

CLASSIFICATION AND DESCRIPTION OF LITHIC ARTEFACTS: A DISCUSSION OF THE BASIC LITHIC TERMINOLOGY

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INTRODUCTION

When excavating Stone and Bronze Age sites, it is common to retrieve large numbers of lithic artefacts. To place these finds in their temporal, spatial and culture-historical contexts, and to make comparison with other assemblages possible, it is necessary to classify and describe the material accurately. The main precondition for comparative archaeology is a general consensus on key concepts, that is, a common archaeological language.

In Britain, the establishment of a conceptual framework for the classification of lithic artefacts (i.e. a general typology) gained momentum in the 1930s with the works of J.G.D. Clark. He proposed definitions of, *inter alia*, debitage categories and cores (1939 [with Rankine]), microliths (1933), transverse arrowheads (1935), scrapers (1960), plano-convex knives (1932a), discoidal polished flint-knives (1932b), and sickle blades (1934). On the basis of our present knowledge, elements of Clark's definitions may seem debatable, but he nevertheless presented an impressive platform on which a future conceptual framework and classification system could have been built.

Unfortunately no-one has taken up this challenge, and at present the tendency is one of disintegration. Instead of moving closer to general consensus on key lithic concepts, we experience a situation of competing and largely incompatible definitions (cf. *chips*, below). This poses a serious problem when comparing lithic assemblages, and, in the larger picture, to the construction of a detailed Stone Age chronology based on diagnostic types. Without

a proper chronology allowing assemblage comparison¹, investigation of Stone Age settlements and lithic scatters will largely remain at a level of single-site analysis.

In my work as a lithics specialist, this situation has consequently led to the inclusion of a short section defining the main lithic categories in every report or catalogue. Inclusion of a section of definitions has been chosen by other colleagues (e.g. Wickham-Jones 1990, 57ff), but in many published papers and reports this is not the case, and the reader is left wondering how the lithic terms are defined by the individual authors.

Obviously, a section of definitions is the second best solution, and specialists should work towards a general consensus on a conceptual framework for lithic classification, the common language of lithics specialists and Stone Age archaeologists. The main elements of this framework should be: 1) definition of the main artefact categories (debitage, cores, tools); 2) definition of the main debitage categories (chips, flakes, etc.); 3) definition of descriptive elements applied in the classification of tools and cores, and; 4) a general typology of cores and tools.

This paper discusses points 1 to 3 and suggests a number of definitions, all in line with international convention. A complete typology or classification system of all British core and tool types (point 4) is a task for the future, as general consensus on the descriptive elements applied in the classification of these types (point 3) is a precondition.

Some of these discussions and the definitions will be influenced by the fact that the author is mainly operating within the framework of Scottish archaeology.

MAIN ARTEFACT CATEGORIES

Debitage:

The unmodified flaked products (various blanks and waste material including chips, flakes, indeterminate fragments and chunks) from the reduction of a core (cf. definition in Inizan et al. 1992, 84).

Cores:

Artefacts shaped by continuous reduction (removal ofdebitage), with only dorsal (negative or concave) faces ('flake scars').

Tools:

Modified artefacts, i.e. artefacts shaped by flaking / secondary retouch (see below), grinding / polishing or pecking.

DEBITAGE CATEGORIES

Chips:

All flakes and indeterminate fragments, the greatest dimension (GD) of which ≤ 10 mm.

In other words, chips are the smallest pieces ofdebitage found on any Stone Age site, and as such they have great importance. They have no chronological value, but being so small, they are important in spatial analysis as prime indicators of knapping areas. Other larger artefacts may have been removed from the knapping area in connection with either use or site maintenance, whereas chips are usually left where they were dropped as primary refuse (Schiffer 1972, 161ff; Binford 1983, 144ff). I have been able to find four, to some degree incompatible, definitions of chips in Scottish archaeological literature, namely: 1)debitage, the greatest dimension of which does not exceed 10 mm (Finlay 1997, 30); 2) bladelets, the width of which does not exceed 5 mm (Wickham-Jones 1990, 73); 3) small, amorphous pieces (Mithen 1990, 35); and 4)debitage exhibiting no detachment characteristics, the greatest dimension of which does not exceed 15 mm (Clarke 1991). It is suggested to adopt definition 1, as this definition corresponds with international convention (Denmark – fliser, mikro-afslag; Norway – splinter; Germany – Absplisse; France – esquilles).

Flakes:

All lithics with one identifiable ventral (positive or convex) face, $GD > 10$ mm and $L < 2W$ (L = length; W = width).

Analytically, flakes may have a chronological value as part of a site's flake:blade ratio, but in spatial analysis they have less importance than chips: due to their general size (> 10 mm) they may have been removed from the area of production (use or site maintenance), and only a thorough examination of their contexts may reveal what their on-site provenance represents.

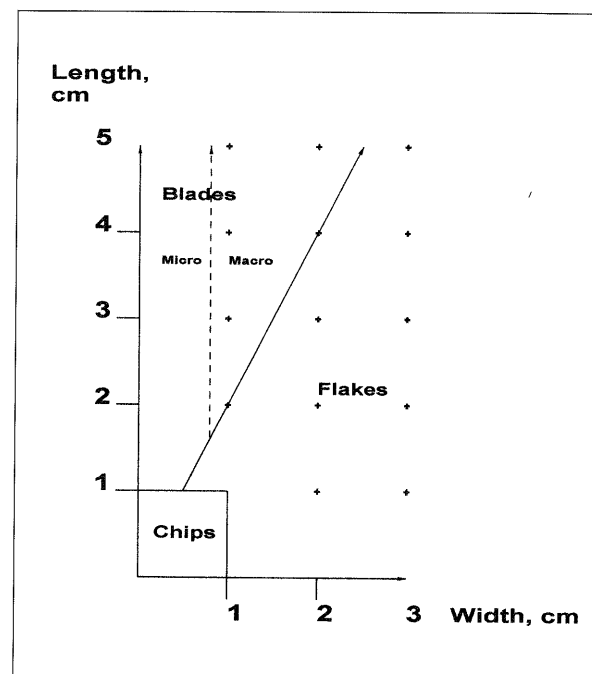


Figure 1. Metrically defined debitage categories (microblades as suggested for Scottish assemblages).

Indeterminate pieces:

Lithic artefacts, $GD > 10$ mm, which cannot be unequivocally identified as eitherdebitage (with at least one convex face) or cores (with only concave faces).

Generally the problem of identification is due to irregular breaks, frost-shattering or fire-crazing. 'Chunks' are larger indeterminate pieces, and in, for example, the case of quartz, the problem of identification may originate from a piece breaking along

natural non-convex / non-concave lines rather than breaking in the usual conchoidal way. Some definitions of chunks (for example, Wickham-Jones 1990, 58; Finlayson *et al.* 1996, 253) correspond more or less with the above definition of indeterminate pieces, but as pieces belonging to this category are not necessarily 'chunky', it is suggested to re-name this category 'indeterminate pieces' with chunks being a sub-group within it, covering the larger, 'chunky' pieces so characteristic of, for example, quartz assemblages.

On Stone Age sites in the coastal region of Southern Norway (Ballin 1999) major parts of lithic assemblages are commonly either frost-shattered or burnt, and due to the subsequent 'peeling-off' of dorsal and ventral faces many blade fragments may have to be assigned to this debitage category. These pieces are rather small and thin, and to term them 'chunks' seems inappropriate.

Blades:

Flakes where $L \geq 2B$. In the case of macroblades (blades) $W > 8$ mm; in the case of microblades $W \leq 8$ mm.

In Southern Scandinavia microblades are defined as pieces narrower than 10 mm, in Norway as pieces narrower than 8 mm (Ballin 1996, 9). This difference is due to different raw-material situations with flint being plentiful in Denmark and southernmost Sweden and scarcer in Norway, and as a consequence, the blades of Norway are generally much smaller than in Southern Scandinavia. As the blades in Scotland have similar diminutive sizes as the Norwegian blades, I recommend adopting the 8 mm definition for this region (cf. Wickham-Jones 1990, 73).

Some authors (Helskog *et al.* 1976; Skaarup 1979; Wymer 1962) have chosen to distinguish between blades *sensu stricto* (or 'true blades') with parallel sides and arrises, and *blade-like flakes* with more irregular outlines. Inizan *et al.* (1992, 76) rejects this distinction as difficult to make in practice, but it is a fact that specialized blade production aims at producing blades *sensu stricto*, and we therefore ought to find a reasonable definition of this artefact group. As an adaptation of Helskog *et al.* (1976, 14), the author suggests as requirements for blades *sensu*

stricto that more than two thirds of the sides must be approximately straight and parallel, and one or more arrises must be roughly parallel to the sides.

Core preparation flakes:

This category includes two types, namely 1) crested flakes or blades, and 2) platform rejuvenation flakes or core tablets.

In Scandinavia the term platform rejuvenation flakes is usually abbreviated to platform flakes, but in British archaeology this is not advisable for the following reason: in later years it has become common practice in lithic analysis to distinguish between flakes from bipolar cores and flakes from platform cores, termed bipolar flakes and platform flakes (e.g. Clarke 1999, 164f), and to avoid confusion, the term platform rejuvenation flakes should not be abbreviated.

BASIC DESCRIPTIVE ELEMENTS

Tool types based on flaked blanks are usually defined by their secondary retouch. The description of this retouch is therefore essential, and in this section, a number of descriptive elements will be discussed and defined.

Type of retouch:

1. *Edge retouch:* retouch limited to the edge zone of a tool, i.e., the outer sixth of the maximum width of an artefact. The angle of this retouch is generally quite abrupt.

2. *Invasive retouch:* retouch embracing the entire, or part of, the central zone of a tool, i.e., the inner four sixths of the width of an artefact. The angle of this retouch is generally quite acute. *Complete invasive retouch* means that more than 90% of the dorsal and/or ventral faces of an artefact are retouched.

(Adapted from Helskog *et al.* 1976, 23).

Extent of (edge) retouch:

1. *Unretouched.*
2. *Sporadic retouch*
3. *Continuous retouch*

The concepts of sporadic and continuous retouch are not unequivocally defined in the archaeological lit-

erature. Dr Søren H. Andersen, Denmark, suggests a divide at 15 mm (pers. comm.), with implements with an edge-retouch of less than 15 mm defined as pieces with sporadic retouch, whereas implements with a retouch of more than 15 mm are defined as pieces with continuous retouch. As Scottish artefacts based on flaked blanks generally are much smaller than similar artefacts from Southern Scandinavia (or southern Britain), it is suggested in Scotland (and other regions outside the main chalk area) to operate with a divide at 8 mm. Pieces with continuous edge-retouch (tool type) would then be defined in the following way: *A piece with continuous edge-retouch has a coherent regular edge-retouch > 8 mm. The character and position of this retouch does not allow classification of the implement to any more specific tool type.*

In many cases, sporadic retouch will be use-wear (which is irrelevant to any morphological classification and should be dealt with separately), trample damage, 'trowel retouch', etc.

Orientation of retouch:

1. *Normal retouch*: retouch, initiated from the ventral face (covering the dorsal face).
2. *Inverse retouch*: retouch initiated from the dorsal face (covering the ventral face).
3. *Alternating retouch*: retouch which on the same lateral edge alternates between normal and inverse.
4. *Propellar retouch*: retouch which is normal on one lateral edge and inverse on the other. This retouch variant is usually associated with borers and, to some degree, tanged arrowheads.
5. *Bifacial retouch*: retouch which on the same lateral edge, and the same extent of edge, combines normal and inverse retouch.

(Adapted from Inizan *et al.* 1992, 94).

Fineness of (edge) retouch:

1. *Very fine retouch*: the length of the individual retouch removals > 0.5 mm and ≤ 1 mm.
2. *Fine retouch*: the length of the individual retouch removals > 1 mm and ≤ 3 mm.
3. *Coarse retouch*: the length of the individual retouch removals > 3 mm and ≤ 5 mm.
4. *Very Coarse retouch*: the length of the individual retouch removals > 5 mm.

(Adapted from Helskog *et al.* 1976, 22f).

The latter authors only applied the first three categories; the fourth category is suggested here as an adaptation to quartz assemblages, the tools (and thereby the retouch) of which are generally considerably larger and coarser than in, for example, flint assemblages.

A commonly used term in British Stone Age archaeology is *microlithic retouch*. The term has no accurate definition, other than its association with microliths and thereby its delicateness. However, microliths are not the only tools to have delicate retouch, and the term 'microlithic retouch' should be replaced with the more precise fineness categories suggested above.

Morphology of retouch:

1. *Scaled retouch*: the individual removals are in general short and wide, being widest in the distal ends and resembling fish scales. The terminations are often hinged.
 2. *Stepped retouch*: as above, but the terminations are stepped instead of hinged.
 3. *Parallel retouch*: a series of elongated removals separated by parallel arrises (ridges). The retouch on the so-called 'ripple-flaked lop-sided arrowheads' (cf. Clarke *et al.* 1985, illus 7.7) is parallel retouch. Lomborg (1973, 28ff) distinguishes between complete and partial parallel retouch, with the former stretching from edge to edge, whereas the latter has been initiated from either edge with the removals joining in the middle.
 4. *Sub-parallel retouch*: a series of elongated removals separated by approximately parallel arrises.
- (Adapted from Inizan *et al.* 1992, 91 and Lomborg 1973, 28ff).

Angle of retouch:

The following graduation schema is suggested by Inizan *et al.* (1992, 75), who admit that other graduation schemas may be relevant in other contexts.

1. *Low*: approximately 10°.
2. *Semi-abrupt*: approximately 45°.
3. *Abrupt*: approximately 90°.

Helskog *et al.* (1976, 23) suggest a finer and more precise graduation:

1. *Very acute*: 0°-15°.
2. *Acute*: 16°-45°.
3. *Abrupt (or steep)*: 46°-75°.
4. *Very abrupt (or steep)*: 76°-90°.
5. *Obtuse*: > 90°.

It is recommended to apply Helskog *et al.*'s finer and more precise graduation schema.

Course of retouch (delineation):

1. *Straight*
 2. *Concave / convex*
 3. *Notched / denticulated*: a notch is a small concave feature on the lateral edge of an implement. The notch may be one larger removal but is usually re-touched, that is, made up of a series of smaller removals. The length of the chord is ≤ 10 mm, and the depth of the notch is $\geq \frac{1}{3}$ of the length of the chord. A denticulation is defined as at least 2 notches (which are often single removals), with the distance between the notches being $\leq$ the largest adjacent length of chord.
 4. *Shouldered / nosed*: those retouch forms are usually found in the distal or proximal ends of a flake (scrapers). If the course of the retouch is concave-convex, the retouch is said to form a shoulder. If the course of the retouch is concave-convex-concave, the retouch is said to form a nose
 5. *Tanged*: double-sided retouch in the distal or proximal end of an implement. The retouch forms more or less distinct shoulders with both lateral edges (neither the *Kerbispitzen* of the Hamburgian culture or the Norwegian single-edged points are tanged points *sensu stricto*).
- (Adapted from Inizan *et al.* 1992, 85; and Helskog *et al.* 1976, 36).

Percussion angle

1. *Acute*: < 80°.
 2. *Abrupt (or steep)*: $\geq 80^\circ$ and < 90°.
 3. *Obtuse*: $\geq 90^\circ$.
- (After Ballin 1996, 7).

The author's research (Ballin 1999) in Southern Norway has shown, that the average percussion or flaking angle of a (chronologically clean) blade assemblage will usually approximate 75°-77°, 80°-83°, or it may be obtuse (some assemblages based on handle-cores; cf. Callahan 1985). This (Norwegian) fact has yet to be fully explained, but defining the

average percussion angle of a blade assemblage as either acute, abrupt or obtuse may help in dating the assemblage.

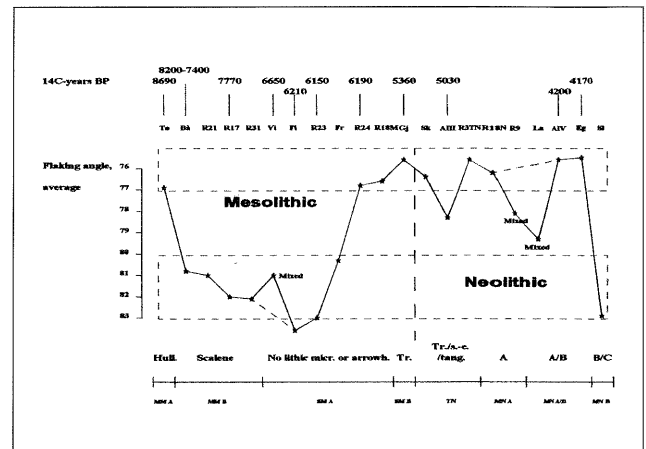


Figure 2. The average percussion angles of Mesolithic and Neolithic blade assemblages from Southern Norway. The information below the curve refers to phase and dominant type of microlith / arrowhead (hulling-points, scalene triangles, no microliths and arrowheads, transverse arrowheads, transverse arrowheads / single-edged points / tanged arrowheads, and tanged arrowheads of types A, B and C). Four points on the curve deviate from the general trend, namely Vi (Vindenes 55), AIII (Austvik III), R9 (Lundevaagen R9) and La (Langneset); of these, Vi, R9 and La are mixed assemblages (Ballin 1999), and the average percussion angles of these sites are results of mixing blade assemblages with acute and abrupt average percussion angles

FUTURE PERSPECTIVES

If it is possible to reach some degree of consensus on the terminology suggested above, the next – and much more challenging – project will be the construction of a general British classification system (typology) for lithic and stone artefacts. The necessity of this kind of work – which to many Stone Age archaeologist will be perceived as an activity of the past – is best exemplified by the type 'microlith'. The main element in Clark's definition of this type was that the blank had been shaped by removal of the proximal end (Clark 1933, 55), but today the term is used to label any small lithic artefact with delicate ('microlithic') retouch, and as a consequence the microlith has lost its diagnostic value. This type, as many other lithic artefact types, needs to be re-

defined to regain its diagnostic value in studies of Stone Age chronology and regionality.

This future classification system does not have to be built up 'from scratch', as indicated in the introduction. Large parts of the typology could be delivered by updating and compiling type definitions from existing papers, such as, *inter alia*, classic articles by Clark (1932a; b; 1933; 1934; 1935; 1960), Clark & Rankine (1939), Manby (1979), and Green (1980). However, it will require a slight re-direction of the archaeological focus.

Without basic elements, such as a common conceptual framework, much archaeological discussion becomes utterly meaningless.

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ENDNOTES

¹ If we wish to investigate the development of assemblages or cultures / societies (differences in time), we must be able to ascertain that the entities we compare *are not* contemporary, and if we wish to investigate regional differences within or between cultures (differences in space), we must be able to ascertain that the entities we compare *are* contemporary.

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