

P L A S T I C A R T
(MATERIAL CULTURE)

Stone Artifacts of Africa

Our main concern in this paper is to discuss the main types of stone tools, their development from crude forms to delicately retouched ones, some of which may be regarded as works of art. Many of the very early tools are not at all different from stones which have been shaped by the agents of weathering; such as wearing and polishing by wind. It must be remembered that for a long time, prehistoric man collected plants and hunted animals for his food. It took him thousands of years to develop the techniques of tool making: the stone tools to be mentioned here, and others in wood and bone which perish quickly were his aids in making a living.

In his early history man greatly depended upon the natural environment. The slightest change so upset him that he had either to move away into a more suitable one or stay there and perish. In order to picture the surroundings, the wild plants and game which were available to man, and to realise that his equipment for obtaining consisted of stone tools, we must know in broad terms at least the natural vegetation of Africa - the tropical forests of the centre and the west with the big rivers like the Congo and Niger, the open grasslands of the south and east including the area of the lakes, the high mountains and the rift valley, the Mediterranean north somewhat cut off from the equatorial region by the Sahara. While the very early stone tools - pebble tools and handaxes - were not made to suit any particular environment, others such as the heavy picks, crudely finished handaxes, high backed cores and scrapers found along the wooded river valleys of the Congo, and few small handaxes found in the open grasslands of Southern Africa do suggest that these two different environments needed different tools.

We are dealing with a very long period in the development of stone tools. Their dates are obtained by working out the history of natural formations like river terraces, fossil beaches and lakes in which some of these tools are found buried; and there are other high technical means of dating, for example, the Carbon method. The earliest recognizable stone artifacts found associated with human bones in East Africa are over one million years old.

How do we recognize a stone artifact?

Two main points are worth considering; the features on the tool and its general form, and the place of discovery and any objects which may be associated with it. Experiment has shown that if a flake is struck off a lump of stone, certain marks are left on the face of the flake and that of the big lump on the face of the flake, a scar and below it some shallow ripples; and on the face of the big lump a half bulb projection. Furthermore the flake scars left on the tool indicate that they were not made at random but with a purpose - for instance to prepare the edge of the stone for chopping, cutting, or scraping etc. So the general form of the object and the flake scars left on it help in determining whether or not it is man made.

Since water is one of the necessities of life, prehistoric man lived near water and may have hunted animals which came to drink. Some of his tools are discovered in river terraces, fossil beaches and lakes. Sometimes stone tools are discovered associated with animal bones some of which were the remains of man's food and others may have been used as tools. The suggestion is that man may have killed the animal or found it dead, made the stone tools to hack away what meat he could and left some of his stone tools at what may be described as a butchering site. There is yet another case where stone tools as well as waste flakes resulting from the manufacture of the tools are found together. So the place of discovery of the tools and the objects' associated with them are significant.

Observation and experiment have shown that prehistoric man must have used four main methods in flaking stone: Anvil flaking: hitting the core against a stationary rock. Hammer flaking: stone hammer, bar of wood or bone. Punch flaking: wooden punch and hammer. Pressure flaking: wood or bone used directly on the tool.

Anvil flaking and the use of a hard hammer (stone) leaves very deep scars on the tool, while that of a soft hammer (bar of wood or bone) leaves rather shallow scars. The hard hammer was usually used in the early stages of blocking out the tool, and later the soft hammer was used in finishing it off. These two methods are very simple, and were used in making the pebble tools (no soft hammer) and handaxes. Punch flaking was used in making long cut-

ting tools (blades) with very narrow striking platforms from which the punch was placed and hammered. Pressure flaking was used in preparing some beautiful projectile points - spear - and arrow-heads. Another method of making stone tools - the latest in the development of tool-making - is grinding. The celts, believed in several parts of the world to have fallen from the heavens during rainstorms, were first of all flaked, then ground and in some cases beautifully polished.

Prehistoric man did not fail to recognize the properties of the raw material he was using for his stone tools. If a variety of rocks was available to him, man selected the most suitable, and also according to the work which the tool was to perform. For example, since obsidian, a volcanic glassy rock, flakes easily with a sharp edge, man used it for making blades, while he used sandstone for making celts. It appears that in the early stages of tool-making unsuitable rock was a handicap. But when man had mastered his technique, even quartzite, which is one of the most difficult rocks to flake was used in making efficient and beautiful tools. In most parts of Africa quartz and quartzite were used in making pebble tools and handaxes. In Southern Africa the rocks used in making tools include shale, chert in the north, and obsidian in the east.

What were the main stone tool types which prehistoric man made? Stone tools may broadly be divided into two groups: flake, and core tools. A flake tool is produced by striking off a flake from a lump of stone and using the flake, and a core tool by removing flakes from a lump of stone and using what is left. It is possible to remove a large flake from a core, then take off little flakes from it in order to produce a core tool. Nevertheless this very general way of grouping stone tools is useful. The classification of stone tools is based on form or use.

The earliest tools, pebble tools - water-worn pebbles with one or more edges flaked in a single direction, were general purpose tools. But they are described as chopper and chopping tools since they were used as such. In this group are flakes which are crudely flaked and may have been used for scraping skins and wood and so are described as scrapers. These occur in subsequent groups but are better made.

Next is the handaxe: this evolved from the pebble tool - the side of Old-vai in Tanzania has produced evidence of the stages of its evolution. The handaxe is bifacially worked and the working edge is spread along all its edges. Contrast it with the pebble tool which is worked on only one face, and the working edge is limited to only one edge. There are several types of handaxes: pear-shaped, flattish, heart-shaped etc. - at Oldvai twelve stages have been distinguished based on the occurrence of different forms. One type, the cleaver which is wedge-shaped is typical of the handaxe industries of Africa. Handaxes were general purpose tools, but experiment has shown that they were very useful for skinning and cutting game.

Towards the end of the handaxe industries prehistoric man improved his flaking technique. The stone core was carefully and elaborately prepared by removing several flakes from it, and thus determining the shape of the flake tool before it was struck off the core. This prepared core technique was used in producing points, blades and microliths.

The projectile points are the next main group. These are stone spear - and arrow-heads which may have been used on wooden shafts as hunting weapons. At this stage prehistoric man had learnt to make these stone tools tanged, and with gummy animal or vegetable matter or rope must have attached them to the wooden shafts. Some tanged cutting and scraping tools were also made at this stage.

The next major tool type prehistoric man learnt to make is the microlith. These minute stone tools are of many forms: triangular, halfmoon, trapezoidal etc.; and were used in making composite tools and weapons. A composite tool was made by hafting these little specially designed pieces of stone in wood or bone slots. Finally, there are the celts which are wedged shaped and are flaked, ground and sometimes polished.

A brief attempt has been made to discuss the main types of stone tools and their development from the very early crude ones to the carefully finished ones. One of the significant points about tool development is that it took prehistoric man a long time to improve his tool-making techniques.

What is even more interesting is that later tools made in iron and steel took the forms of their stone predecessors. For example, a modern iron axehead, the blade of a pen-knife, iron spear and arrow-heads are all very similar in form to tools worked by prehistoric man.

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