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New types of stone tools found in Soanian Regime of the NW sub-Himalayas of India

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ABSTRACT

Though Northwestern sub-Himalayas are as yet known only for the Soanian tools but many new tool types have now been found by us from a large part of this region when it was vigilantly explored. It is for the first time that in addition to the conventionally known Soanians, many new tool types like pitted cobbles, edge-ground flakes, Hoabinhian tools, cutting tools on large flakes, finely made chisels, hand adzes and some other tools with typical functions were recovered from several sites occurring in an approximately 40x6 Kilometer area of Punjab and Himachal Pradesh region of the sub-Himalayas. All such tool types have also been found from the sites dated from mid to late mid-Holocene times. These tool were being used along with chopper/chopping tool and flakes etc., and they seem to represent some expedient technology that was employed by different societal communities who gathered in the sub-Himalayas during mid-Holocene dry phase/s.

Key words: Sub-Himalayas, Soanian, Hoabinhian, Edge-ground, Pitted cobbles.

INTRODUCTION

The northwestern sub-Himalayas are mainly known for the Soanian tools (de-Terra and Paterson 1939) with as yet unconfirmed chronological stages. The earlier workers (de-Terra and Paterson 1939, Jaysawal 1978, Karir 1985, Mohapatra and Singh 1979, Singh et al. 1998, Mohapatra 1966, 1974, 2007) usually followed de-Terra and Paterson (1939) and based their investigations on small surface collections and their interpretations of the Soanian have not yet been able to illustrate an unambiguous state of knowledge of this entity. Our discovery of stone artefacts from various post urban Harappan sites (Soni et al, 2008; Soni and Soni, 2013), the finding of three thousand lithic implements mixed with ceramics in buried state from a site in Himachal Pradesh (Soni and Soni, 2009), collection of about 500 lithic specimens from the dated young terraces of River Satluj and its tributaries (Soni et al., 2008), and from known typological parallels (Breschini and Haversat, 1993) found in association with the Soanian tools and pottery, deem to throw new light on the prehistory of this region. A special attention needs to be paid to certain new tool types which have never been reported earlier and which exist in almost all the sites going to be discussed by us. A careful and intensive exploration at appropriate geomorphologic positions like the river terraces and cup-shaped valleys entailing water sources has lead to these new findings. Earlier researchers, especially in the Indian part of the sub-continent (Karir, 1985: 120-131; Mohapatra and Singh, 1979; Singh et al., 1998; Mohapatra 1966, 1974, 2007) limited their search mostly on the higher terraces and usually close to the boulder conglomerate formations, never suspecting that the so called 'Soanian lithic material' can exist also on very young terraces (now dated up to mid-Holocene times; Soni and Soni, 2009, 2010, 2013). We give here a few examples of some of the peculiar stone tools which exist on lower as well as upper terraces and high level sites. Several such tools have been recovered from a nearly 40x 6 Km average area of the upper/middle Siwaliks of Punjab and Himachal Pradesh in India.

Site formation of some sites yielding large lithic assemblages

Though the typical stone tools are found at dozens of sites including many in dated context, they were found generally mixed with early/late Soanian tools (as per previously known typo chronology) and even with pottery at certain places (Soni and Soni, 2005, 2009, 2011, 2013; Soni et al, 2008). The formation of some sites which generated large lithic assemblages is given in the following:

1. NANGAL SITE COMPLEX

Three terraces are visible on the left bank of River Satluj above its flood plain near Nangal Township (fig.1; 1). Site NGT-1 is on first terrace and the sites NGT-2 and NGT-3 are respectively on next two higher terraces. The riverside edge of first terrace (site NGT-1) is about

9m above the present river bed, the next higher terrace NGT-2 is nearly 10m above the south end of terrace NGT-1 and the edge of NGT-3 is about 9m above the left end of site NGT-2. Initially the sediment of all the three terraces was a gravel deposited by River Satluj and subsequently three incision events (2 during terminal Pleistocene and 3rd during mid-Holocene) gave the terraces their present morphology. The topmost layer of the terrace NGT-2 is a muddy sediment drawn from the background hill overlying the boulder conglomerate bed laid down before 11.3ka as shown by a soil sample dated by Optically Stimulated Luminescence method (Soni and Soni, 2013). The muddy sediment (1.5m average depth) might have deposited on the gravel-bottom during Holocene until a little after 4.8ka (a soil sample taken at a depth of 55cm gave date of ~4.79ka; Soni and Soni, 2013). The top surface of the lowest terrace NGT-1 rather gave a date of 6.25ka (Soni et al, 2008) and is therefore younger than the bottom of the muddy sediment of NGT-2. A large lithic assemblage was collected from these dated surfaces and wherever the concentration was high, potsherds including the coarse fabric late-Harappan type ceramics and Black & Red Ware (which are known from Harappan sites also; Shinde, 2000) were present there (Soni et al, 2008; Soni & Soni, 2013). These sites also provided us with largest number of pitted cobbles (n=45) which are usually known from the mid-Holocene sites in California (Breschini and Haverslt, 1993; Fitzgerald and Jones, 1999) and SE Asia (Esser, 1994; Xeuchun et al., 2003).

2. GOALTHAI

Goalthai sites are 2 small valleys lying close to each other at the outskirts of a small middle Siwalik sub-range (fig.1:2) and are named as Gl (Goalthai Lake) and Gr (Goalthai Ramdas) respectively. Gl is a sub-circular valley of nearly 300m diameter and a narrow stream emanating from the background middle Siwalik hill which further opens up in the valley as a c15m wide stream cutting its badland type floor up to near 1 meter a depth. This stream emerges out from a narrow opening in the valley and ultimately joins Samteni Khad (a tributary of River Satluj; fig.1). Majority of about seven hundred stone artefacts were freshly worked cores, chopper/chopping tools and rest were hammer-stones, Hoabinhian-like tools, large and small flakes and flake tools. Some edge-ground flakes, 2 very large anvils, a pitted cobble and a complete ring-stone made on local sandstone were also recovered from the dried up stream bed and irregular terrace sections/slopes on both sides of the stream. Many weathered potsherds were also noticed on the badland surface pointing to the mid-Holocene occurrence of this workshop site. The second site 'Gr' lying close to 'Gl' is also similarly situated but is a c300m long and c15m wide longitudinal mini-valley, through which a quasi-perennial stream flows. The stream bed, slopes on both sides, and small remnant terrace sections situated here and there yielded as many as six hundred stone artefacts and the assemblage was almost similar to the one collected from 'Gl'. Large anvils and battered cobbles/hammer-stones and some potsherds were also found though no pitted cobble was encountered.

3. JANDORI-6

This site generated a very large assemblage of stone tools and a limited excavation was also conducted in it (Soni and Soni, 2009, 2013). It exists in middle Siwalik hills on the left bank of Jandori River and yielded more than five thousand stone tool of which ~90% were flakes/flake tools and debitage. The assemblage consisted of in-situ presence of a large number of edge-ground flakes (figs. 28, 29). Hoabinhian-like tools (fig. 24) as well as Harappan potsherds (as indicted by a piece of a vessel resembling Harappan ware; Soni and Soni, 2013). It was a workshop site since from its small area (c15x12m) and from the excavation sufficient quantity of small-size shatter was also recovered. The raw material of the lithics (coarse/medium-grained quartzite) appears to have been imported to the site from elsewhere.

4. BIKA KHAD.

This is a small left bank tributary of River Satluj near Ganguwal and flows for about 2.5 Km in the Siwaliks as a grade-2 stream. This stream is later joined by another 1.5Km long (within the hills) similar stream, Barara Khad (fig.1), and both flow parallel to each other separated by half a kilometer. There are some remnant single cusp terraces in the narrow (c 15m wide) valleys formed by these streams which support Soanian, Hoabinhian and edge-ground tools along with choppers. From a terrace in Barara Khad, a typical fine chisel piece covered with a natural yellow polish made on quartz (fig. 31 d-h) is a rare discovery from this Khad. This chisel is almost similar to a chisel found by us from a Ban Ganga terrace near Kangra, which is made on fine grain quartzite (fig. 31 a-c). Both these materials are foreign to Siwaliks and therefore these chisels appear to have been transported from somewhere else.

5. NANGETHAKUR

This is a short-run upland dried up seasonal stream from whose bed and slopes on both sides, a large number of Soanian tools mixed with Haobinhian and Sonvian types were found. Two pitted cobbles and a typical Sonvian circular disc (fig.11). This stream lies about 2Km north of the village Nangethakur (fig.1) in the middle Siwaliks and ultimately joins the Jandori-Khad.

6. BAGHERI

Site Bagheri is a wide terrace supporting agricultural fields on the left bank of Luhund Khad (fig.1) which flows cutting through the Pinjaur Dun alluvial fans. This terrace was dated to c20ka (Suresh et al, 2002) and it yielded many Soanian tools and some large flake tools (Soni and Soni, 2005). Though some workers had earlier suggested a mid-Pleistocene date for the occurrence of lithic assemblages at this level of the fan surfaces (Mohapatra and Singh, 1979), the assemblage was rather of much later date than the date of fan deposition (20ka) which is indicated by the recovery of a pitted cobble and many Harappan type potsherds from this large area site.

New type of tools recovered from these sites in addition to the Soanian:

1. Pitted cobbles.

Pitted cobbles are generally known from North America (True et al, 1979; Fitzgerald and Jones, 1999) and Southeast Asia (Higham, 2002; Xeuchun et al, 2003) but have never been reported from the Indian sub-continent. Our search in a large region revealed many such sites which generated these tools, most of which were recovered from the Nangal site complex (Soni and Soni, 2011). These tools (and many others going to be described in the following) were recovered from sites dated to late mid-Holocene times. A few of these tools were also recovered from the higher level sites like Nangethakur (HP), and cup-shaped valleys near Goalthai (HP), which are undated sites occurring in the laps of middle Siwaliks (fig.1). Occasional tools were also encountered in the lowest terraces of young streams as Bika Choe, and Bagheri (fig.1). Pits on most of these cobbles appear to have been intentionally made for some use, true cause of which is yet unknown (see figs. 2-6) and some are quite different in appearance than those reported from other countries (Fitzgerald and Jones, 1999; Roda Gilabert et al, 2011).

2. Edge-ground stone tools.

Stone tools with ground edges also remain unreported from the sub-Himalayas before our recent discoveries (Soni and Soni, 2009, 2010, 2011, 2013). Edge-ground adzes and occasionally a small number of edge-ground flakes have been found from the mid-Holocene sites in Southeast Asia (Bellwood, 2007), but in the present case the edge-ground flakes have been found by us in very large numbers from some sites (Soni & Soni, 2009, 2013). In an excavated site from where a few thousand flakes fabricated on quartzite were recovered, more than 95% were having ground edges (Soni and Soni, 2009). The grinding of the edges here appears to have been done with some utility purpose and are not post-utilization marks. Figures 28, 29 show some edge-ground tools with special focus on ground edges. An experiment performed on some flakes of quartzite showed that when their edges are rubbed repeatedly on a quartzite core, a shine is obtained on the flake's edge akin to the edge-ground archaeological flakes depicted in figs. 28 and 29. This fact makes us believe that the edge grinding was pre-utilization act and was not a result of some activity.

3. Hoabinhian, Sonvian and Bacsonian tools.

Hoabinhian tools are generally found in Southeast Asian archeological sites (Matthews, 1966; Gorman, 1972; Anderson, 1990; Esser, 1994; Marwick, 2007; Bellwood, 2007; Yi. S et al., 2008) dated from terminal Pleistocene to early Holocene times. However, we encountered a large number of such tools in mid to late mid-Holocene sites. The main characteristics of Hoabinhian tools are that they are unifacially or bifacially peripherally centripetally flaked cobbles (see figs.9a-b, 10a-b, 20-23, 26, 27). Such tools, particularly belonging to times later than those reported from Southeast Asia, have for the first time been discovered by us from Northwestern sub-Himalayas in the mid-Holocene context (Soni and Soni, 2010, 2013).

The Sonvian tools are flat-faced cobles abruptly flaked all-round (fig.11). These tools are claimed to have existed prior to Hoabinhians (Ha Van Tan, 1997) but strangely enough, we found such tools in mid-Holocene sites (Soni and Soni, 2010, 2013).

Bacsonian tools are the edge-ground cores (particularly adzes) which are reported from the upper Hoabinhian times (Bellwood, 2007). Though edge-ground flakes are also sparingly found in certain sites (Bellwood, 2007), our finds show abundant of them in this region of sub-Himalayas (see flakes and their edges in figs. 28, 29). This fact calls for a further critical study of these tools and find the cause/s of their occurrence in this region.

Sumatraliths, which also represent the Hoabinhian tools and are defined as peripherally centripetally flaked circular through oval to rectangular unifacial cobbles (Nishimura, 1994). Such tools (figs.20, 26, 27) are found in this region in quite large numbers. The Hoabinhoidal tools (Sonvian, Hoabinhian, Bacsonian) are most abundant in sites Bika/Barara-Khads, Jandori sites and Nangal site complex.

4. Other rare/typical tools

It has previously been claimed that miniaturization of the stone tools (particularly of the Soanaian tools) occurred as the late Soan tools went on becoming smaller with time (de-Terra & Paterson, 1939; Mohapatra, 1966, 1974, 2007). But present study does not find any typo chronological distinction between early and late Soan (Soni and Soni, 2013) and this fact is proved by the discovery of very large stone tools like large anvils (fig.7), choppers, chopping tools and utilized flakes from quite young assemblages. In our assemblages, we have:

a) Large flakes used as cutters (figs. 14-16, 18, 19) have been recovered from almost all the sites in our area of study (fig.1). Some very large flakes with utilized lateral edge (fig.18) and backed knife with tang (fig.12) and without tang (fig. 14d, e; 32 a, b) recovered from Nangal site complex (dated to 4ka or so) and Jandori region, present a good example.
b) There are large flake cutting tools which resemble cleavers (figs. 15, 16), but we have named them as ‘cleaving tools’ to differentiate them from Acheulean cleavers, as they could also have been used for similar purposes.
c) Many miscellaneous tools were also recovered from this region such a large wedge (fig. 14a,b), pointed large cores (figs. 14f, 32f), hand adzes (fig.17), tools with transversal edges (figs. 9c-f) haft able axes (fig. 8a),one double axe (fig. 10c-d), arrowheads (fig. 31), half and complete ring stones (fig.8e, 32d), two fine chisels made on material foreign to Siwaliks (fig. 31), thick piercing tools (fig. 32 c), a large unifacial discoid (fig. 32e) and utilized large cores.

DISCUSSION AND CONCLUSION:

In the foregoing we have described only those tools which are peculiar and different from the conventionally known Soanian tools though they were found in association with the later. They represent a mixture of more than one culture and strangely enough, this situation was never inferred by the earlier workers because of their inadequate studies and interpretations. The reason is in the past almost all the studies (right from de-Terra & Paterson, 1937 to Mohapatra, 1966, 1974, 2007) were based on meager collections made in un-datable contexts. We have made studies which are based on large collections made mostly from dated sites yielding more archeological material ignored by the earlier workers or by chance not encountered by them. Since Harappan potsherds, B&RW, edge-ground lithic specimens, Hoabinhian-like tools and pitted cobbles etc have been found from almost all the rich assemblage sites mentioned above, it shows that there is a mixture of many cultures in the NW sub-Himalayas. Even if some assemblages have been recovered from higher level terraces or sites, their typo technology points to their young age. Although only a limited area is shown to have been explored in the foregoing, we speculate such situation to be prevailing in the whole region. The main reason of finding stone tools along with the other cultural material is that long spells of aridity during the mid-Holocene (Gupta et al, 2006; Giosan et al, 2012), many societal communities including the late Harappans had gathered in the rainier sub-Himalayas who brought their culture along with. It can also be assumed (subject to confirmation by further interdisciplinary work) that due to the cessation of long distance trade, metal could no longer be available to the distraught communities for long times and these stone tools were fabricated (and some tools like chisels, ring-stones were transported hereto by them) for day to day use. They had used some expedient technology in times of misery and probably that is the reason why we have encountered these new types of tools distributed in the region in a slapdash manner.

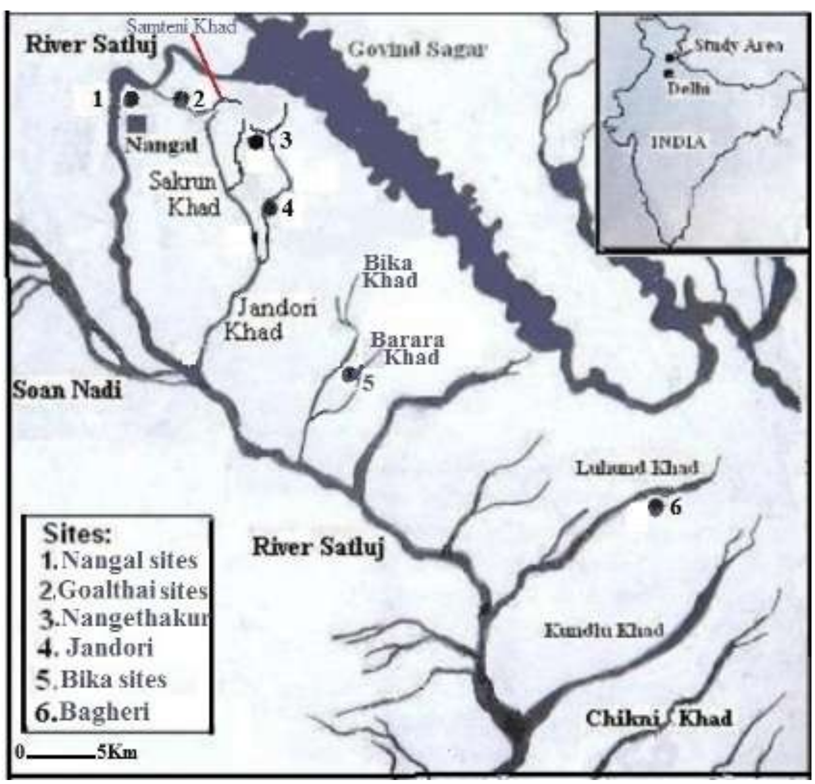

Figure 1. Map showing sites discussed in the paper.

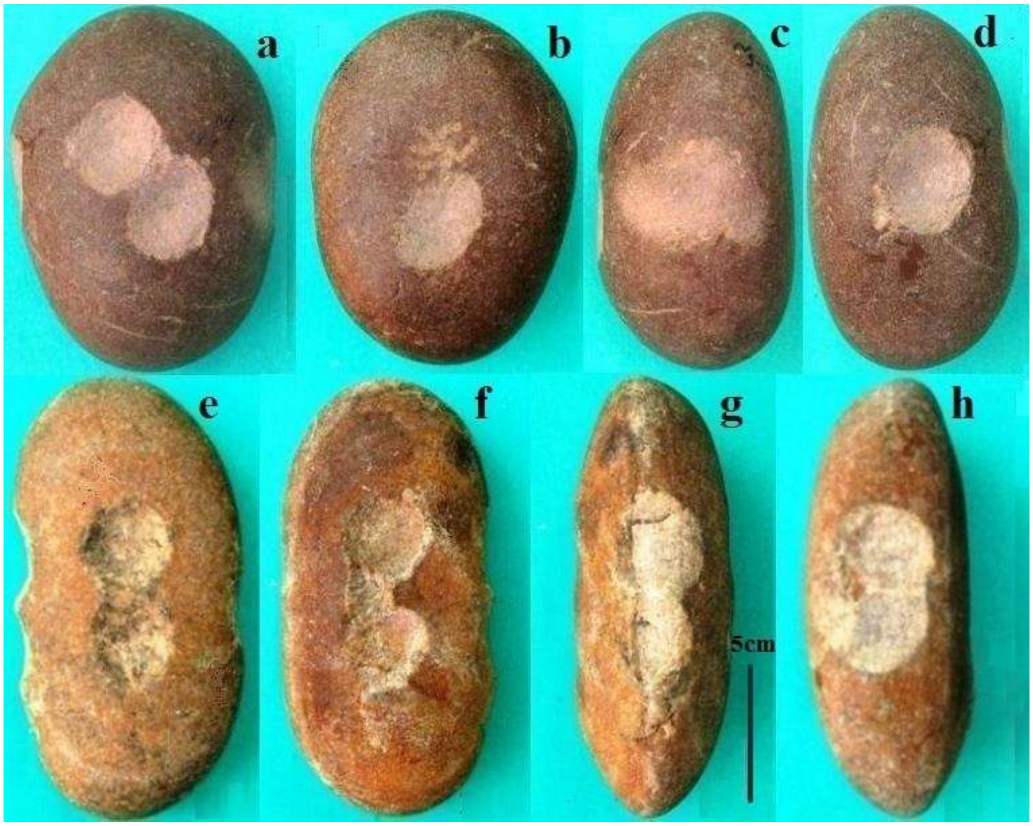

Figure 2. (a-d) Both faces and sides of a pitted cobble from NGT-1; (e-h) both faces and sides of a pitted cobble from Goalthai site.

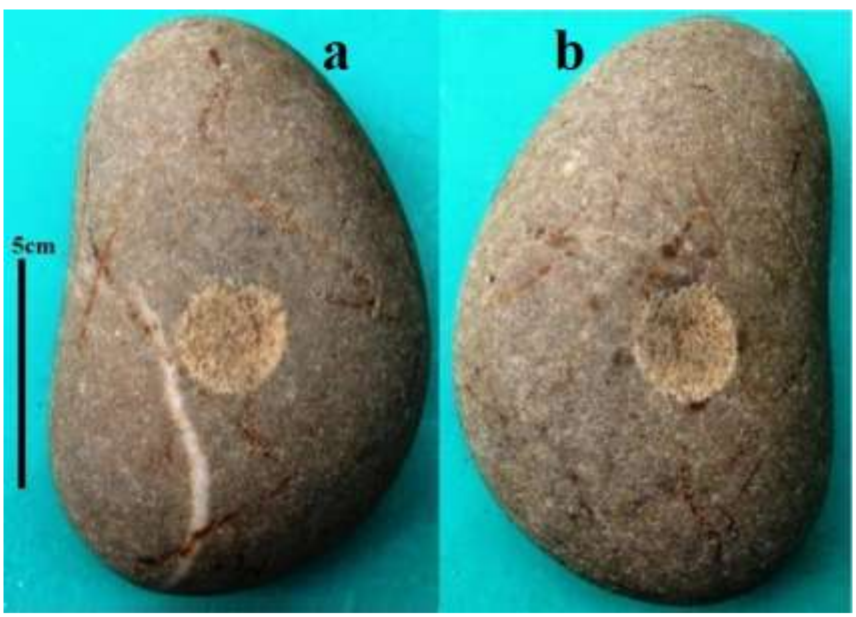

Figure 3. (a-b) Both faces of cobble from NGT-2 with centrally placed pits. Its narrower end is battered.

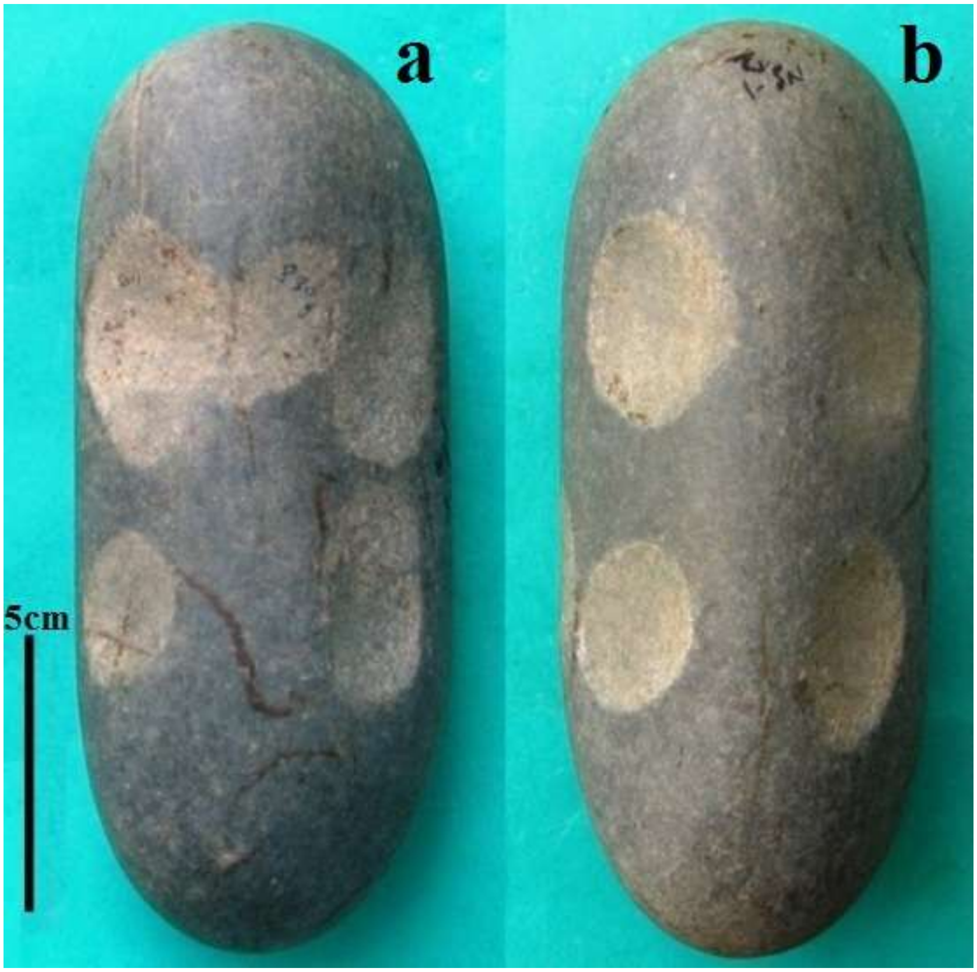

Figure 4. (a-b) Two sides of a multi-pitted cylindrical cobble from NGT-1.

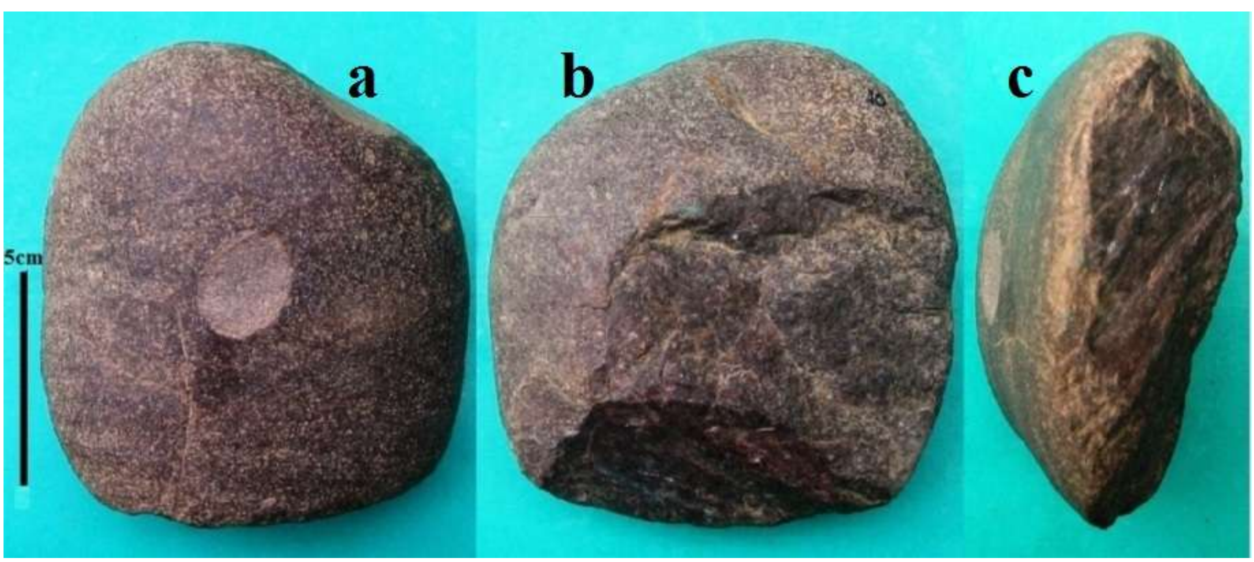

Figure 5. (a-b) Two faces of a squarish cobble having 2 pits; (c) its battered working edge.

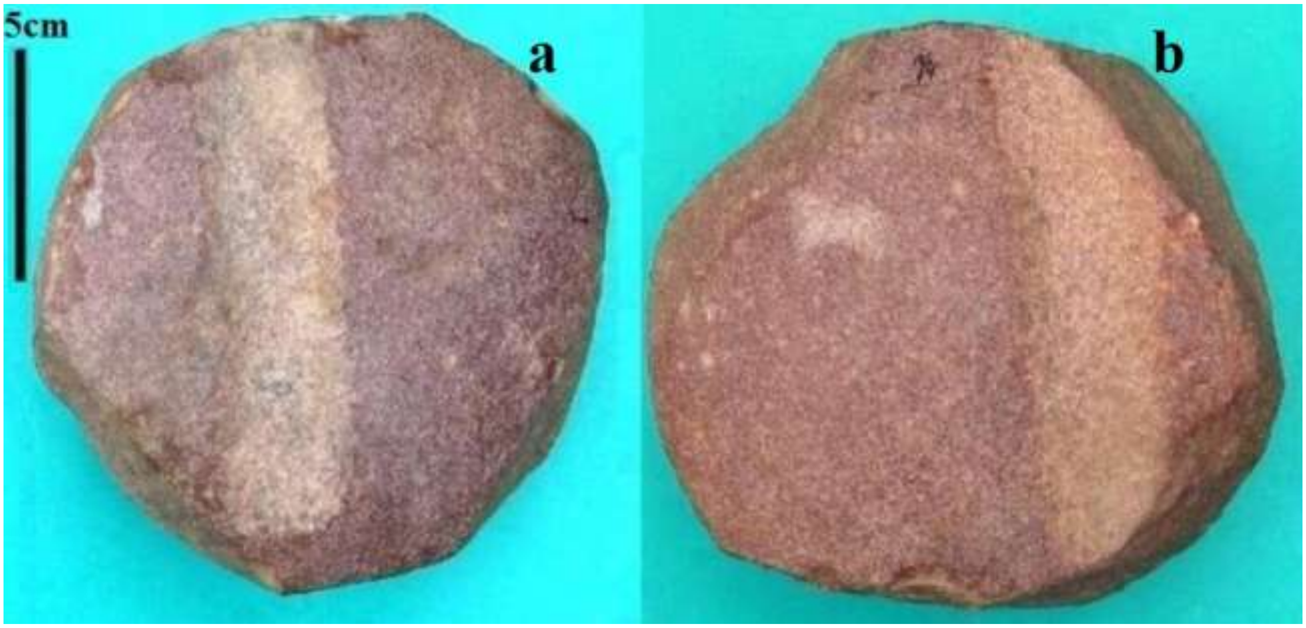

Figure 6. (a-b) Both cortical faces of a large hexagonoidal core have straight grooves. Its six sides are steeply flaked

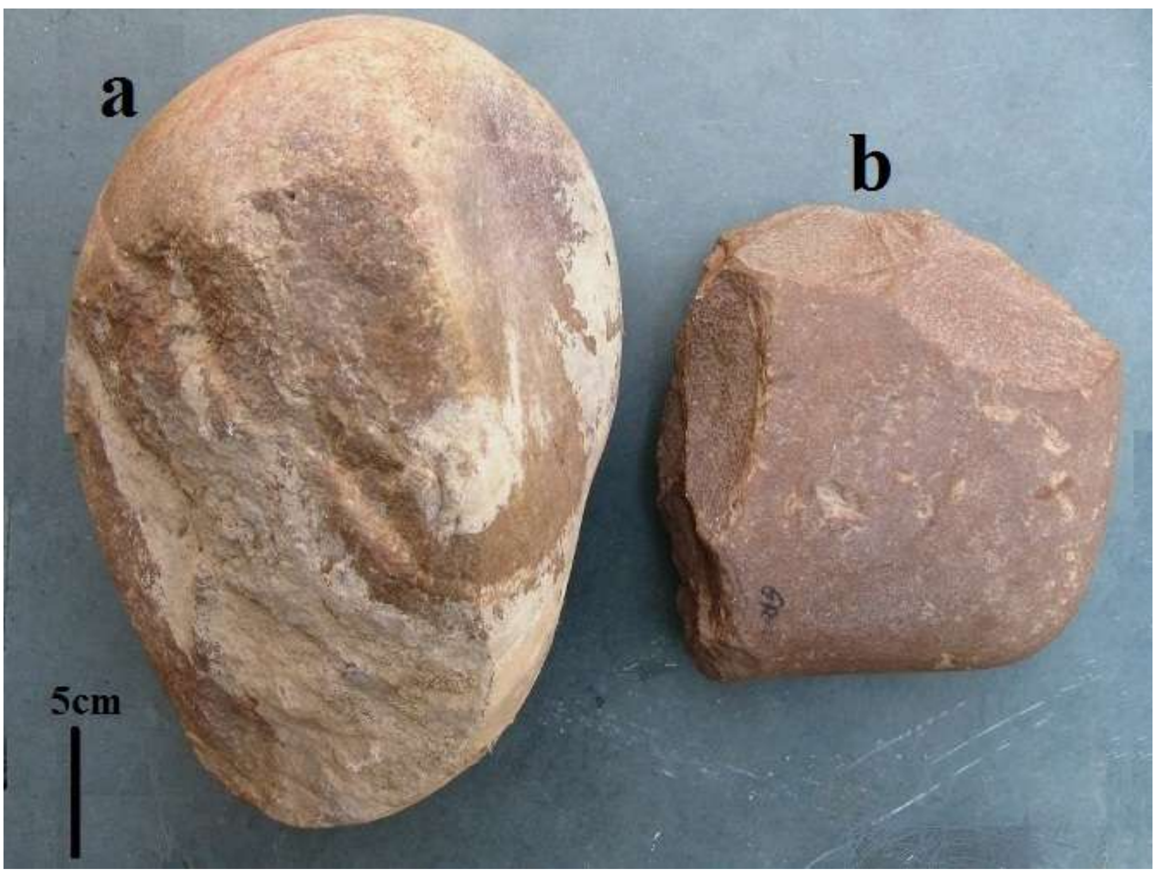

Figure 7. (a) A large anvil having several flake scars on one side found from site Gl (Goalthai); (b) A large sub-rectangular flat-faced chopping tool cum anvil showing battering signs on its faces.

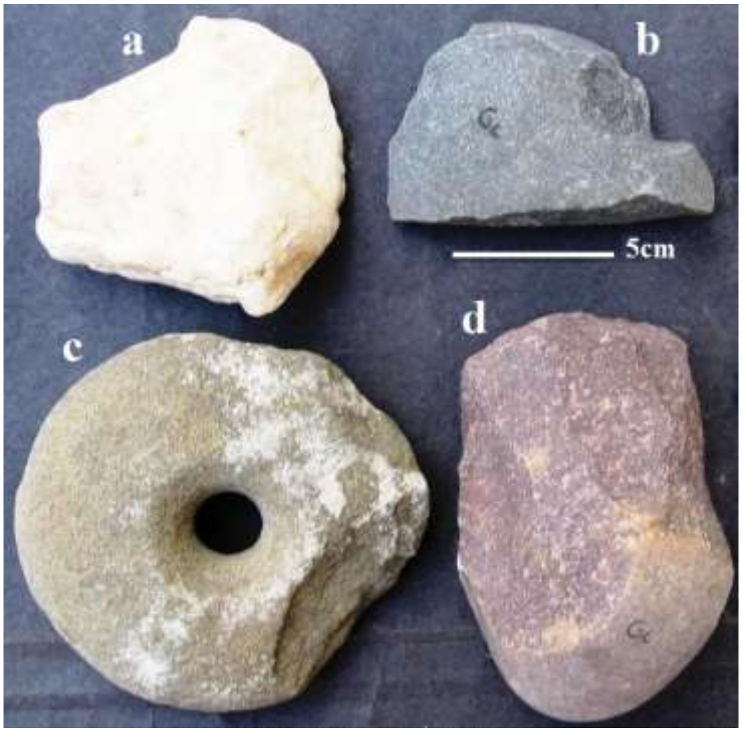

Figure 8. (a) Haft-able stone axe with a convex working edge; (b) a thick backed-flake with a tang; (c) a complete ring-stone on sandstone; (d) a unifacial cleaver-like object with utilized distal edge.

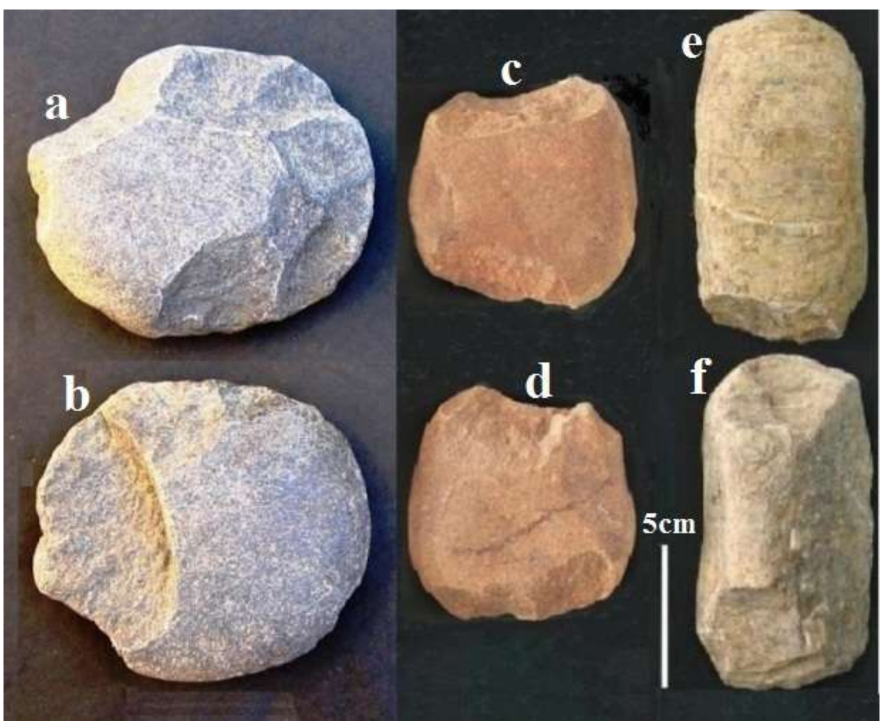

Figure 9. (a-b) Both flat cortical faces of an all-round centripetally flaked circular discoid; (c-f) cobble tools with transversal cutting edges.

Figure 10. (a-b) Unifacial cobble resembling a Sumatralith from Bika Khad; (c-d) rectangular double axe (having 2 sharp working edges) from Goalthai; (e-g) stemmed flaring tools on flaked cobbles.

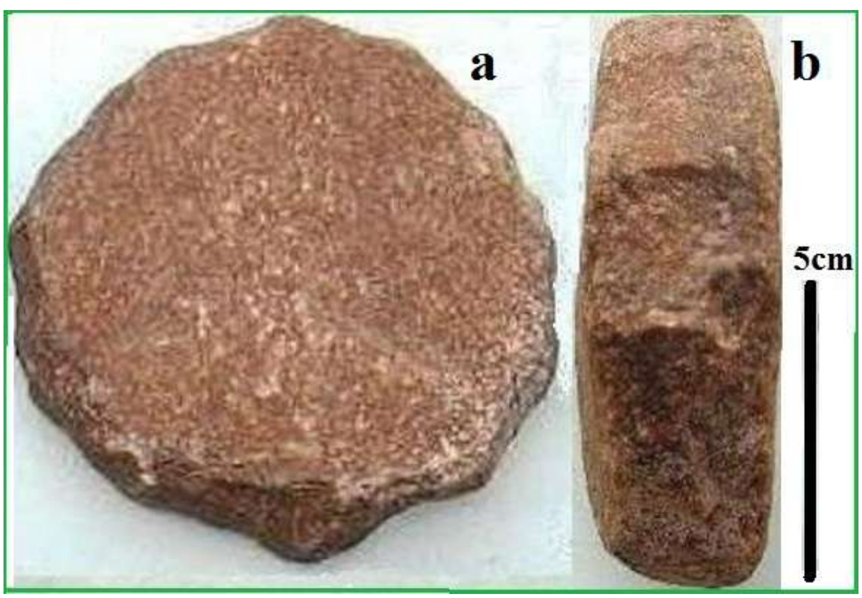

Figure 11. (a-b) Peripherally steeply flaked thick flat disc with fully cortical faces. It is a typical Sonvian tool found from the site Nangethakur.

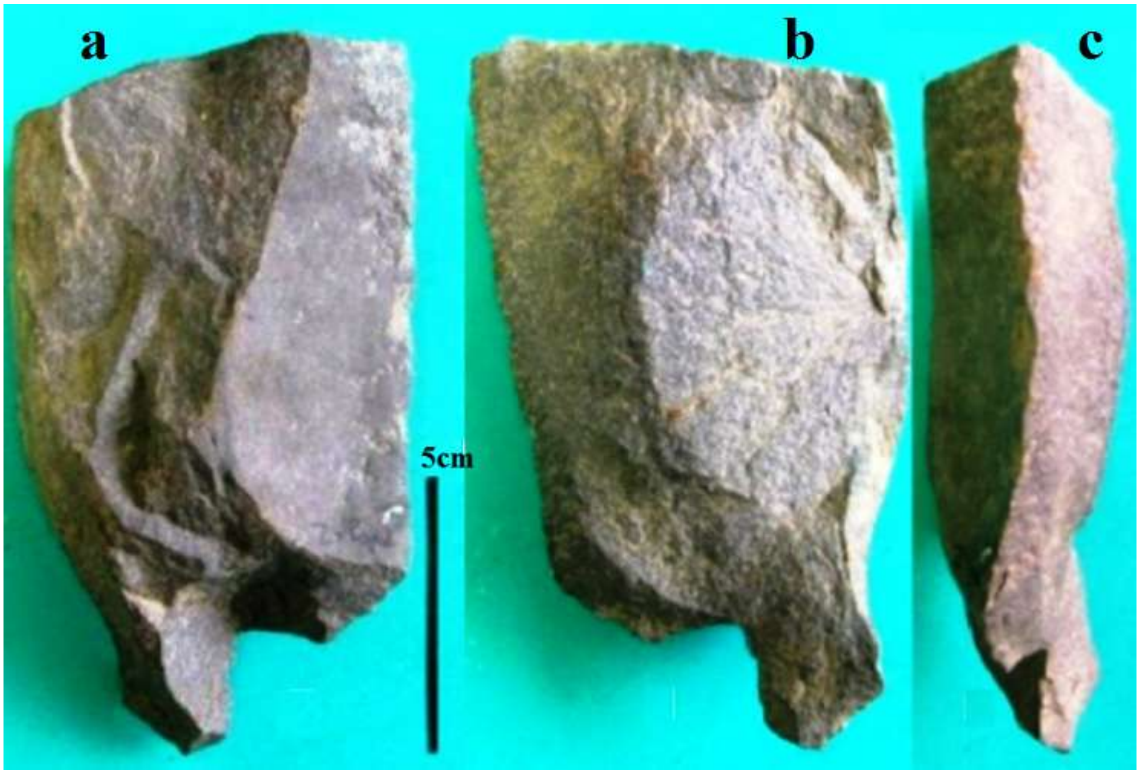

Figure 12. (a-c) Three views of a backed and cutting tool having a tang and utilized cutting edge.

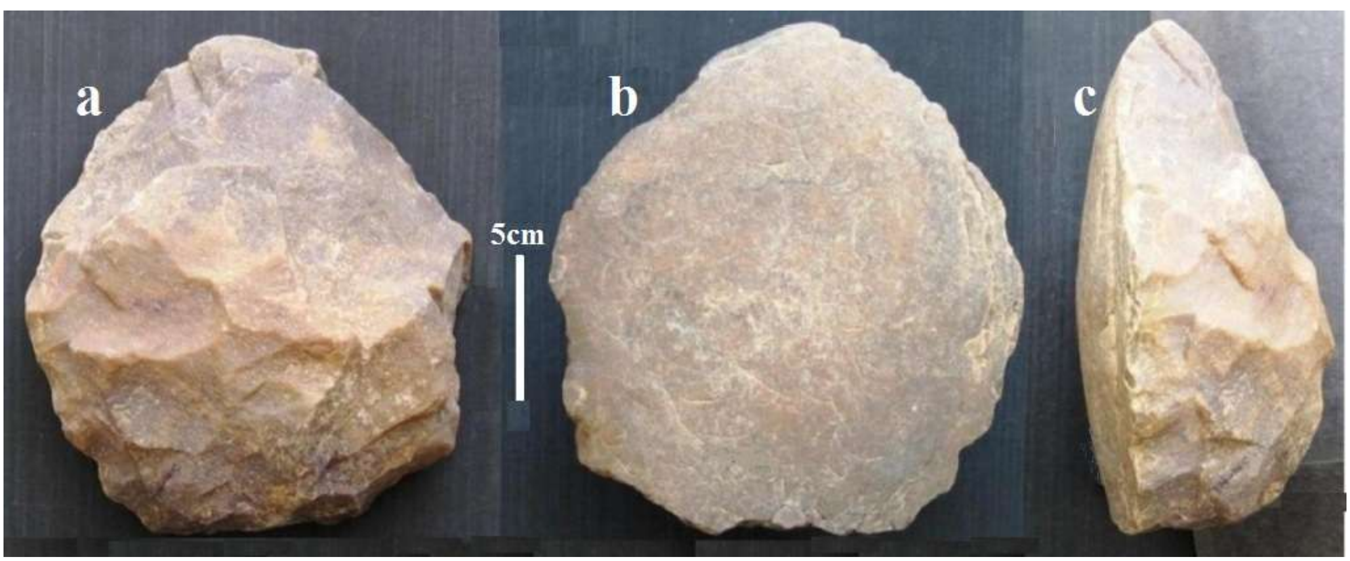

Figure 13. (a-c) Large unifacial thick discoid flaked all over the ventral face also showing centripetal flaking done round the edge found from a terrace of Samteni-Khad near Nangal.

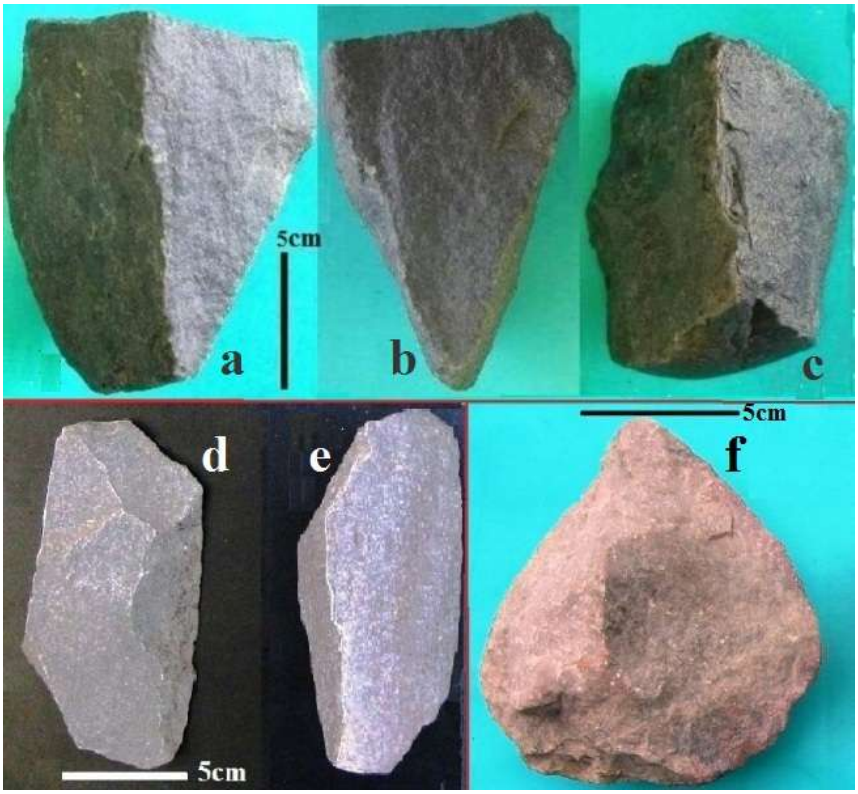

Figure 14. (a-b) A view showing 2 faces of a thick wedge and; (c) its cutting edge, found from a terrace at Barmala near Nangal; (d, e) backed knife on a thick flake from NGT-1; (f) unifacial pointed core with bulge at the centre.

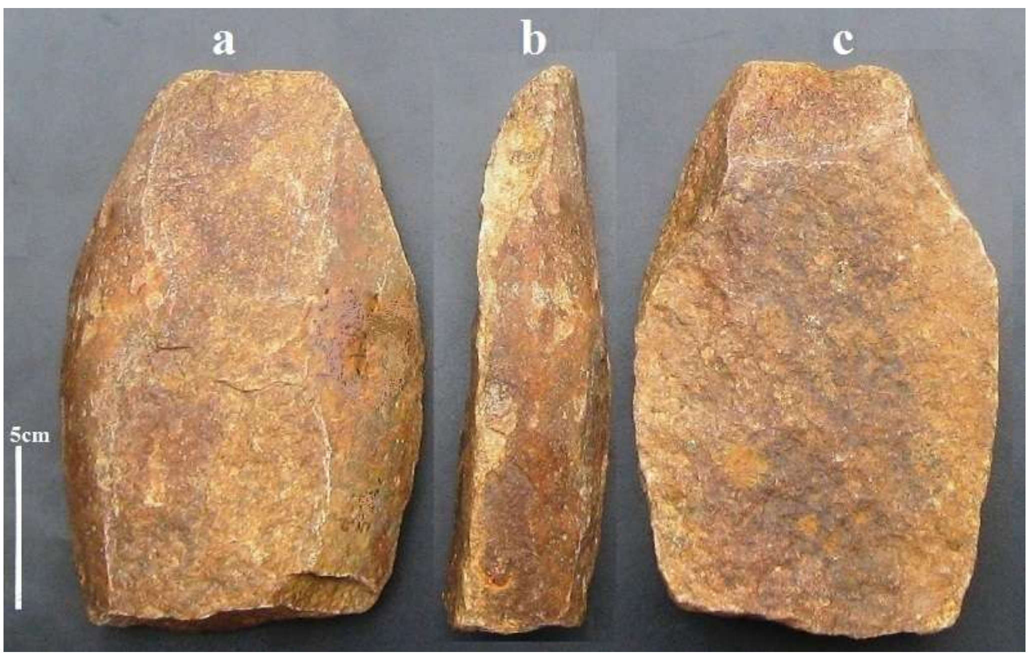

Figure 15. (a-c) Three views of a large cleaving tool having steeply truncated butt and utilized distal working edge recovered from NGT-1.

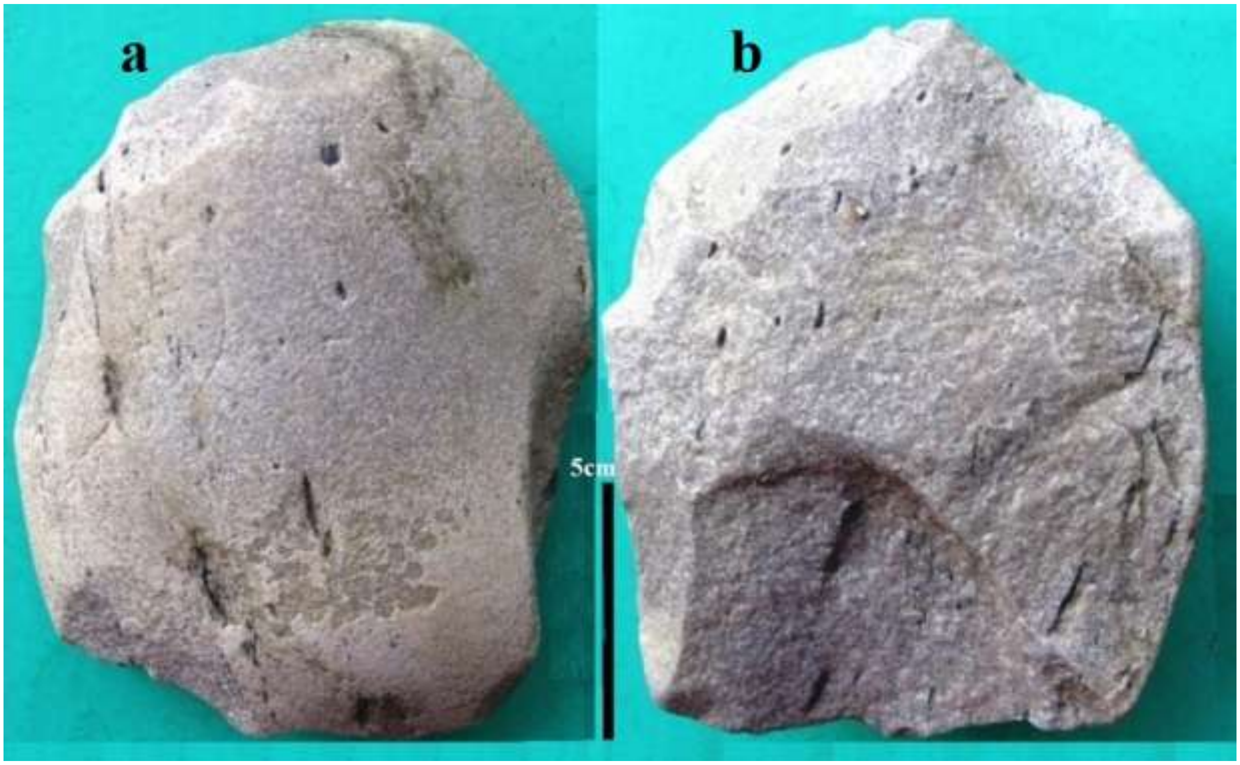

Figure 16. (a-b) Both faces of a cutting tool, resembling a cleaver, obtained from the Bika site.

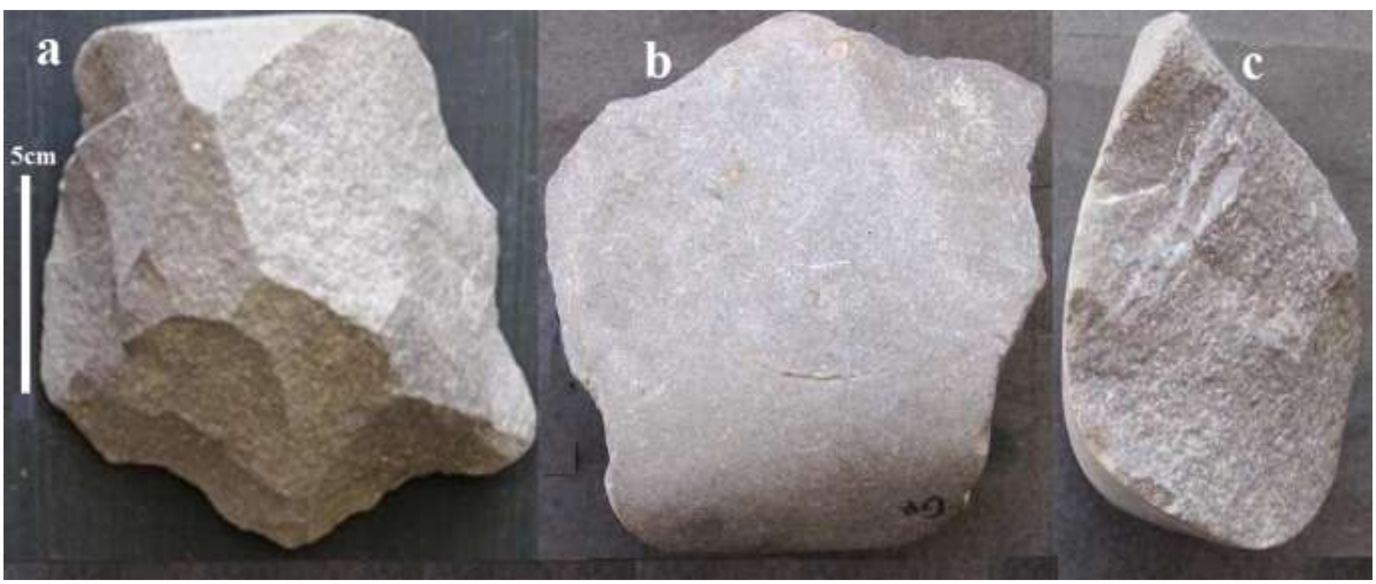

Figure 17. (a-c) Ventral, dorsal and lateral views of a hand adze made on a core recovered from Gr (Goalthai).

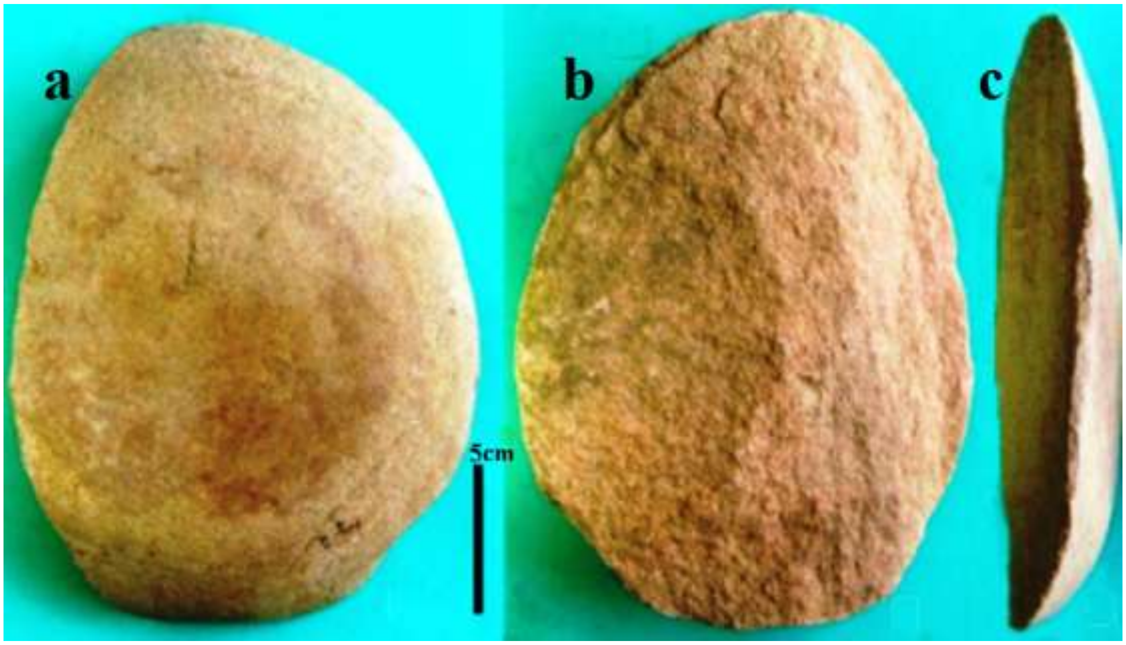

Figure 18. (a-b) Dorsal and ventral faces of a large flake cutter; (c) its utilized cutting edge, recovered from NGT-1.

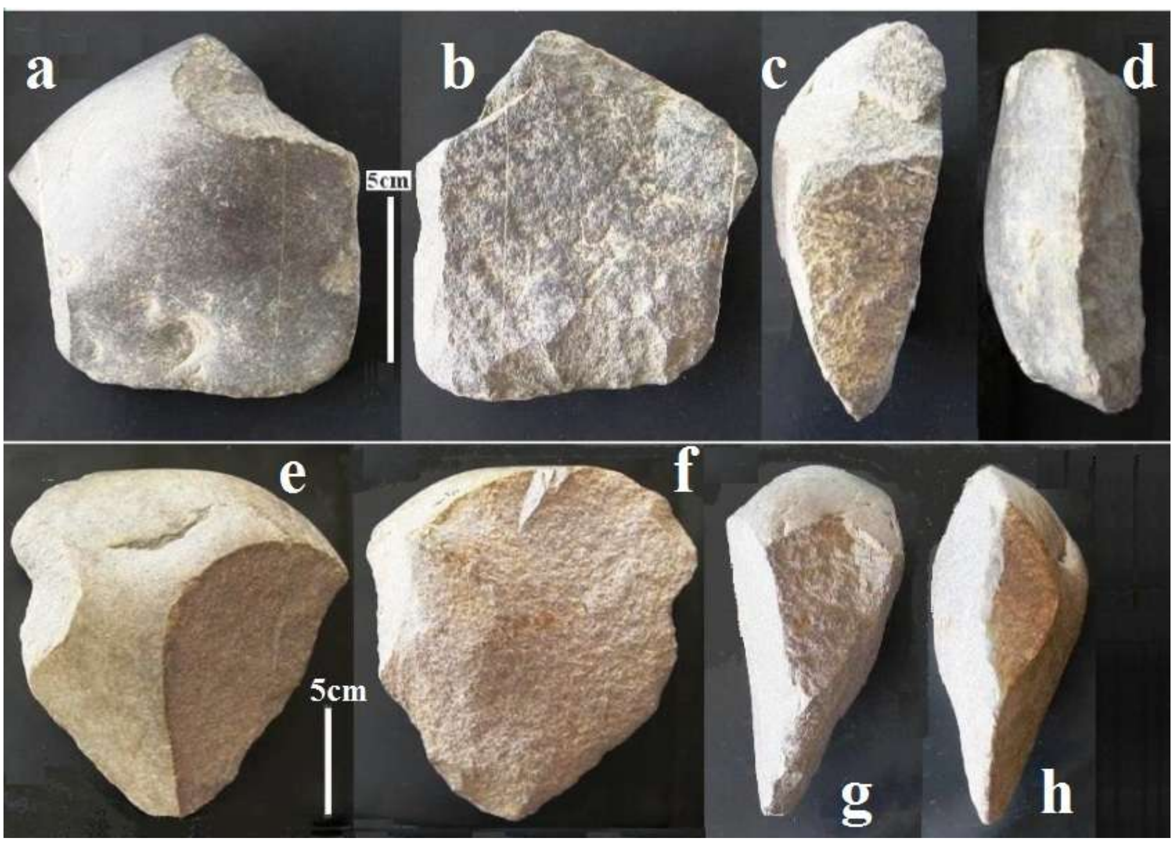

Figure 19. (a-c) Dorsal, ventral and lateral views of a sub-rectangular cleaving tool; (c) its distal cutting edge; (e-h) both faces and lateral sides of a thick pointed flake. Both these specimens are from NGT-1.

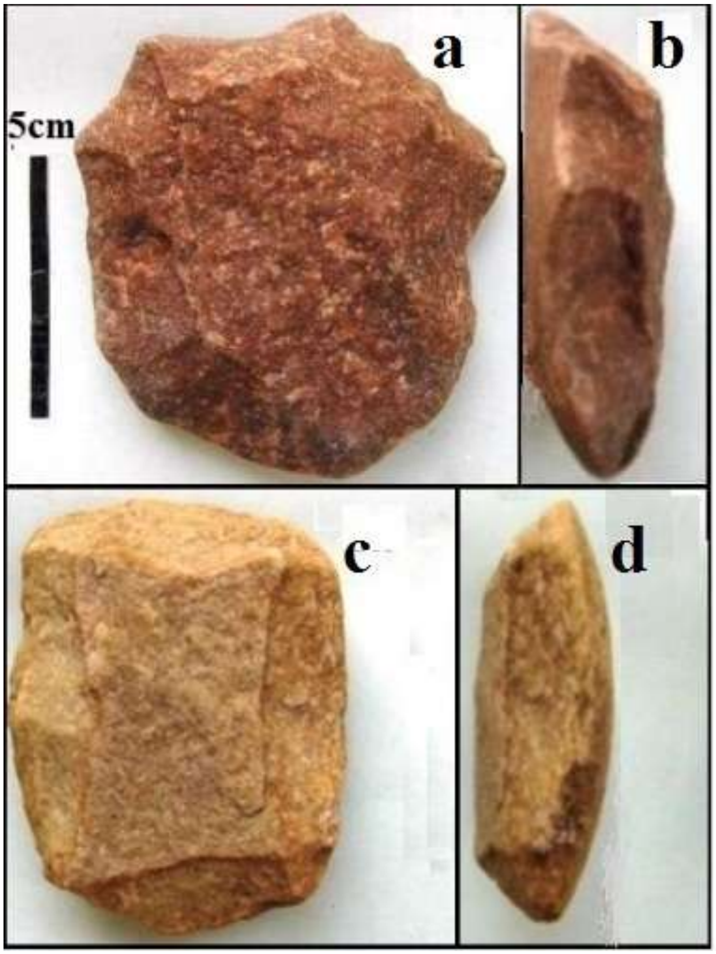

Figure 20. (a-d) Ventral and lateral views of 2 Sumatraliths recovered from Bika-Khad site.

Figure 21. (a-b) Dorsal and ventral views of a chopping tool resembling a Hoabinhian tool (peripherally centripetally flaked) recovered from Gr (Goalthai).

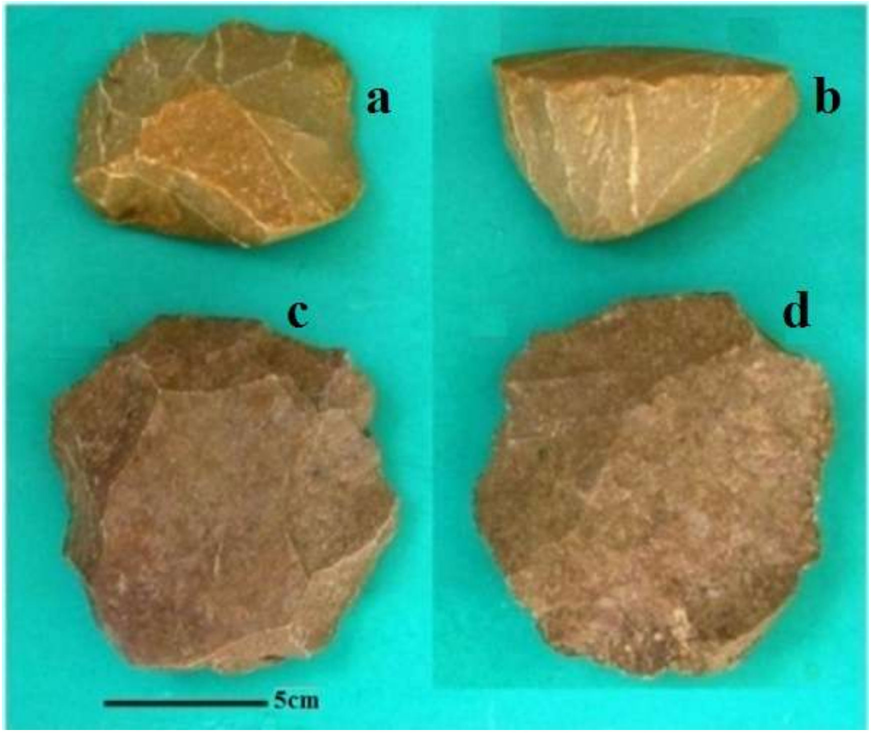

Figure 22. (a-b) All-round centripetally steeply flaked unifacial core with a bulge at the centre; (c-d) bifacial Hoabinhian tool. Both these specimens were recovered from a site near Jandori-6.

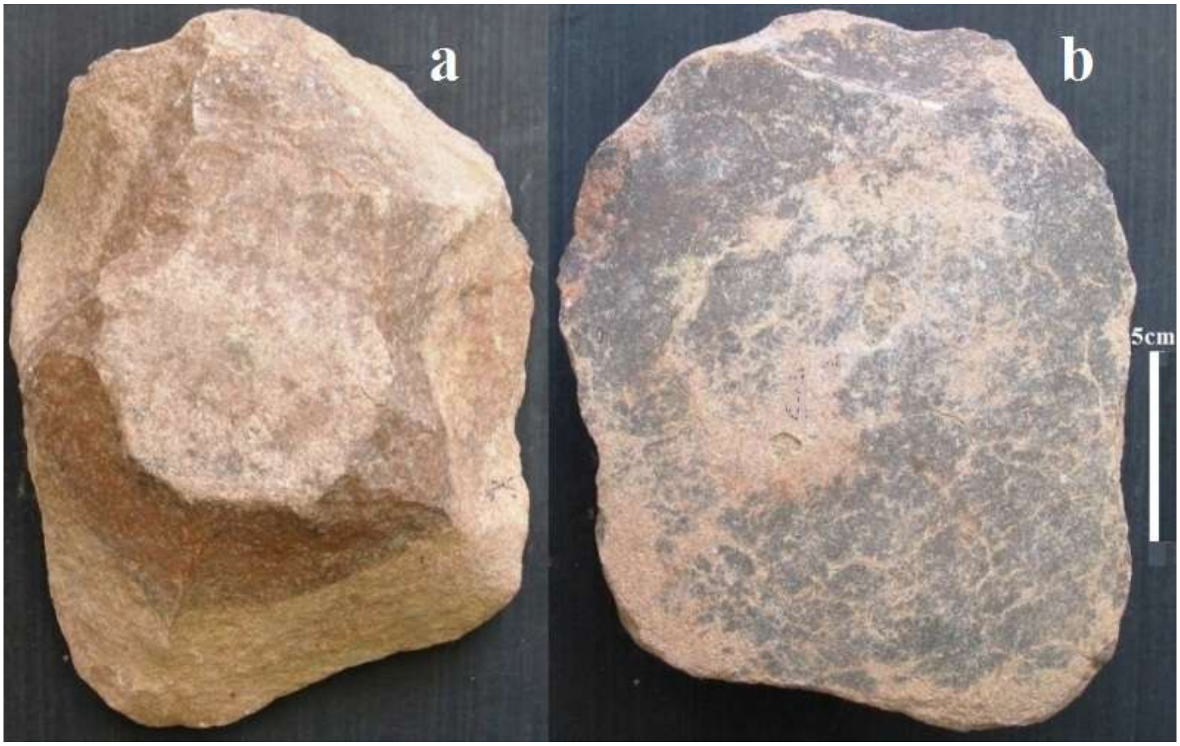

Figure 23. (a-b) Peripherally/centripetally flaked large unifacial core from Goalthai region.

Figure 24. (a-b) Sub-rectangular unifacial core from Jandori-6 having truncated proximal end and utilized distal end.

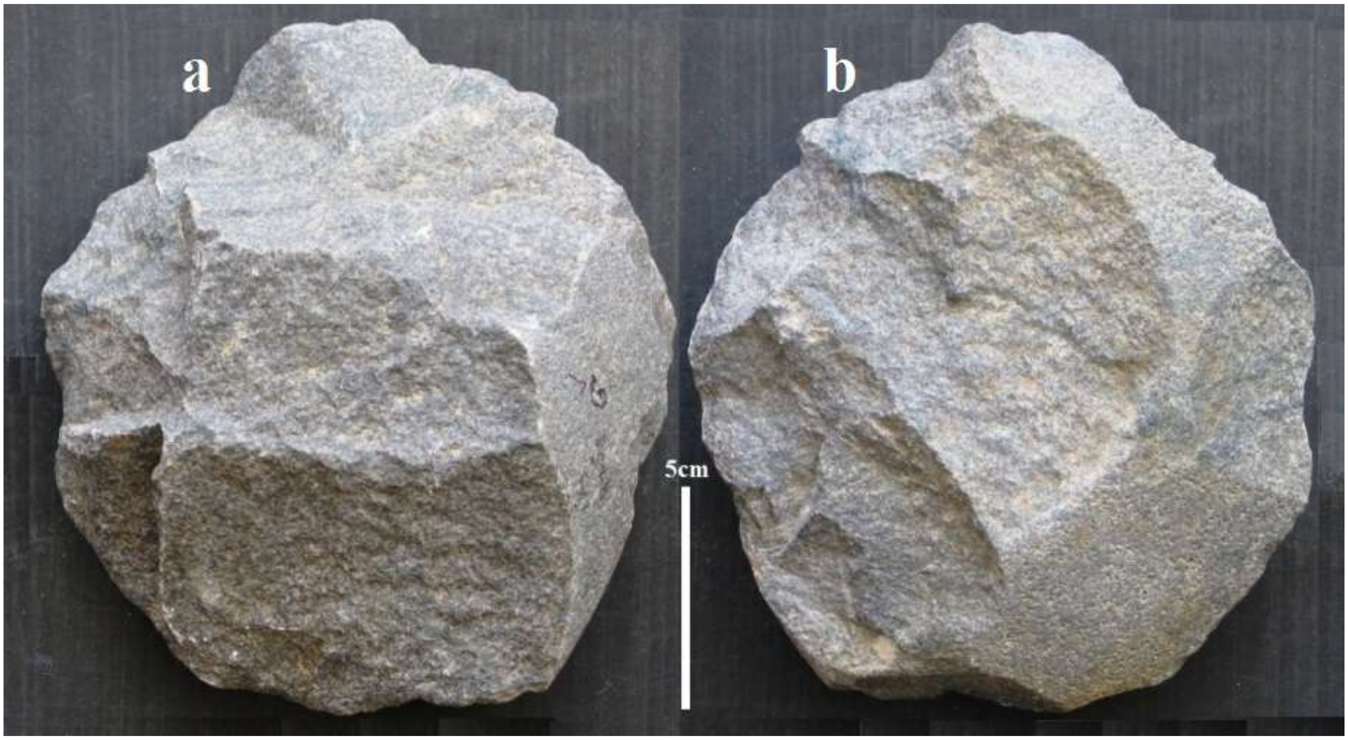

Figure 25. (a-b) Sub-circular bifacial discoid from Goalthai region with a patch of cortex on both faces.

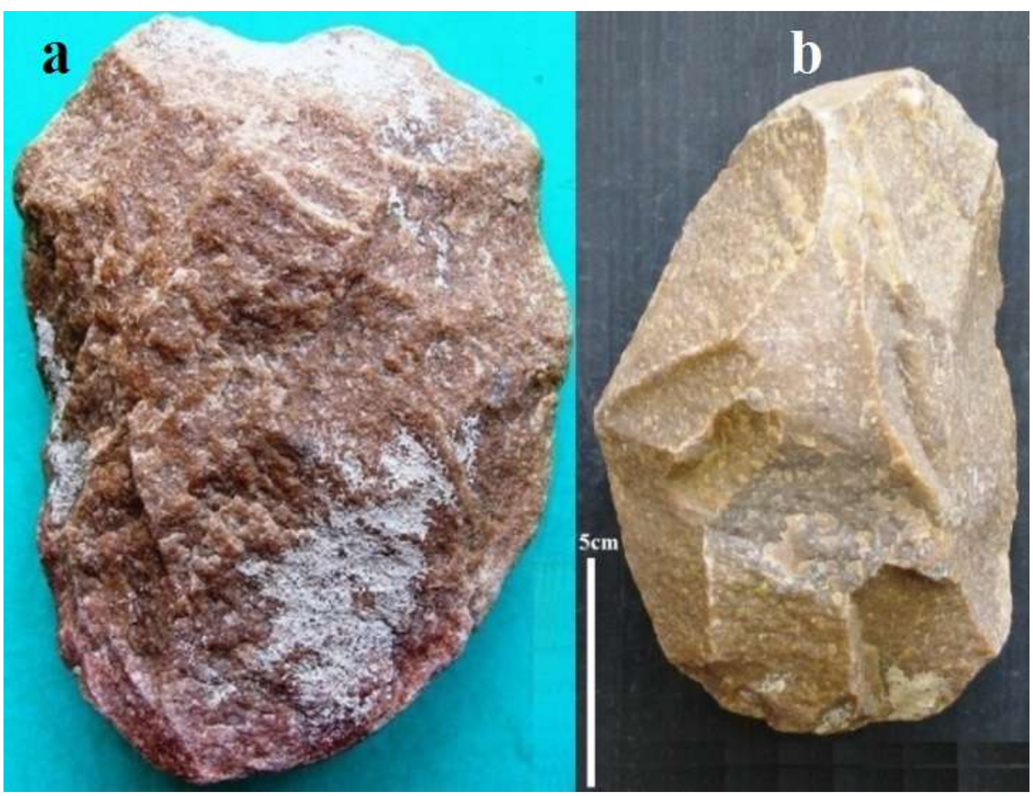

Figure 26. (a& b) Sumatraliths (oval shaped unifacial cores with peripheral/centripetal flaking) from Bika Khad site.

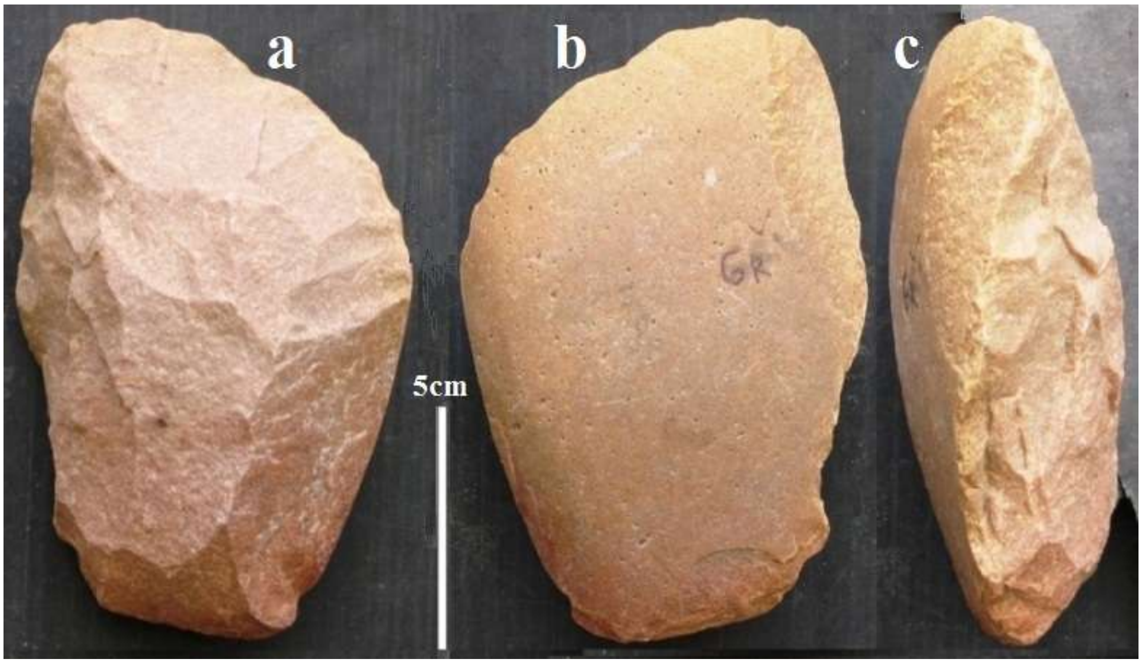

Figure 27. (a-c) Both faces and side of a Sumatralith from Gr site in Goalthai.

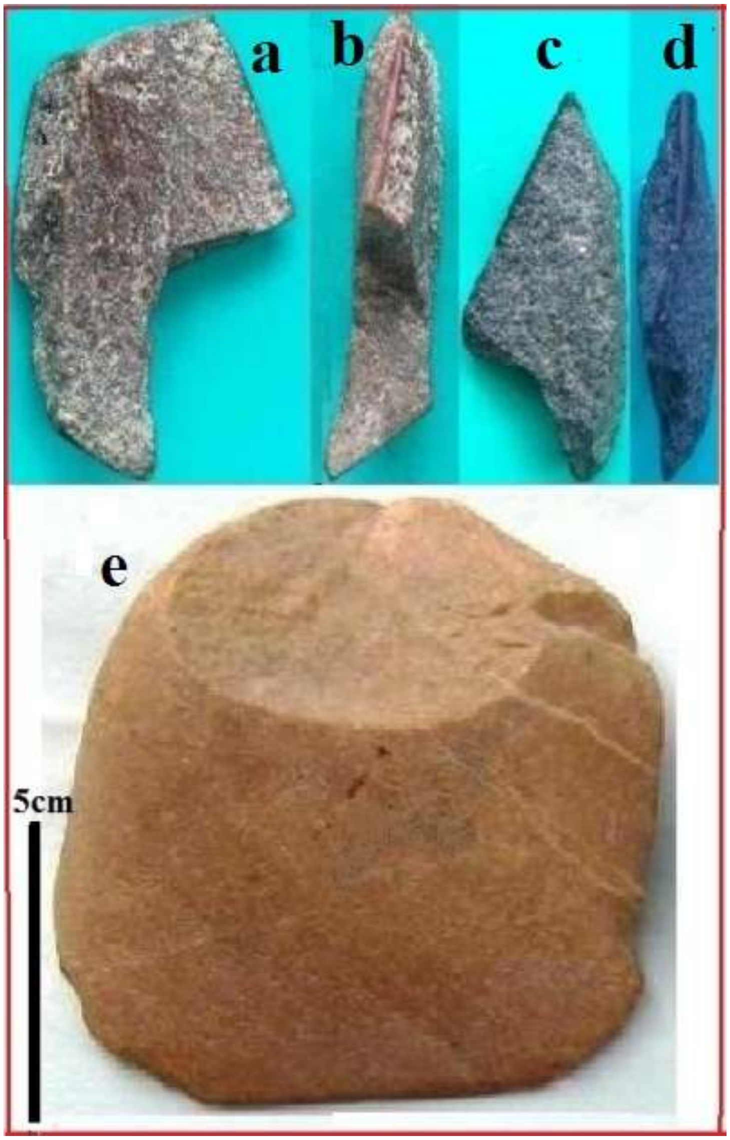

Figure 28. (a) A squarish flake with tang and (b) its smoothly ground working edge; (c-d) a tanged borer having a smoothly ground edge; dorsal face of a squarish flake with proximal scar and having a ground working edge. These specimens were recovered from excavation of the Jandori-6 site (see text).

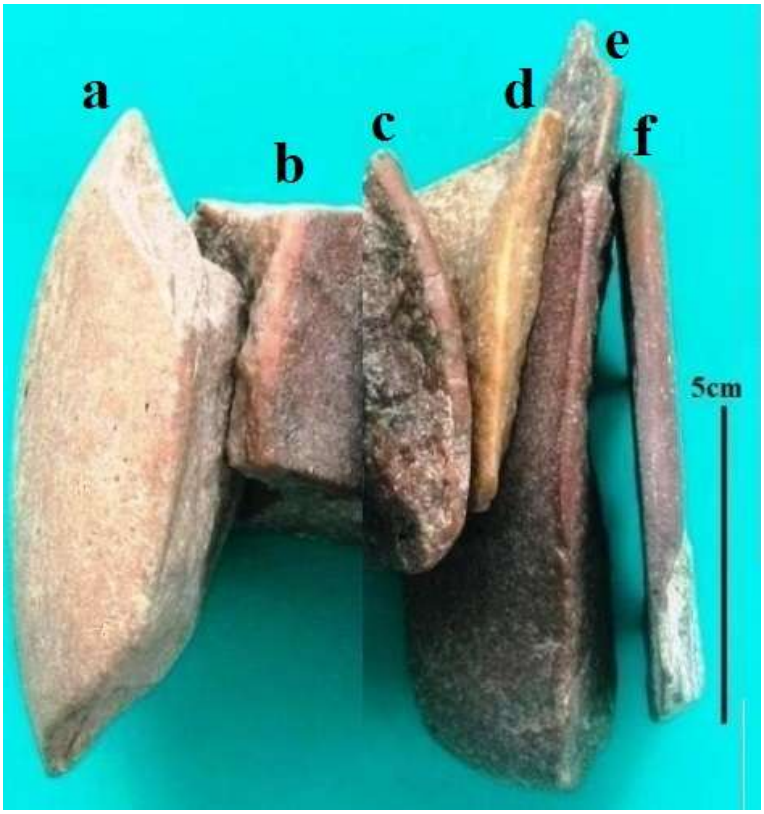

Figure 29. (a) View of the ground edge of a unifacial discoid; (b-f) view of the ground edges of different flakes. All these tools were recovered from Jandori-6 excavation.

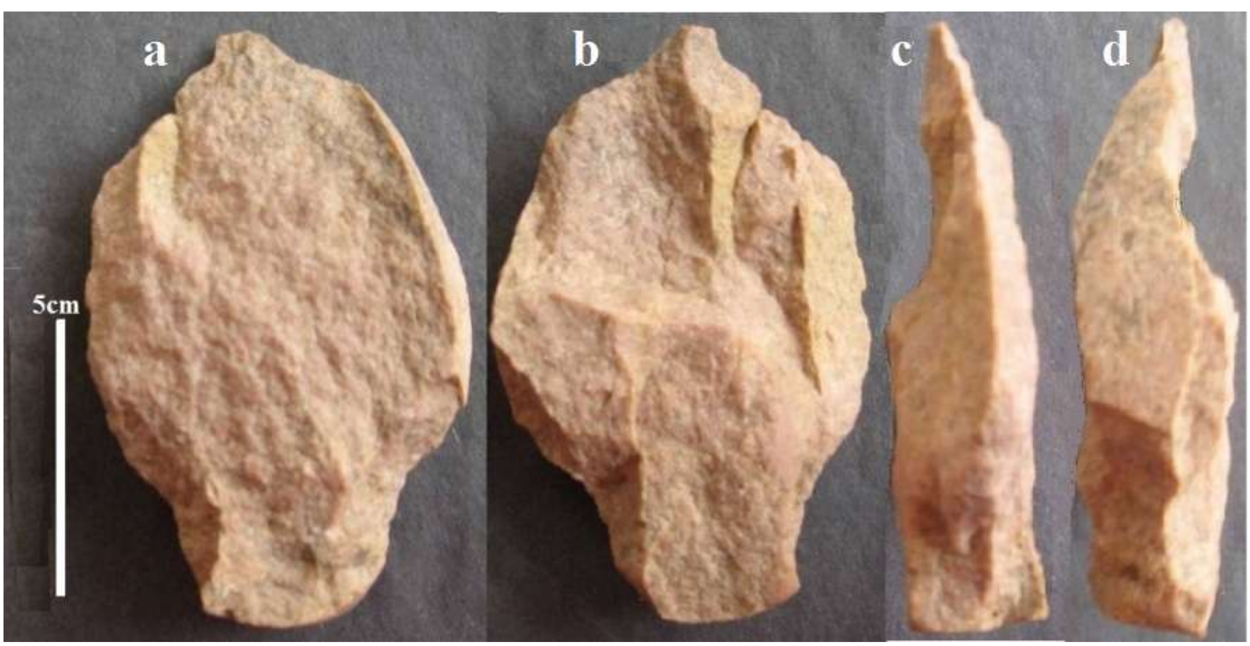

Figure 30. (a-d) Two faces and two sides of an arrowhead recovered from Jandori-6 excavation.

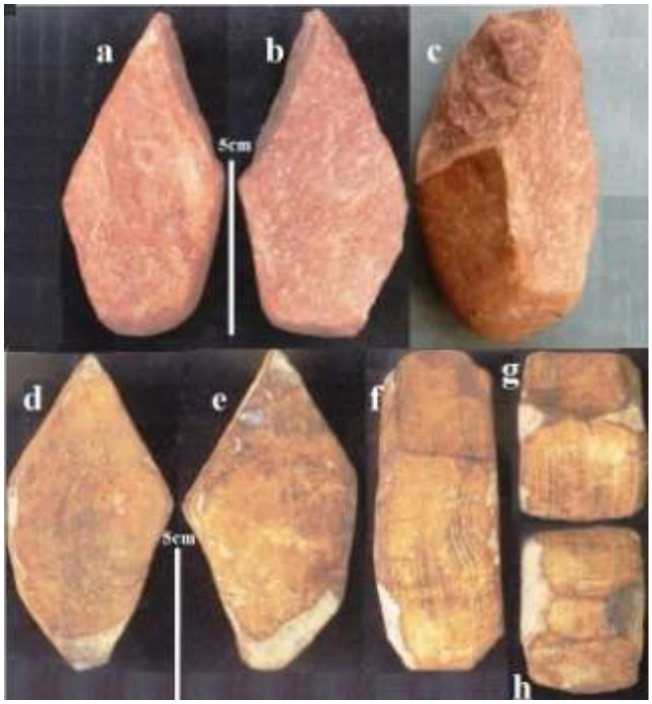

Figure 31. (a-c) Two facial and one oblique view of a finely made chisel from a terrace of Banganga near Kangra; (d-f) two facial and one side view of a chisel from a terrace of Barara-Khad flowing close to Buka-Khad; (g-h) its distal and proximal ends. This tool is made on quartz material and shows a natural yellow polish due to weathering.

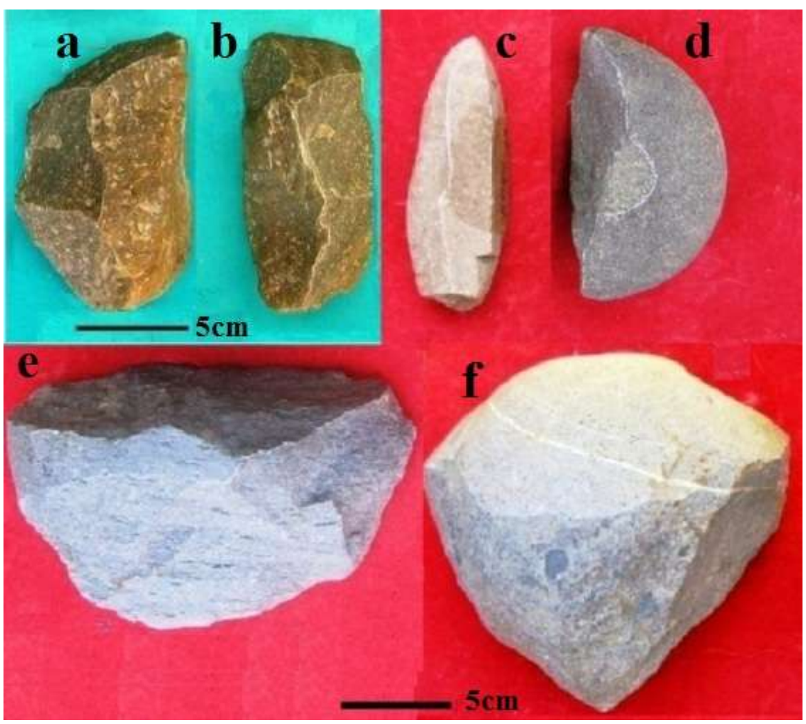

Figure 32. (a-b) Lateral and occlusal (cutting edge) view of a backed cutting tool on a unifacial core from Jandori region; (c) a piercing tool (Killi) on fine grain quartzite from NGT-1; (d) half ring-stone from NGT-2; (e) large and thick unifacial half discoid from NGT-1; (f) a fattish pointed core from NGT-1.

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