STONE TOOL TYPOLOGY
(Concept and Classification, Stone tool types and their functions)

Introduction:

Prehistoric archaeology is a study of mainly stone and bone tools though it has occasionally to deal with other artifacts as well. These tools are being the remains of the non-living culture; archaeologists have to coin some names mostly on the form and technique as well as the likely function of the tools. The content of the present module is confined to the stone tool typology – particularly its concept and classification along with stone tool types and their functions.

Typology: Concept and Classification:

Typology is the method the archaeologist uses to arrange the artifacts in a scheme to show gradual development or degeneration through time. It is frequently assumed that artifact-types are self-evident groups of artifacts intended for a specific usage, for example, projectile points, axes, burins, scrapers, etc. Artifact-types are conceived in terms of detailed sets of similarities between numbers of artifacts such that the degree of similarity between artifacts within the type group is greater than any similarity between the artifacts in separate type groups. Therefore, the defining type groups are those separate populations of artifacts respectively.
carrying attributes in neat, rigid, mutually exclusive artifacts clusters. Further, within the type-group archaeologist can subdivide until the smallest indivisible unit according to the artifact attributes. For example, the Stone Tool Family of the Palaeolithic culture can be grouped into three family groups – Core Tool, Flake Tool and Blade Tool. Each of these families can be divided into a number of type-groups; like chopper, chopping, and handaxe etc., under core tool; cleaver scraper etc. under flake tool; and blade and burin under blade tool. Similarly the type group is divided into types. For instance the type group scraper is divided into three types of scrapers. They are: side scraper, end scraper, and round scraper. Likewise these types are again divided into sub-types, e.g. the side scraper is divided into four sub-types: straight side scraper, convex side scraper, concave side scraper, and concavo-convex side scraper. Moreover, the sub-type is also again divided into varieties. For instance the sub-type convex side scraper has two varieties. They are the slightly concave side scraper and deeply concave side scraper. These sub-divisions are shown in the following illustrations.
Stone Tool Types and their Functions:

The prehistoric Stone Age, based on the typo-technology of the tools, is divisible into Palaeolithic, Mesolithic and Neolithic cultures. The characteristic stone tool type groups of the Palaeolithic culture are

Palaeolithic Stone tool:

The Palaeolithic stone tools are made on core or flake or blade, and these are also identified respectively as core tool, flake tool and blade tool.

Chopper:
Chopper is a pebble tool with unifacially flaked broad cutting edge and thick pebble butt. It could have been used in cutting of wood with the broad edge and with the thick butt end smashing or cracking of the animal bone for marrow and the hard shell nuts.

Chopping tool:
Chopping tool is also a pebble tool with bifacially flaked at one end to produce the bread cutting edge and a thick pebble butt. It could be used in the same way as the chopper.
**Handaxe**: It is a bifacial tool. Handaxe types are distinguished according to shape and technique as:

1. Pear-shaped,
2. Lanceolate,
3. Triangle,
4. Cordate,
5. Ovate, and
6. Micoquian

Handaxe is considered as all-purpose tool, such as digging up roots, cutting and smashing of killed animal and boring the hide or animal skin. They are also collectively known as coup-de-poing or multipurpose tool. Hence the thin elongated handaxes like lanceolate could have been served as spear-heads after being hafted in wood or bamboo shaft. While the ovate type of handaxe with sharp edge all around could be used as disc or disc-like purposes for hurling against an enemy (human or animal).

**Cleaver**: Cleaver is a bifacial tool made on either a core or a massif flake; generally, it has a broad edge produced by the intersection of a primary flake surface with one or more flake scars on the other surface. Various types of cleavers can be distinguished according to the shape or form of the butt, cutting edge and the cross-section. There are cleavers with:

1. Square or rounded U-shaped butt and square or rectangular body,
2. Pointed butt and straight, broad edge and roughly triangular in shape,
3. Broad or narrow butt and flaring sides, and
4. Parallelogrammatic section.
Cleavers are used primarily in cutting or chopping or cleaving purposes like dressing the animals for meat, splitting the trunks of tree and carcasses of animals, etc. Sankalia has suggested that a cleaver with trimmed long sides might be used after hafting to a handle.

**Pick**: Pick is a heavy pointed tool. It is distinguished from the handaxes by its massive cross-section and elongated pointed edge. This tool could be used in digging roots.

**Scraper**: Scraper is mostly made on flake or blade, and sometimes on worked out core, for scraping the skin of animal, thin wooden or bamboo shafts, etc. According to the position and nature of working edge, it is classified into Side scraper, End scraper, Keeled scraper, Nosed scraper, Round scraper, and Core scraper.

The Side scraper is a tool made on a broad flake with the edge at one of the sides. It can be further sub-divided according to the nature of the scraping edge as Straight-side scraper, Convex-side scraper, Hollow-side scraper. The straight and convex side scrapers might be used in scraping by pushing the edge both forwards and backwards over the skin. The hollow or concave side scraper might be used for scraping away excess material on a spear shaft or bone artifacts in spoke-shave fashion.

The end scrapers are generally made on blades, and the working edge is produced by fluting retouches on the dorsal at one of the ends. The end scraper might be used by holding the ventral side facing upward with the scraping motion towards the user. Blunt end scrapers could also be used to soften the skins after more rigorous cleaning away of flat and fibers by knife or sharper-end scrapers.
The Keeled scraper is made on a thick broad flake. The scraping edge is produced by fine convergent retouch rising to a keel-like angle on the dorsal face.

The Nose scraper has a nose-like projecting edge produced by retouching between two side notches.

The Core scraper is made on a worked-out core. The scraping edge is produced by the intersection of a large flake surface with a series of small scars.

The Keeled scraper, nose scraper and core scraper are less common and might be used in the same way as the end scraper.

The Round scraper is named after the presence of the scraping edge all around the flake, when the tool is very small it is also termed as thumbnail scraper. This type of scraper is used for finer work and as small whittling knife.

**Borer or Awl**: Borer or Awl is a tool made on either a flake or nodule by making deep notches one on each side to form a narrow projecting edge that is being sharpen by careful and minute retouches. It is a tool used in piercing or drilling holes for providing fastening attachments of the skin cloth.

**Point**: Point is made on either flake or blade, and its main character is the very thin narrow pointed edge produced by careful secondary retouching. Points are used as the tips of the spears or arrows forming parts of composite tools. According to the form, point can be
classified into triangular point, leaf-shaped point, tanged or shouldered point.

Triangular points are one of the typical tool types of the Mousterian industries and also known as Mousterian point. It is made on a flake with careful retouching on both or one of the sides. According to P.K. Oakley, it could be used as a knife also.

Leaf-shaped point (Willow-leaf/Laurel-leaf point): Leaf-shaped point is made on a flake and generally range in size from 2" to 8" and are often bifacially worked, thin in section, sometimes with one end more pointed than the other. Fine retouching is done by employing pressure flaking technique either on one surface or on both surfaces. This type of stone tool is the characteristic tool of the Solutrean industry of the Upper Palaeolithic Culture and might be used as arrow-heads and javelin-heads.

Tanged or shouldered point is made on flake or blade and characterized by the presence of an elongated projection at the base opposite to the pointed edge for the purpose of hafting. The tang is produced by notching at the base on one side or both sides. This type of tool could be used as arrowhead. According to Coles and Higgs, some of the shouldered points have been shown to be cutting and ripping knives.

Blade: Blade is a long and thin parallel-sided flake having one or more midridges on the dorsal. Blades could be divided into narrow blades and broad blades based on the number of midridges. According to the nature of the retouching at
one of the sides the blades of Upper Palaeolithic Culture can be classified as (a) chatelperronian knife blade, (b) gravettian knife blade and (c) trapezoid blade.

The chatelperronian knife blade has one razor-like straight edge, and the other curved over to the point and blunted by abrupt trimming for handholding. In the gravettian knife blade the blunted back tappers gradually to meet the blade at a point, while the trapezoid blade has one blunted back and obliquely retouches at both ends. Blades could be used in cutting purposes as knife.

**Burin or Graver**: Burin or Graver is a tool with a narrow chisel edge made on either a flake or blade. It is the typical tool of the Upper Palaeolithic Culture. A great variety of burin has been recognized by the prehistorians, but the most common type is called 'burin bec-de-flute'. This type is characterized by the presence of one burin facet on each side of the working edge. There are also burins with gouge and beaked edged gravers. In these two cases more than one curved graver facets meet with a concave flake scar to form a gouge edge or with a flat plain flake scar to form a nose like beaked edge.

Experiments show that such a burin can cut wood, and even the bone and antler. It was the invention of the burin that made it possible for prehistoric man to extend the range of materials in making tools, like bone harpoons, needles, etc., as well as in the work of arts by engraving and sculpturing with the sharp burin edge.
Mesolithic Stone Tools:

The stone tools of the Mesolithic Culture are characterized by microliths. These are very small blade tools, because of its smallness in size not a single microlith could be used as an effective tool, but used as composite tool after fixing them to a shaft or handle. Microliths have two broad categories as geometric and non-geometric microliths. The common types of the geometric microliths are Triangle, Trapeze and Lunate (Crescent). In the non-geometric group, such regular geometric forms are absent. These microliths could be used as barbs of harpoon or sickle blade after hafting to a handle.

Neolithic Stone Tools:

The Neolithic Stone tools are generally identified by the presence of smooth ground and polished tool surfaces. These tools could be divided into celt, chisel, ring-stone and quern. The Neolithic celt, according to Sankalia (1964:83), is believed to be founded on a false reading in a vulgate, and applied to the ground axe or adze type of Neolithic stone tools. The Neolithic celt can be broadly divided into axe and adze. The division of axe and adze is based on the preparation of the working edge. In case of the axe the edge is present medially due to symmetrical bifacial grinding, while the laterally beveled edge is the character of the adze type of celt. Both the types of celt are used after hafting to a handle with its blade parallel to
the axis of the handle in the case of axe, and at right angle in case of adze.

**Tanged or Shouldered celt**: The chief feature of this type of celt is the prolongation of the butt end into a tenon to provide a suitable haft. Two varieties of this type of celt could be divided based on the nature of the tenon as simple shouldered celt and rectilinear shouldered celt. The rectilinear shouldered celt has square cut tenon and body, while the simple shouldered celt has only the curved sides to form the tenon. It could be used generally as adzewise.

**Chisel**: Chisel is a narrow cylindrical or rectangular stone tool with two of its sides tapering half way to form the working edge, and opposite to this edge the butt is generally thick for suitable hammering. The edge may be either medial or lateral. Chisel could have been used in cutting across the fiber of the wood in the carpentry works, like making of the canoes.

**Ring-stones**: Ring-stones are generally thick and round shaped stones with a hole at the centre. Ring-stones seem to have been used as weights for digging sticks in the primitive agriculture. It is also suggested to have been served as mace-heads.
**Querns:** Querns are comparatively large stone slabs with flattish or concave surfaces. These are found in the habitational sites of the Neolithic Culture and later period. These stone slabs were used for crushing and grinding or milling grains.

**Conclusion:**

In short typology is the study of the types of tools made by man deliberately. Hence archaeologist uses typology as a method to arrange artifacts in a scheme to show gradual development or degeneration through time. Each tool possesses a regular set pattern in both technique and form. Regularly patterned tools are concerned as the archaeological sign of culture. There are certain degrees of similarities and differences among the stone artifacts. Based on these similarities and differences, artifacts are classified into family, type-group, type, sub-type and variety and each type or variety has its own function (s) too.

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