INTENTIONAL BREAKAGE IN THE BRITISH NEOLITHIC: SOME COMMENTS AND EXAMPLES

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ABSTRACT

The act of intentionally breaking lithic artefacts results in distinctive fracture patterns that have been well documented by replication studies. These attributes have allowed the identification of intentional breakage in numerous lithic industries, but to date there has been little consideration of intentional breakage in the British Neolithic, despite the use of this technique for the production of tools (e.g. chisel arrowheads) and their destruction before burial. This paper explores the role of intentional breakage in the British Neolithic and argues for more systematic recording of patterns of breakage.


Keywords: Intentional breakage; British Neolithic; arrowhead manufacture; chisel arrowheads.

INTRODUCTION

The intentional breakage of flakes, primarily for the production of tools or usable flake segments, is well documented in diverse lithic industries. For example, among Mousterian and Late Upper Palaeolithic flakes (Bordes 1953; Bergman et al. 1987); Near Eastern Neolithic and Chalcolithic industries, particularly in relation to the production of sickle elements and burins (Rosen 1997); and, closer to home, in the manufacture of gun-flints (Skertchly 1879). In the British Neolithic, however, the role of intentional breakage has been neglected, although it is both a feature of tool production (e.g. chisel arrowheads) and destructive deposition practices (Thomas 1999, 66). This paper highlights the attributes of intentional breakage, in the hope of increasing the identification of this practice, and reviews the current evidence for intentional breakage in the British Neolithic using examples from the Middle and Upper Thames Valley.

PREVIOUS RESEARCH AND REPLICATION STUDIES

The majority of the previous work undertaken was based upon the investigation of Palaeolithic assemblages and has been comprehensively reviewed by Bergman et al. (1987) and as such does not require duplication in this short article. Replication studies have played an important role in the investigation of intentional breakage and studies by Bosinski and Hahn (1972), Owen (1982) and Roche and Tixier (1982) have all highlighted traits and patterns of breakage. The most extensive replication study of over 300 experimentally broken surfaces was undertaken by Bergman et al. (1987). The study provides a broad framework for the identification of intentional breaks; results which have been borne out by the current author’s own experimental replication. The characteristics of intentional breakage form two distinct groups which have been defined as ‘contact features’ and features resulting from flexion (Bergman et al. 1987). The contact features result from direct percussion on the surface of the flake and include the presence of a cone or bulb of percussion, incipient cones or crushing at the point of percussion (ibid. 24). Notably many of these features are very slight and can only be identified by careful examination. Features resulting from flexion (fracture initiated by ‘bending’ the flint) include wedge-shaped fracture lines, lips on the edge of the breaks and conchoidal fracture marks (ibid. 26; see Figure 2 for examples). The wedge-shaped fracture lines always develop on the opposite surface from the point of impact and on occasion, lead to the detachment of wedge-shaped elements (see Figure 1, 8–9). The development of a lip is always on the opposite surface to the wedge-shaped fracture lines, and relates to the surface of impact.

The study determined that contact features can be used confidently to identify intentional breakage, but it is noteworthy that 25% of...
intentionally broken flakes only bore attributes from flexion. Bergman et al. (1987, 28) consider the features resulting from flexion to be less reliable in the identification of intentional breakage, as during some flexion features appeared on accidental breaks. However, these accidental breaks developed during attempts to manufacture intentional breaks, indicating that the flakes were subject to a considerable impact prior to a break at an unintentional location (ibid. 27). The current author’s replication of 60 intentional breaks only produced wedge-shaped fracture lines on intentional breaks, and the experiments demonstrated the considerable force required for these wedge-shaped lines to develop. Therefore, whilst only contact features can positively identify an intentional break, the presence of wedge-shaped fracture lines can in the current author’s opinion be taken to suggest that the flake has been subject to a considerable impact, most probably resulting from an intentional delivery.

**BREAKAGE IN BRITISH NEOLITHIC ASSEMBLAGES**

Intentional breakage in the British Neolithic will be considered in three main categories:

1. The use of intentional breakage for the production of blanks for retouched tools.

2. The production of blade and flake segments for use in an unaltered state.

3. The intentional breakage of retouched tools and utilised flakes.

In general, the level of breakage encountered in Neolithic assemblages is usually somewhere between 35% and 40% of the total number of flints in an assemblage. For example, out of 11,000 flints from a preserved earlier Neolithic land surface at Dorney Lake (Area 6), Buckinghamshire (formerly known as Eton Rowing Course) 35% were broken, while a further 9,800 flints in the same area, but
preserved in surface middens and deposits within tree-throw holes averaged 38% (Lamdin-Whymark forthcoming). Levels of breakage commonly encountered in the later Neolithic are perhaps marginally higher than that of the earlier period, and particularly high levels of breakage are seen in association with Grooved Ware. Indeed, at Barrow Hills, Radley, Grooved Ware associated pit 3196 (1117 flints) and ring ditch 801 (519 flints) included 58% and 49% broken pieces respectively (Bradley 1999, 49 and 87).

**Blank production using intentional breakage**

The intentional breakage of flakes for the production of tools is most commonly associated with transverse arrowheads. However, it is not uncommon for the bulbar end of serrated flakes and scrapers to have been removed by an intentional blow, presumably to facilitate hafting orprehension (see Figure 1, 7).

Chisel and petit-tranchet transverse arrowhead forms are almost entirely produced on blanks created by the intentional breakage of a flake into two or more fragments. The intentional breakage of a flake removes the bulb of percussion, leaving a blank requiring limited retouch to acquire the desired form. The process of retouching very often removes the majority, or all evidence of the snap itself making it impossible to consider the method employed to break the flake. Given the simple method of blank production it is not entirely unsurprising that debitage from chisel arrowhead production is rarely identified in flint assemblages. A range of debitage resulting from the production of transverse arrowheads was, however, recovered from excavations on the Maidenhead to Windsor Flood Alleviation Scheme.

A small assemblage of 64 flints recovered from a Plain Bowl-associated deposit within a tree-throw hole at Marsh Lane West on the Flood Alleviation Scheme (Lamdin-Whymark forthcoming), represents the first evidence of debitage from transverse arrowhead manufacture. The assemblage included a large number of broken flints amounting to 60% of the assemblage. Among these broken flints several proximal and distal flake fragments displayed fractures resulting from percussion or flexion. The proximal pieces represent the removal of the bulb, while the distal ends are considered to represent mis-shapen and abandoned arrowhead blanks. A selection of the debitage, and a complete chisel arrowhead from the same feature, are shown in Figure 2.

![Figure 2. A selection of debitage from the manufacture of transverse arrowheads and a complete example of a chisel arrowhead from a tree-throw hole on Marsh Lane West.](image)

A second example of an unfinished transverse arrowhead was recovered from a second early Neolithic, Plain Bowl-associated tree-throw hole on Marsh Lane East, Site 1 (Lamdin-Whymark forthcoming). The tree-throw hole contained 360 flints, 42% of which were broken, including a small number with intentional breaks. A refit was identified between one of these broken flakes and the unfinished chisel arrowhead (Figure 3). The break demonstrated features resulting from flexion including a lip and wedge-shaped fractures, which indicated that the flake was broken by pressure from the dorsal surface. At the distal end a small area of invasive retouch has been applied to the dorsal surface, but the blank appears to have been abandoned due to the break fracturing at the wrong angle and failing to form the desired shape.

**Segmented flake and blade tools**

The intentional reduction of flakes and blades into usable segments is poorly documented in British Neolithic assemblages, although a few possible examples may be highlighted (Figure...
The identification of these tools is however universally problematic, even within industries which accept the presence of segmented flake tools. For example in the Near Eastern Neolithic and early Bronze Age where the use of blade fragments as sickle blades is commonly accepted (Rosen 1997, 49). The identification of some of these elements is still often difficult and Rosen dwells on the problem of distinguishing a broken sickle element from a snapped sickle element if it is the appropriate length for hafting (c 5 cm; ibid.). In this debate Rosen raises the problematic issue of the inconsistency in categorisation between technological attributes and typological categories (ibid.). The presence of intentional breaks technologically confirms the presence of a segmented blade or flake, but it is the regular typological form which allows categorisation as a sickle element. The question over the existence of segmented flake tools in the British Neolithic is therefore not easily resolved as it is essential to demonstrate both intentional breakage and the presence of regular typological forms of segmented flaked. However, few regularly segmented flakes have been identified in the British Neolithic to date and the occasional wedge-shaped flake fragments that are recorded, appear to represent no more than ad hoc tools.

It is also noteworthy that the technique of segmenting flakes against an anvil, replicated using stone tools in Figure 4, has not been observed in any of the archaeological examples of intentional fracture from Neolithic contexts so far examined by the author.

The intentional breakage of tools

Intentional breaks have been observed on a wide variety of retouched artefacts, but scrapers are by far the most frequently broken tool type and many of these examples are associated with interesting deposition patterns. At Blewbury, Oxfordshire, a scraper was described as having been ‘snapped’ in two and a half placed in each of one of a pair of pits (Halpin 1984; Thomas 1999, 66). The breakage of this tool, although technically not described in a fashion to allow definitive identification as an intentional break, and the artefacts mode of deposition have, however, been cited as a carefully controlled practice associated with Neolithic pit deposition practices (Thomas 1999, 66). At Barrow Hills, Radley (ring ditch 801) a scraper was recovered which had been ‘snapped in half and then in half again’ and while again the break is not described it is noted that the scraper was ‘perhaps deliberately snapped’ (Bradley 1999, 49). Similarly, at Dorney Lake, a quarter of a scraper was recovered in a pit (13650), but it was clear the tool had been snapped half by flexion, burnt and then quartered by another intentional blow which left clear contact features (Lamdin-Whymark forthcoming).

Gaffney and Tingle reviewed the evidence for breakage across 725 scrapers collected during field survey on the Berkshire Downs (1989). In total 60 were broken, representing 8.3% of the total; a figure over double the 4% breakage
recorded among flakes (a figure which included breaks resulting from plough damage). The high level of breakage recorded and a pattern of breakage often propagate from the retouched edge led the authors to suggest that the damage may have resulted from the use of the scraper as the working edge of a hafted implement, perhaps functioning as a substitute for larger core tools (ibid., 47–48). This conclusion can be questioned as it implies that the tools were used for tasks for which they were inappropriate and liable to break, however, hafting may have an important role to play in the pattern of breakage observed, but perhaps for a different reason. If we are to consider that a tool has been adequately hafted for use, at the point it is considered worn out it will need to be removed from the haft to allow for the insertion of a new tool. The force needed to remove a tool from its haft will depend on how well the tool is fixed and in certain cases a substantial blow, perhaps with enough force to break the flint, may be needed to facilitate its removal. An explanation of breakage during removal from a haft need not only apply to scrapers, as it is likely that numerous tools and flakes were hafted for use, and may have been broken in such a fashion.

The practice of deliberate breakage is, however, not solely confined to scrapers. A later Neolithic pit in Oxford contained two halves of a well-utilised flake were refitted on an intentional break (Lamdin-Wywhmark 2005). Furthermore, within the micro-debitage from this pit small wedge-shaped elements resulting from flexion were recovered (Figure 1, 8–9), indicating the breakage of other flints.

CONCLUSIONS

Replication studies have provided a significant body of data to aid the identification of intentional breakage. These studies have, however, not been extensively applied to lithic assemblages from the British Neolithic and currently patterns of breakage are not systematically recorded. There is, however, little question of the use of intentional breakage for the production of transverse arrowheads in the British Neolithic, although the subject of a snapped scraper; note the removal of the bulb by direct percussion to the ventral surface (see additional fracture/fissure) prior to the application of retouch.

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REFERENCES


