentiss and D. L. Pokotylo. 1995. Bipolar Reduction: An Experimental Study of Debitage Variability. *Lithic Technology*, 20(2): 116-127.

Phillips, E. 2007. *Petrology and provenance of the Siluro-Devonian (Old Red Sandstone facies) sedimentary rocks of the Midland Valley, Scotland*: British Gelogical Survey Internal Report (IR/07/040).

Tixier, J., M.-L. Inizan and H. Roche. 1980. *Préhistoire de la pierre taillée, 1 terminologie et technologie*. Valbonne: CREP.

Wickham-Jones, C. R. (ed.). 1990. *Rhum, Mesolithic and Later Sites at Kinloch: excavations 1984-86*. Edinburgh: Edinburgh University Press.

Wickham-Jones, C. R. and G. H. Collins. 1977. The sources of flint and chert in northern Britain. *Proceedings of the Society of Antiquaries of Scotland*, 109: 7-21.

Wickham-Jones, C. R. and S. B. McCartan. 1990. The Lithic Assemblage: Secondary Technology. In C. R. Wickham-Jones (ed.), *Rhum: Mesolithic and Later sites*

At Kinloch: excavations 1984-86: 87-102. Edinburgh: Society of Antiquaries of Scotland.

Woodman, P. C., N. Finlay and E. Anderson. 2006. *The Archaeology of a Collection: The Keiller-Knowles Collection of the National Museum of Ireland*. Wicklow: Wordwell.

Wright, A. D. 2012a. The Archaeology of Variation: a case study of repetition, difference and becoming in the Mesolithic of West Central Scotland. Unpublished PhD Thesis: University of Glasgow (Available to download from 'http://theses.gla.ac.uk/3310/').

Wright, A. D. 2012b. SERF Archive Report: Flaked Lithic Assemblages 2007-10. Unpublished SERF Report: University of Glasgow.