KENYA

A Comparative study of Middle Stone Age cores from the Lake Victoria Basin and the Central Highland of Kenya

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Introduction

The project compares core production in the Middle Stone Age assemblages of the Lake Victoria Basin and Central Highland of Kenya. The main objective is to document the effect of raw materials on morphology and technology. A core is a nucleus that remains after flake(s) and/or blade(s) have been intentionally removed from a stone. Cores are divided into two categories, specialized and unspecialized (Clark 1974). Specialized are prepared cores that show evidence of preparation of their striking patterns or platforms. They include Levallois, Levallois flake, Levallois point, Levallois blade, discoid and prismatic blade cores. Unspecialized cores are those that do not have evidence of special preparation. They include single platform, double platform, bipolar, polyhedral, biconical and prismatic cores. Cores studied were excavated from Muguruk and Songhor sites in the Lake Victoria basin and Prospect Farm and Prolonged Drift in the highland. They are stored at the National Museums of Kenya in Nairobi.

Middle Stone Age

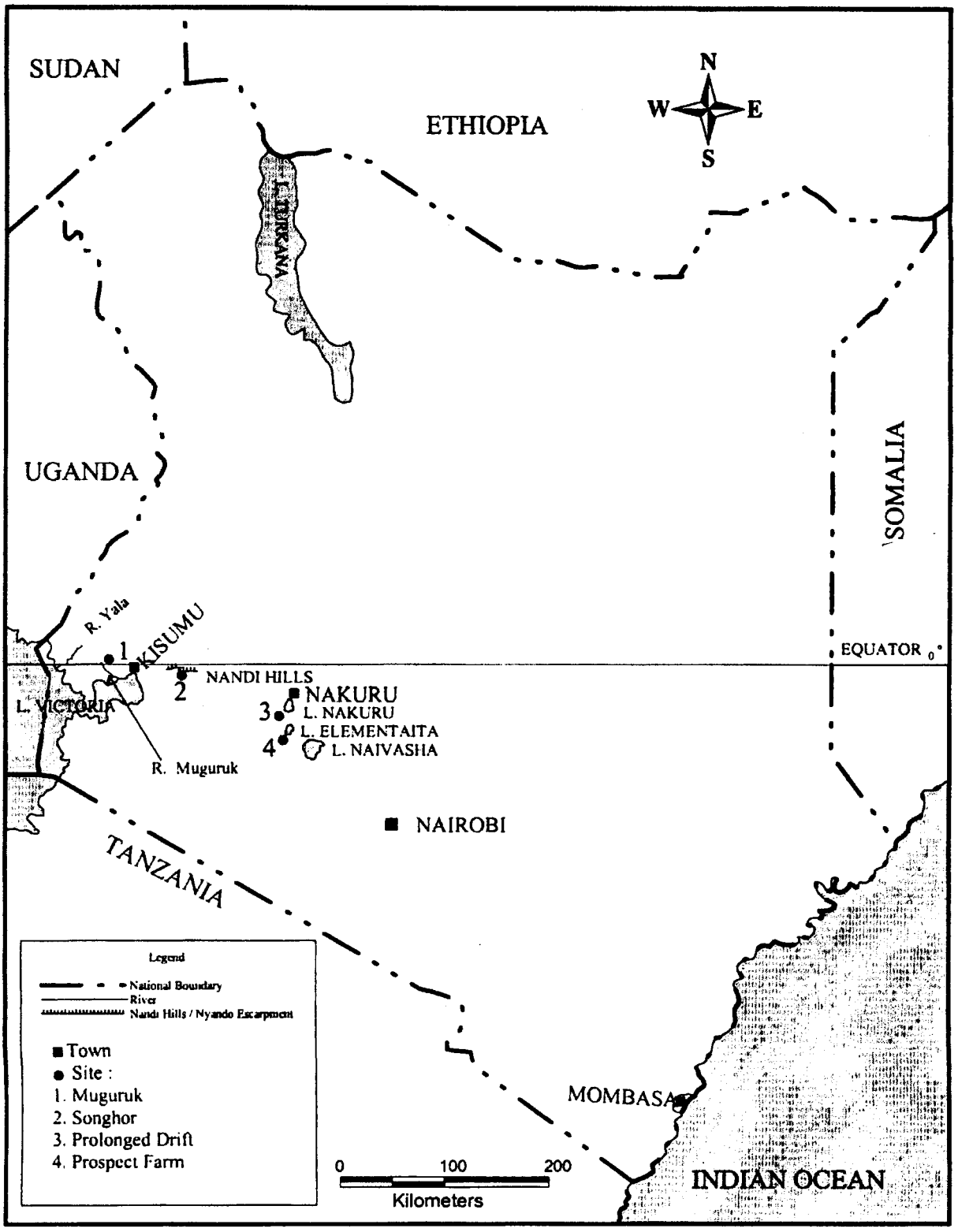
The term Middle Stone Age refers to the second stage in the tripartite system of the Stone Age archaeology in Africa, and is also referred to as mode three (Clark 1977). Tools were produced from tortoise-shaped or prepared cores and includes core-axes, discoid cores, Levallois cores, convergent flakes with faceted striking platforms, flake blades, bifacial points and unifacial points. Towards the end of the MSA, there are more composite and flake tools made from smaller disc-like cores and trimmed into points and side-scrapers using special techniques that led to step-or resolved-flaking. MSA industries used techniques developed during the Acheulian, but tools are more refined. In Kenya, mode 3 industries are represented by Acheulo-Levallois or the Sangoan and Lupemban industries. Sangoan industries flourished on the fringes of the equatorial rain forests and their tool assemblage include core-axes, picks and narrow lanceolate forms. Lupemban are found deep in the forests and their tools are similar to those of the Sangoan but are more finished and refined.

Study Area

The Lake Victoria Basin and the Central Highland (Figure 1) are two geographically diverse regions. The lake basin is a shallow depression on the plateau in Western Kenya, characterized by forest woodland and grassland mosaic. Lake basin sites do not have evidence of hominid remains (Leakey 1960; Clark 1988; McBrearty 1981). The Muguruk site is situated about 3 km north of the lake and above the shore of the Muguruk River (Leakey and Owen 1945). Its bedrock consists of phonolite lava that provided basic raw material for its artefacts (McBrearty 1981). It has Sangoan/Lupemban tools characterized by cores, awls, scrapers, flakes, large bifacial tools, core-axes, planoconvex picks and long finely made lanceolate points with biconvex to lenticular cross sections. Songhor is on the foothills of the Nandi Escarpment some 50 km east of the lake. Its dominant rocks are quartz and nephelinite lava (Clark 1988; McBrearty 1981). Most of its tools are unmodified flakes, scrapers, Levallois points, bifacial points and discoid cores.

Highland sites are in the mountainous region of the central Rift Valley. Their industries are dominated by obsidian from nearby Lake Naivasha and Mt. Eburru (Merrick 1976). Sites are found in the habitat zone of the interior plateau proper with elevations varying between 1,370 and 370 meters. The region's vegetation consists of moist and deciduous woodland comprising of *Brachystegia-Julbernardia* and *Isoberlinia* types in the higher rainfall areas and *Acacia* and *Commiphora* woodland steppe with thicket in the drier and lower parts (Clark 1988). The Prospect Farm site is situated on the slopes of Mount Eburru overlooking Lakes Elementaita and Nakuru. Tools include retouched points, pointed scrapers, sin-

Figure 1: Middle Stone Age sites examined in this study.



gle and double side scrappers, convergent scrappers and unifacial and bifacial discoid tools and cores made from thin Levallois flakes. Some of the cores have single and double platforms (Merrick 1976; Anthony 1972). Prolonged Drift is on the lower reaches of the Nderit River in the Lake Nakuru basin. Tools here include unifacial and bifacial points or "knives" consisting of blade - like forms and trimming flakes, side-scrapers, truncated blades and modified edge - damaged pieces.

Methodology

The research took two dimensions. The first was the physical survey of the sites to document them and assess their proximity to raw material sources. The second was the laboratory analysis of cores. From each site I picked as many cores as I could identify to avoid the problem of sample bias. The other step of analysis involved looking at core attributes including length, breath, thickness, shape, size, weight, raw materials, number of platforms and flake scars, presence or absence of cortex, reduction intensity or size of initial blocks, direction of percussion, organization of flaking and production techniques.

Size was measured to the nearest mm. Measurements above 100 mm were considered to represent heavy-duty cores while those below 100 mm represented light-duty cores. Shape was analyzed by use of a standardized typology, based on geometric form. Radial and subradial cores were identified by looking at radial or irregular patterns or flaking direction. Technologies used to produce the cores were determined by looking at the characteristic features. For example, some cores were characterized by the presence of small striking platforms or diffused bulbs or the way they were curved. Such cores are believed to have been produced by the punch techniques.

Data Analysis

I analyzed 394 cores from the four sites. Lake basin sites produced 210 cores while 184 cores were from the highland sites: 168 from Muguruk, 42 from Songhor, 134 from Prospect Farm and 50 from Prolonged Drift. Results are presented in the tables.

Raw Material. The lake basin sites has 9 types of raw materials namely obsidian, nephelinite, quartz, quartzite, phonolite, ignimbrite, basement complex rock, chalcedony and basalt (Table 1). Phonolite is the most widely used while the least used are obsidian, quartzite and basalt. This can be explained by the fact that lava are common while the least represented rocks are imported. The highland sites have five (5) types of raw material namely obsidian, nephelinte, ignimbrite, chalcedony and basalt. The most common is locally available obsidian while the rarest are ignimbrite and basalt. The two regions have five raw materials in common suggesting possible

Table 1: Core raw materials by region

Type	Lake Basin Sites	Highland Sites
Obsidian	1	158
Nephenelite lava	22	19
Quartz	20	0
Quartzite	1	0
Phonolite lava	152	0
Ignimbrite	2	2
Basement Complex	6	0
Chalcedony	5	3
Basalt	1	2
Total	210	184

Table 2: Core shape by region

Type	Lake Basin Sites	Highland Sites
Discoid	19	16
Levallois	20	18
Radial	24	2
Subradial	48	0
Opposed platform	12	0
Narrow single platform	4	0
Broad single platform	25	25
Triangular	4	0
Pyramid	3	2
Biconical	2	0
Levallois blade	3	10
Levallois point	11	25
Levallois flake	17	38
Polyhedral	1	0
Battered	11	8
Rolled	3	0
Scraper	1	2
Chopper	1	1
Casual	1	1
Block	0	19
Chunk	0	17
Total	210	184

links between them. However, the lake basin region has more types. It is possible that the lake tool makers extensively exploited local raw materials or traveled widely in search of others.

Shape. There are 21 types of cores from the two regions (Table 2). Most (19) of these are found in the lake basin. The highland sites have 14. The lake basin sites include 7 types that are not found in the highlands. It is possible that since most of raw materials from the lake basin are less isotropic, they yielded a wider variety of shapes.

Size. Similarities and differences characterized core sizes from the two regions. The lake basin ones ranged from 3 to 18 while the highland cores ranges from 3 to 11 (Table 3). Size 6 is the most frequent in the lake basin region while size 4 is the most frequent in the highland. The highland cores are generally smaller in size.

Weight and Dimensions. Dimensions of cores vary significantly. Generally the lake basin cores are heavier, longer, wider and thicker than highland ones. For instance, the lake basin has cores weighing from 1 to 900 grams compared to the highland ones that range from 1 to 500 gm. Lake basin cores range in length from 21 to 180 mm compared to the highland ones that range from 11 to 120 mm. The lake basin had none below 20. Lake basin cores

Table 3: Core size by region

Size class (in 0.5 mm increments)	Lake Basin Sites	Highland Sites
3 (1.0 to 1.5 mm)	6	16
4 (1.5 to 2.0 mm)	24	66
5	27	36
6	37	33
7	36	22
8	36	7
9	21	2
10	8	1
11	4	1
12	2	0
13	3	0
14	2	0
15	1	0
16	1	0
17	0	0
18	2	0
Total	210	184

are wider than the highland ones. The highland cores ranges from 1 to 90 mm wide while the lake basin ones range from 11 to 180 mm. In thickness, highland cores are thinner than the lake basin ones. These differences may be due to the fact that lake basin highland cores ranges from 1 to 70 mm while the lake basin ranges from 1 to 90 mm. Thus the lake cores are made from lighter raw materials that are also more isotropic. This may also be the reason why highland cores have more standardized numbers of platforms and flake scars than lake basin ones.

Presence or Absence of Cortex. The presence or absence of cortex on the samples (Table 4) supports the argument that rocks from the highland region are more isotropic compared to those from the Lake Victoria basin. For instance, 133 cores from the highland had no cortex on both surfaces compared to 93 core from the lake basin. Cores without cortex were mainly obsidian, as they are easier to flake.

Production Techniques. Five techniques were used in core production: anvil, bipolar, hard hammer percussion, punch and soft hammer percussion (Table 5). Anvil technique was used only in the lake basin region. Hard hammer percussion was the most widely used in the lake basin while soft hammer percussion technique was most frequently used in the highlands. Lake basin cores were mainly produced by heavier percussion techniques because raw materials were less isotropic.

Conclusion

The study shows that cores in the two regions have both similarities and difference. Raw materials influenced core attributes and their production techniques. Less isotropic rocks of the lake basin produced heavier, longer, thicker and larger cores compared to the more isotropic rocks used in the

Table 4: Cortex by region

Cortex cover	Lake basin sites	Highland Sites
Present on parts of flaking surface	44	20
Present on part of platform	52	19
Present on both surfaces	21	12
Absent on both surfaces	93	133
Total	210	184

Table 5: Production technique by region

Production technique	Lake Basin Sites	Highland Sites
Anvil	25	0
Bipolar	18	37
Hard hammer percussion	113	61
Punch	3	9
Soft hammer percussion	51	77
Total	210	184

highlands. Proximity of raw materials influenced their use and form. Obsidian cores from highland sites are generally bigger and heavier than those from the lake basin while the lava cores from the lake basin are larger than highland ones. The more accessible a raw material was, the most extensively it was exploited or utilized. Importers were more economical in their exploitation so as to minimize wastage. Most of the heavy - duty cores were produced from less isotropic rocks while light-duty ones were from the more isotropic ones. As such, the largest and heaviest cores from the lake basin are made of phonolite lava while those from the highland are made of nephelinite. The smallest cores from both regions are obsidian ones.

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Bibliography

Anthony, B. W.

1972 The Prospect Farm Industry. A Definition. Unpublished PhD dissertation, Harvard University.

Clark, G.

1977 *World Prehistory in New Perspective.* Cambridge: Cambridge University Press.

Clark, J. D.

1974 *Kalambo Falls Prehistoric Site.* Vol. 2. Cambridge: Cambridge University Press.

1988 The Middle Stone Age of East Africa and the Beginning of Regional Identity. *Journal of World Prehistory* Vol. 2(3): 235-305.

Leakey, L. S. B.

1960 *Adam's Ancestors.* New York: Harper and Row Publishers.

Leakey, L. S. B. and W. E. Owen

1945 *A Contribution to the Study of the Tumbian Culture in East Africa.* Nairobi: Coryndon Memorial Museum Occasional Papers. Vol. 1

Malan, B. D.

1955 The term "Middle Stone Age". In the Third Pan African Congress on Prehistory, Livingstone.

McBrearty, S.

1981 The Sangoan – Lupemban and Middle Stone Age Sequence of the Muguruk Site, Western Kenya. PhD dissertation, University of Illinois, Urbana.

Merrick, H. V.

1976 Changes in Later Pleistocene Lithic Industry in Eastern Africa. PhD dissertation, University of California, Berkeley.