

Palaeolithic Archaeology Teaching Resource Box

Palaeolithic Stone Tools: Advanced

Lower, Middle and Upper Palaeolithic Stone Tools:

The stone tool technologies of the British Palaeolithic can be effectively divided between the Lower, Middle and Upper Palaeolithic periods (see the Palaeolithic Chronology cards for further details on the date ranges of these periods):

- Lower Palaeolithic: during the Lower Palaeolithic the most characteristic stone tools were handaxes (*core tools*) and *flake tools* (including scrapers and notches). There was considerable variety in these tools (especially the flake tools), and it is sometimes easier to talk about a continuum of variability, rather than specific and repeated types. However the handaxes are often divided into pointed and ovate (or oval) forms.
- Middle Palaeolithic: although handaxes were still produced during the Middle Palaeolithic they were made less frequently than previously, while flake tools (including projectile points) became increasingly important. Unlike for the Lower Palaeolithic, it is now possible to identify a series of distinctive flake tool types. This period also saw a new technique of core working: the Levallois technique. This method (a key example of the prepared core technique) was characterised by a more structured approach to core working and the production of flakes whose size and shape were semi-predictable.
- Upper Palaeolithic: the range of flake tools expanded again during the Upper Palaeolithic, including the widespread appearance of blades (these are a specialised form of flake, at least twice as long as they are wide). Flakes and blades were retouched to create a wide range of tool types, including burins (chisel-type tools), projectile points, backed knives, and scrapers. This period also saw the introduction of new flaking techniques (pressure flaking: see below) and new core working techniques (blade cores). Unlike the earlier periods the Upper Palaeolithic also saw a relatively rapid turnover in stone tool industry types: the Solutrean industry for example only lasted c. 5,000 years.

Making Tools:

The key to flaking stone and making tools is *conchoidal fracture*. The flaking of stone and the making of stone tools during the Palaeolithic relied upon three major techniques:

- Direct percussion: directly striking the core (the piece of stone being worked) with a hard (pebble) or soft (usually wood, bone or antler) hammer. This technique is powerful (all of the force or energy in the hammer blow is directed straight into the core), but it can be a little inaccurate.
- Indirect percussion: indirectly striking the core, using a 'punch' (placed between the hammer and the core) to direct the blow. Indirect percussion (used in blade core working) enables greater precision, but reduces the amount of energy transmitted into the core.
- Pressure flaking: this technique removes flakes from the core by the application of pressure, inwards and downwards, to the core. The technique, which first appears in the Upper Palaeolithic, enables the removal of long, thin flakes and the production of finely thinned artefacts (such as leaf points).

Using Tools:

One way of working out how stone tools were used is through microscopic examinations of the tools' edges. Archaeologists using modern replica stone tools to butcher dead animals and work wood (amongst other things) have noticed that distinctive polishes develop on the edges of the tools. When these experimental polishes were compared with genuine archaeological examples, the same polishes were found on the real tools, indicating how those genuine tools had been used in the past.

Terminology:

Conchoidal fracture: this property allows the stones to be flaked predictably and in all directions, enabling the knapper (the person making the stone tools) to shape the stone as she or he wishes.

Core tools: the core (the original lump of stone) is shaped by flaking into a core tool. These are usually quite large and have sharp edges (handaxes are good examples of core tools in the Lower and Middle Palaeolithic).

Flake tools: flake tools are made on the flakes that are removed from cores by flaking. Usually the flakes are then further modified by the removal of a series of small flakes from an edge (a process known as retouch) to create suitable working edges on the flake tools.

Typology: the classification of stone tools according to their different shapes (also known as their form).

Technology: issues concerning the techniques of making stone tools (e.g. different methods of flaking).

Quiz Questions:

1. Why might Lower Palaeolithic hominins choose to make *both* handaxes and flake tools?
2. Does the production of distinctive and repeated flake tool types tell us anything about Neanderthal societies?
3. What factors could explain the relatively (compared to the Lower and Middle Palaeolithic) rapid turnover of stone tool industries during the Upper Palaeolithic?

Further Resources:

<http://www.hf.uio.no/iakh/forskning/sarc/iakh/lithic/sarc.html> [Stone Age Reference Collection, with information about the typology, technology and raw materials of stone artefacts]

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Lower Palaeolithic handaxe
(ficron type)



Middle Palaeolithic projectile
point (retouched flake tool)



Upper Palaeolithic bifacially
flaked point



Hard hammer(stones) and an
antler soft hammer



Direction (hard hammer)
percussion



Pressure flaking