

The Aksum Long-Blades: A Late Pleistocene/Early Holocene (Mode 4) lithic industry from Northern Ethiopia

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In an earlier paper in *Nyame Akuma*, the writer outlined the goals of a three-year archaeological research project based at Aksum, Tigray, Ethiopia (Finneran 1998). In advance of the publication of more detailed excavation reports, this paper outlines one of the most distinctive motifs of later prehistoric settlement in the Aksum region: the mode 4 (or long-blade) industry which locally preceded microlithic (mode 5) industries. This overview synthesizes data from the Gobedra excavations (Phillipson 1977), new data from my own excavations at Anqer Baahti and Baahti Nebait and observations on a number of undescribed surface sites presented in the author’s PhD thesis (Finneran 1999).

A few brief points need to be made. A detailed breakdown of the Gobedra data is present in Phillipson 1977. I see no point in replicating his metrical data here en bloc, but wish to clarify a few key points about my use of these data. The typological scheme that I developed to deal with the Anqer Baahti and Baahti Nebait lithic material was based largely on that of Phillipson, but also made reference to Deacon (1984); these enabled a good “fit” to be made between my new data and

those from Gobedra. Following Grahame Clark’s typological scheme (Clark 1988:23), the material is classified as mode 4, aceramic mode 5 and ceramic mode 5, not including pre-Aksumite/Aksumite material. For a fuller discussion of the Aksumite-period lithic industries, see L. Phillipson (2000). The type contexts and sample size for long-blade/mode 4 material from each excavated site at Aksum are shown in Table 1.

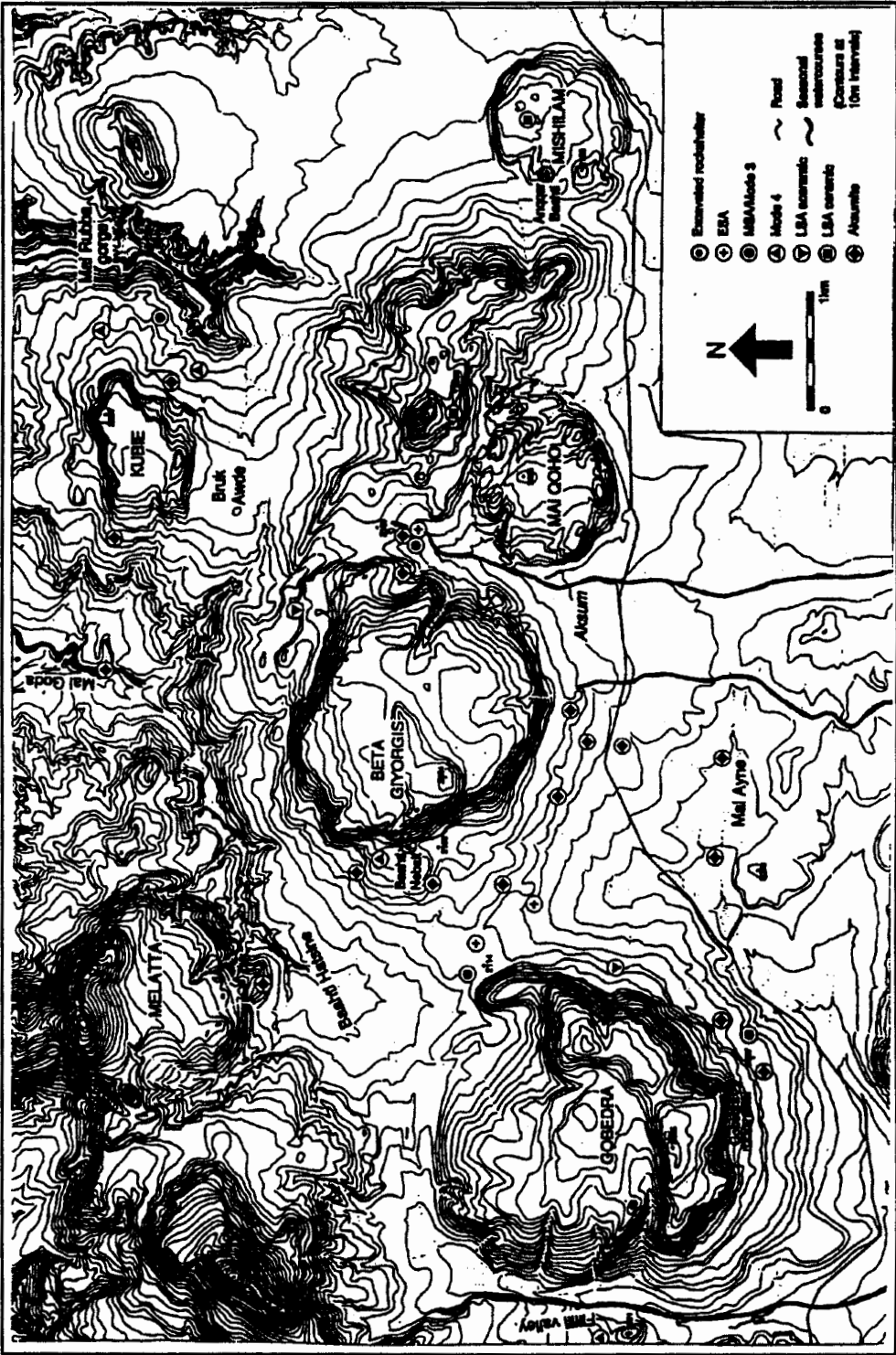
The antecedents of the mode 4 long-blade industry

It is clear that makers of Early Stone Age and Middle Stone Age lithic industries were established in the Aksum area (L. Phillipson, pers. comm.). Isolated finds of ESA (mode 2) material were noted during the survey. Predominantly large bifaces, these were fabricated from local igneous rocks (mainly granites) and metamorphic rocks (predominantly quartzite). Small amounts of MSA (or mode 3) material have been observed in the environs of Aksum (L. Phillipson, pers. comm.). A large surface scatter of MSA-type flakes, struck from radial cores and bearing faceted striking platforms, was noted around the sides of the Mai Rubba gorge (Figure 1). This material was fabricated from a much wider range of material than was observed in the ESA or mode 2 assemblages; igneous rocks, sandstone and mudstone, as well as a highly distinctive yellow/brown chert predominated. In the absence of a well-dated archaeological sequence from this area (no such sequences were observed at Gobedra, Anqer Baahti or Baahti Nebait), the nature and development of the Pleistocene cultural sequence can only remain highly speculative. One can merely state that the local Pleistocene (or MSA) lithic industries that have been observed around Aksum are broadly similar to those noted elsewhere in the Horn of Africa (Brandt 1986; Clark 1988).

Table 1: Type contexts and sample sizes for the mode 4 “long-blade” industry (includes all elements)

Site	Mode 4 long blade industry
Gobedra	Type contexts: 4, 5, 6; sample 2236
Anqer Baahti	Type contexts: 14; sample 433
Baahti Nebait	Type contexts: 5, 6; sample 764

Figure 1. Map of the Aksum Landscape showing locations of lithic scatters. ESA and MSA material noted by L. Phillipson and N. Finneran. Aksumite-period material noted by L. Phillipson. Map copyright B.I.E.A. 1999; prepared from aerial photographs (provided courtesy of the Ethiopian Mapping Authority) by P.D.S. Ltd. Shoreham-by-Sea, U.K. AutoCad representation by Tom Pollard.

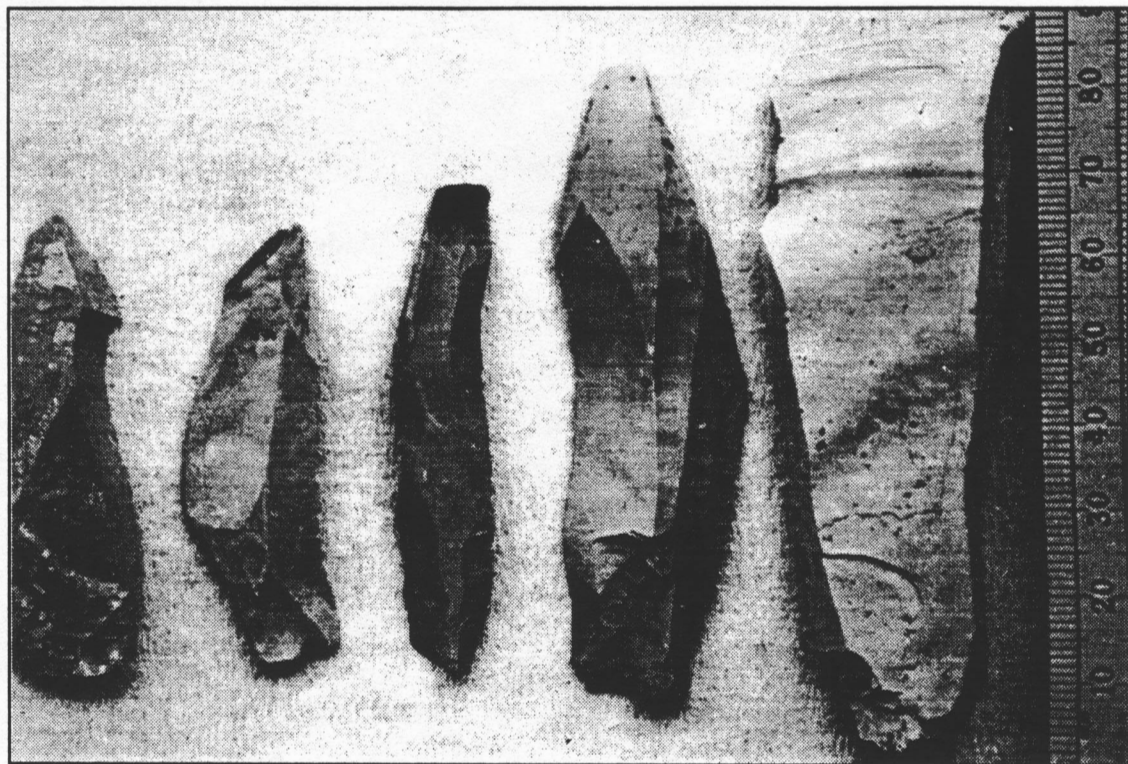


The Aksum region mode 4 long-blade industry: circa 10000 BC-7500 BC

These temporal parameters can only be generally defined. The period 10,000-7500 BC broadly encompassed the hypothesized time-span for the fabrication of mode 4 lithic industries in the Aksum region during the early Holocene. It is likely that a blade-based mode 4 industry was established in this area earlier, probably during the late Pleistocene, as is recognized elsewhere in the Horn of Africa (Brandt 1986). Stratified long-blades have been well dated locally: the Gobedra radiocarbon age estimate of 8160 ± 140 bc (P-2238) (Phillipson 1977) for this phase accords well with radiocarbon age estimates on charcoal from Baahti Nebait context 5: 7545 ± 50 bc (OxA-8359) and 8025 ± 55 bc (OxA-8384) (Finneran 1999:218). We can therefore define the temporal limits of the mode 4 industries with a degree of certainty that cannot be assumed for later LSA cultural phases, excepting, of course, the pre-Aksumite and Aksumite material.

The local mode 4 industry was highly distinctive in raw material preference and tool form, and was recognized at each of the three excavated sites, as well as a number of surface sites in the area. I have informally named this lithic industry the "long-blade" industry after its most distinctive and widely recognized facet: the long, non-retouched, but variably utilized mudstone (occasionally sandstone) blade. A selection of these pieces is shown in Figure 2. At Gobedra, Anqer Baahti and Baahti Nebait rockshelters this industry was stratigraphically earlier than the succeeding microlithic industries. This cultural phase was easily recognized within the overall lithic sequence; blades of this size and of this type of material (mudstone and rarely sandstone) occurred rarely within later microlithic phases, and where they did it was noticeable that the blades were generally smaller. At all the excavated sites this industry directly overlay the natural. There were few clues to its immediate local antecedents, but the distinctive long-blade form could be based on earlier MSA (or mode 3) blades noted on local surface scatters.

Figure 2: A selection of long-blades from Anqer Baahti. Scale divisions in mm. Photograph by Laurel Phillipson.



The percentage of raw materials present in the long-blade industries at each site were broadly uniform. At all three sites, macro- and crypto-crystalline quartz predominated, although it only made up a small percentage of the overall sample at Baahti Nebait. Of the crypto-crystalline quartz types, colored cherts were the most numerous. There was no clear preferable utilization pattern for different colors of chert, although yellow/brown types were used for flake fabrication. Macro-crystalline quartz proportions were roughly constant across the three sites, although it was not favoured for the fabrication of blades. Igneous rocks were utilized to a small extent, as were metamorphic rocks. The presence of mudstone was the most striking facet of the long-blade industry; the use of fine-grained materials in the manufacture of blades was a common theme at contemporary sites in eastern and northern Africa (Phillipson 1993:61). At Gobedra, mudstone comprised just over 3 percent of the overall raw material proportion for this phase. This was surprising as mudstone made up almost equal proportions of the Anqer Baahti and Baahti Nebait raw material assemblages, respectively 22 and 24%. Although only very marginal sources of mudstone were noted during survey, they were located in a number of seasonal riverbeds in the immediate vicinity of all the rockshelter sites. Igneous rocks were more favoured at Gobedra for flake/tool manufacture, but this was not reflected in the Anqer Baahti or Baahti Nebait assemblages where the utilization of igneous and metamorphic rocks was minimal.

The Aksum long-blades

The key cultural motif for early Holocene settlement in the Aksum region is the ubiquitous long-blade, manufactured almost exclusively from mudstone. At Anqer Baahti and Baahti Nebait, the mean lengths for whole flakes from this phase were significantly higher than in the succeeding industrial phases; for the Gobedra material a significant increase in mean whole flake length was not observed (see Phillipson 1977). Brandt (1986) has made this observation, and questions if the Gobedra metrical data supports Phillipson's cultural divisions. At Anqer Baahti and Baahti Nebait, however, a clear increase in whole flake mean length is noted, and breadth: length ratios, not cited in the Gobedra excavation report, point clearly to a blade-

like morphology (Table 2). The standard deviations and ranges of the mean length, breadth: length ratios and thickness of these flakes were all fairly wide, the conclusion being that the blades were not morphologically standardized to an accepted stylistic -or perhaps functional- template (Hayden et al. 1996; Jeske 1989), nor were they being utilized to a heavy degree. The index for utilization presented in Table 2 is borrowed from Deacon (1984), where lateral-edge use-wear was loosely categorized according to heavy, medium or light use damage. The manner of their fabrication and rather minimal utilisation leads one to think that the makers of this industry were being rather wasteful with their finished tool forms.

We can only begin to guess at the functional role of these distinctive long-blades; microscopic examination of edge damage on a small sample of long-blades from Anqer Baahti (context 13) did not provide any clear clues to their use. The morphology and raw material of the long-blades would not have been conducive to heavy-duty cutting tasks; none were retouched and many bore only evidence of light utilization. An experiment using a resharpened long-blade (it was admittedly retouched) to cut dense ligneous or heavy plant material indicated its relative fragility. One can only guess that the blade forms were used for cutting something very soft; they were clearly not suitable for butchery, but may have been used for the removal of the subcutaneous fatty layer from hides or related tasks (Figure 3).

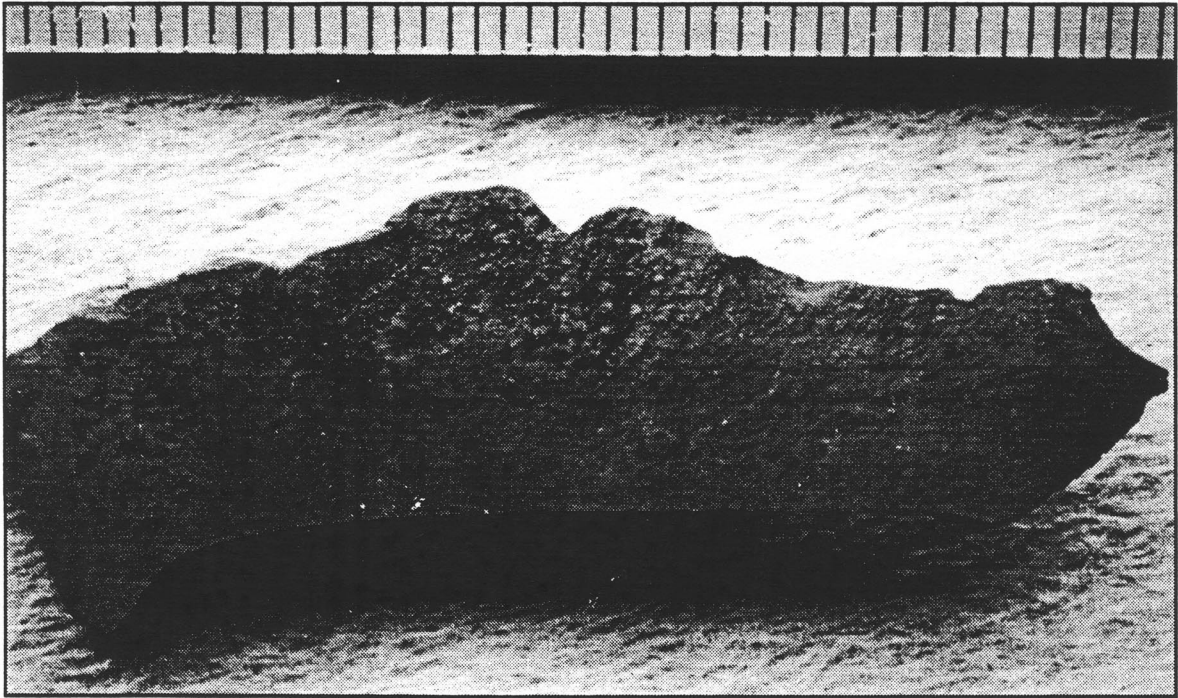
The long-blade industry: further definition

The general overall composition of the excavated mode 4-type industries was broadly similar across the three sites. Cores and shatter chunks made up only a small percentage of the overall composition, and it is probable that discrete tool fabrication areas were located nearer to the sources of the raw materials. Across the three sites, no single core type predominated; at Anqer Baahti and Baahti Nebait, single and opposed-platform types prevailed -not mirroring the overall proportions of blades with radial dorsal surface scar patterns. The cores associated with this phase at Anqer Baahti and Baahti Nebait tended to exhibit only a few flake removals (on average 2-3), so the cores were not

Table 2: Collated metrical data for excavated long-blades.

	Anqqr Baahti context 14	Baahti Nebait context 5	Baahti Nebait context 6
% radial dorsal scar pattern	13	50	36
% with cortex	4	0	12
mean length (mm)	47.7 ± 7.2	29.8 ± 6.0	33.7 ± 7.5
	Range 22 - 89	Range 16 - 56	Range 21 - 57
mean breadth-length ratio	1: 2.2 ± 1.1	1: 1.7 ± 0.5	1: 1.7 ± 0.6
	Range 1: 0.9 - 5.2	Range 1: 1.1 - 2.8	Range 1: 1.1 - 3.2
mean maximum thickness (mm)	7.4 ± 4.1	6.3 ± 2.6	8 ± 3.7
	Range 3 - 17	Range 1 - 15	Range 2 - 27
% faceted striking platform	4	5.5	4
% bipolar	8	5.5	4
utilization % light	62	45	52
utilization % medium	19	30	24
utilization % heavy	19	25	24
Total long blades	53	36	25

Figure 3.: Edge damage on long-blade from Anqqr Baahti. Scale divisions in mm. Photograph by Laurel Phillipson.



intensively worked out. At Gobedra, radial cores were the more numerous in the long-blade industry, and although no detailed analysis of the long-blades from Gobedra was attempted, the overall picture of dorsal surface scar patterning (all materials) broadly reflected the preponderance of the radial core forms.

In common with the succeeding lithic industries, the index of formal, retouched tools within the overall composition was never high. With the exception of Baahti Nebait and a single example from Gobedra, backed forms were rare. When they did appear, they were considerably larger than those in the later microlithic phases, and were certainly more roughly finished. Stylistically, however, one can recognize these forms as being the antecedents of the later microlithic backed forms. Scrapers were clearly the most numerous retouched tool across the three samples: circular scrapers, manufactured from a range of raw materials, dominated this type of tool, with a small proportion of end-scrapers and convergent scrapers/points.

Associated economic/environmental evidence

Faunal remains associated with long-blade industries at Gobedra and Anqer Baahti were exceptionally fragmentary and largely unidentifiable (Phillipson 1977; Finneran 1999: 205). The picture at Baahti Nebait was slightly better, but because of the nature of bone preservation species-level identification was often problematic. The Baahti Nebait material (context 5) points to the exploitation of large ungulates, and it was clear that more marginal meat-bearing elements (such as vertebrae and metatarsal fragments) were also being utilized (Chester Cain, pers. comm.). Identification of the wood charcoal from the long-blade phase at Baahti Nebait is still at a preliminary stage, although the data to hand broadly point to a different picture of woody coverage than today. The species represented in this sample would appear to have affinities with forest margin ecozones rather than dense woody coverage (Sheila Boardman, pers. comm.), a picture that is consistent with the wider palaeoenvironmental picture (Di Blasi 1997). Little archaeobotanical material of note was recovered from the long-blade phases at Gobedra and Anqer Baahti.

Long-blade sites in the Aksum landscape

Apart from Gobedra, Anqer Baahti and Baahti Nebait, a number of extensive surface long-blade sites were noted during survey. Around Geza Mereschen, at the southern lip of the Mai Rubba gorge (Figure 1), an extensive area of dense mode 4 surface sites was noted. These sites were located within some thirty metres of the river bank and in a lithosolic area. A single, random surface collection of material from one of the denser zones of the site yielded fifty artifacts. Mudstone and yellow chert predominated in this sample and the majority of the pieces (60%) were typical mudstone long-blades. Approximately 40% of the sample was represented by cores, of which unipolar and opposed-platform variants were the most common. On the western flanks of the Filfili valley, again in close proximity to a dependable watercourse, similar surface long-blade sites were noted; again mudstone and yellow chert clearly predominated. A large number of the pieces were chunks, chips, core rejuvenation flakes; opposed-platform and single-platform cores predominated, clearly mirroring the morphology of the associated blades, and three radial core types were also noted. This site was interpreted as being a manufacturing locale, along with the scatters at Mai Rubba, and its proximity to a number of seasonal stream beds in which were found a number of unmodified crypto-crystalline quartz cobbles, as well as a few slabs of fragmentary mudstone, allowed scope for extensive raw material utilization.

A small rockshelter to the west of Beta Giyorgis, approximately one km to the north of Baahti Nebait, also yielded evidence of a long-blade industry. Here a great deal of deposit had eroded away and one was able to observe a very general cultural sequence in-situ. Within the lowest deposits a number of highly abraded mudstone and sandstone long-blades were visible. No cores or retouched tools were associated with this material.

Six sites within the Aksum region yielded evidence of a long-blade industry. Phillipson (1977) hypothesized that this industry was replaced by a microlithic one at around 7000 BC, although excavations at Baahti Nebait did not yield any radiocarbon dates which could have confirmed this. It is clear, at least according to radiocarbon dates from Baahti Nebait, that the long-blade industry persist-

ed until at least the mid-eighth millennium BC, spanning the period that broadly encompassed a north-eastern African early-middle Holocene wet phase (Hassan 1996). With the very limited environmental evidence to hand, it appears that the landscape at this time was probably more wooded than today and dominated by juniper and cedar stands (Di Blasi 1997). During this period of increased precipitation and warming, allied to glacial melting from the Simien range to the south (Mohammed and Bonnefille 1998), it is likely that there was an increase in the areas of the bodies of water in the Aksum region; two major long-blade manufacturing sites were located near to perennial, dependable water courses.

The density of cultural deposit at Gobedra would hint at a long-lived and fairly intensive habitation at this site; there are indications of mode 4 surface material (Puglisi 1941, 1946) in the vicinity of the site that would suggest that the area to the south and east of the rockshelter supported a fairly extensive population. This picture is not reflected at Anqer Baahti or Baahti Nebait, so it is probable that the area to the south of Gobedra hill was the key habitation focus for these populations, with smaller, outlying habitation and manufacturing sites located to the north and east.

The Aksum long-blades in regional and world context

Within Eastern Africa, the definition of these mode 4 industries, which do not easily sit within the accepted "MSA" or "LSA" pigeonholes, remains poorly understood. The Eburran industry of the Lake Nakuru area of the eastern Rift of Kenya, which dates to broadly the same period as is posited for the Aksum material, is characterized by large, well-finished blades on obsidian (Ambrose et al. 1980). The Hargeisan of northern Somalia, as initially defined by Clark (1954:218), would seem to fit the morphological criteria, but as Brandt (1986) suggests the definition of this industry should be treated with caution in the absence of well-dated stratified material. Brandt has also rightly suggested that the Ethiopian highland picture for these industries is similarly poorly defined, and the so-called Magosian industries from Porc Epic (Clark and Williamson 1984) and Gorgora (Leakey 1943) may have been the result of vertical mixing,

especially the latter, where the mode 4 material was associated with pottery.

The Aksum long-blades would fit well into what has been termed the "Ethiopian Blade Tool Tradition" (Brandt 1980). Geographically the closest find-spot of this material to the Aksum region is perhaps the rock-shelter of Quiha, near Makelle, approximately 100 km south-east of Aksum (Clark 1954:324). Here long obsidian blades, variably utilised, were associated with high frequencies of scrapers and microliths, a pattern inconsistent with the composition of the Aksum long-blade industry. Similar obsidian long-blades have been noted by the author at several locations around Makelle, and as a whole extensive utilisation of obsidian within pre-Aksumite (*sensu lato*) stone tool industries in the Aksum region is not observed.

Moving further afield, we may draw parallels with a similar European Upper Palaeolithic manifestation; the author has purposely applied the term long-blade to the Aksumite material in recognition of similar traits observed on French Upper Palaeolithic long-blades from the Belloy area of the Somme Valley (Barton 1998 and pers. obs.). A number of shared technological traits may be noted: the variability in length of flake, the bruised, non-retouched edges, dominance of blade debitage, fabrication by soft-hammer technique as evidenced by narrow, flattish butts, the use of high-quality fine-grained raw materials, and the preponderance of single/opposed platform cores with occasional radial cores. As with the Ethiopian material, the typochronological status of the European industry is poorly understood, and the functional role of these blades is uncertain, it has been suggested that they were used to work hard organic substances. Nevertheless, there are parallels that justify my use of the term long-blade as it would be understood in the European context, and more accurately in the context of Clark's "mode" scheme rather than the technologically looser term "LSA".

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