

150 YEARS OF CUTTING EDGE RESEARCH

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There have been at least two and a half million years of stone tool making but only one hundred and fifty years of understanding. On April 27th 1859, when Joseph Prestwich and John Evans photographed, and then plucked, a biface from the gravels at St Acheul on the outskirts of Amiens they turned speculation and conjecture into repeatable scientific enquiry. In the whirlwind four weeks that followed, until Prestwich presented their results to the Royal Society on May 26th, they not only confirmed what Boucher de Perthes had long claimed as *antédiluviennne* artefacts (Breuil 1945; de Bussac 1999) but they also rediscovered John Frere's overlooked letter to the Society of Antiquaries of 1797, visited Hoxne and spoke to workmen who were well acquainted with such 'fighting stones'; became aware, thanks to Augustus Franks, of the Gray's Inn handaxe found in the 1690s; wrote and re-wrote their papers and convinced most of the main players in the principal learned societies of the veracity of their results (Gamble & Kruszynski 2009).

This great moment in the history of science is significant because it transferred the burden of proof for the antiquity of humans from texts to artefacts. The stone was now mightier than the pen. Without such a transfer human antiquity could not have been pushed back beyond the 6000 biblical years to the unimaginable recesses of 60,000,

600,000 or even the genetic benchmark of 6 million years for a last common ancestor.

We have been refining this proof for 150 years and the study of lithics has led the way. As this volume demonstrates there have been at least three phases of roughly fifty years each. First came the *heroic* age when a pre-historic archaeology was established and the Palaeolithic became a science tasked with charting the chronological and typological boundaries of this new intellectual landscape. Then came the age of the *collector* when many million flint tools were harvested, worldwide, from gravels, fields and caves. These added detail to the classifications, by period and region, laid down in the heroic age of lithics. Finally, the last fifty years has been a period of *experimentation* when chronologies, thanks to science-based dating, became absolute and unexpected variation in technology and typology has been teased from the data. This transition is captured in Figures 1 & 2. The first is a cartoon from 1912 and the age of collectors. It shows a cowering audience at the Society of Antiquaries. Which specialist from this volume, I wonder, is portrayed? The second is Phil Harding participating as an expert knapper in the experimental programme for the *Hand-to-Mouth* project, an international collaboration based at University College London, commenced in 2006, and aimed at investigating the



*Figure 1: 'A member of the Society of Antiquaries gives a demonstration of his theory of the construction of arrowheads' [George Morrow for *The Sphere*, April–December 1912]*



Figure 2: Phil Harding carrying out expert replication of early lithic technology, under the gaze of Dr. Blandine Bril of the École des Hautes Études en Science Sociale, Paris

evolution of speech and manual dexterity. Experimental flint knapping has developed from an antiquarian curiosity into a mainstream scientific endeavour for archaeologists; 100 years later and lithic studies are being taken seriously once again.

The heroic age did more than demonstrate the antiquity of humans. At the same time it instituted the study of variation. In his paper to the Society of Antiquaries on June 2nd 1859, Evans described the main forms of artefacts they had collected from the Somme and seen in England:

“The classification I propose is as follows –

- 1. Flint flakes, apparently intended for arrow-heads or knives.*
- 2. Pointed weapons, some probably lance or spear-heads*
- 3. Oval or almond-shaped implements, presenting a cutting edge all round”*

(Evans 1860: 288–9)

The pattern of pointed, ovate and flake was spotted early and confirmed by many later studies, most notably the seminal overview of the British Palaeolithic by Derek Roe (1968a). Many other patterns followed with the work of Lartet and Christy and the insights of de Mortillet (Richard 1999) and Comont; Lower, Middle and Upper Palaeolithic were all differentiated as was the Mesolithic (Westropp 1872), and the major cultural divisions: Acheulean, Levallois, Solutrean, Magdalenian and many others. Unlike their archaeological contemporaries who were classifying metalwork and pots that had been known for many years, these lithic pioneers started from nothing to chart new archaeological territories with what to us seems like unerring accuracy. Extraordinary insights were produced from detailed local knowledge which, in the hands of a sharp observer such as Worthington Smith, had wide ramifications for understanding our earliest ancestors.

The age of the collector in the first half of

the last century produced many driven individuals, fanatics such as Henry Stopes and James Reid Moir and those who are not widely known outside their local areas; Charles Bean, Llewellyn and Mabel Treacher, George Smith, F.C.J. Spurrell. These busy and dedicated collectors established our primary archives which in Britain have provided the quarry for future research in projects such as Derek Roe’s (1968b) *CBA Gazetteer*, John Wymer’s (1999) *English Rivers Survey* and the *Ancient Human Occupation of Britain* led by Chris Stringer (2006). Such archives are not unique to Britain. They form the basis for major syntheses in France (de Lumley 1969, 1971, 1976), Germany (Bosinski 1967) and South Africa (Goodwin & van Riet Lowe 1929), to name only a few examples.

The third phase of experimentation starts, I believe, with Hazzledine Warren (1914) and his debunking of the eoliths that so many collectors were busily amassing. Then followed the Clactonian debates that have formed a vital focus for discussions of technological and typological variability (McNabb 2007); a theme of international interest in Bordes’ study of the Mousterian and its competing explanations of variability in archaeological evidence. The experimental thread is, however, always present during the collectors’ phase with Breuil’s (1912) vision of the Aurignacian and Garrod’s (1937) study of the change between the Middle and Upper Palaeolithic. But it has come to prominence only in the last forty years with painstakingly acquired technical expertise supporting new investigative areas of *chaîne opératoires*, raw material studies, use wear and residue analysis. Experimental analyses, as Phil Harding shows us (Figure 2), have opened up possibilities for studying Palaeolithic cognition and memory and re-invigorated investigations into shape and symmetry by better understanding the properties of stone.

This anniversary volume fittingly recalls the achievements and contributions of many of

the key players in lithics' three ages. But where will a fourth age lead us? Will we wait on a scientific breakthrough either to date individual stone tools by a simple MRI-like scan, or to retrieve by a cheap, everyday technique, ancient DNA from their surface so that we can know not only which hominin species made a particular tool, but what it was used to cut, scrape, shave or bore? Such wish lists should not however cramp our style. Those who studied lithics in the past did so from a sense of curiosity and a desire to understand more about our ancestors. There is no substitute for that hands-on experience when it comes to the properties and potential of stone. And it is that complex shared hominin experience, with its deep emotional underpinnings, that should guide our steps into a fourth age of lithics.

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