

KENYA

New Excavations at the Middle Stone Age Cartwright's site, Kenya

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Introduction

The Middle Stone Age (MSA) is significant in human evolution as it marks the beginning of modern human behavior. This includes symbolism, self-adornment, trade networks and regional differentiation in technology (McBrearty and Brooks 2000). These developments may coincide with the emergence of our species, *Homo sapiens*. The term MSA was coined by Goodwin and Van Riet Lowe (1929) for stone tool complexes that did not contain characteristic Early Stone Age (ESA) tools such as handaxes nor typical Later Stone Age (LSA) ones such as microliths. The MSA is found inter-stratified between the ESA and LSA at numerous sites in Africa. While the term was initially invented for southern African archaeological material, it was soon realized that differences existed even here. Goodwin and Van Riet Lowe (1929) proceeded to divide the material into "industries" and "variations". Thus came into existence the terms Stillbay Industry, Glen Grey Industry, Pietersburg Variation and Howieson's Poort Variation, among others (Vogelsang 1998; Kleindienst 1967). Some of these terms persist while others have fallen from use. Other MSA industries in Africa include the Lupemban in East-central Africa (Clark 1970, 1988; McBrearty 1992), and the Aterian, and Nubian Complex in Northern Africa (Kleindienst 2000; Van Peer 1991).

Cartwright's site (GsJj 75)

GsJj 75 lies on the Kinangop plateau between the Aberdare ranges and the Rift valley, overlooking Lake Naivasha (0° 35' 50" S, 36° 27' 30" E) at an

elevation of 2420 m. The Malewa River and its two tributaries, the Kitiri and Turasha Rivers drain the plateau. The vegetation was predominantly tussock grassland during Quaternary times but modern farming activities have altered the landscape to include pasture grass and exotic trees (Hamilton 1982; Bennun and Njoroge 1999). GsJj 75 is an MSA site attributed to the pseudo-Stillbay industry by Leakey (1931), and dated to 440 ka (Evernden and Curtis 1965). This date has not been generally accepted, largely because the stratigraphic relationship of the sampled volcanic tuff and artifacts found at the site cannot be reconciled (McBrearty and Brooks 2000). The site however remains an important focus for understanding the chronology of the MSA. The oldest securely dated MSA sites are >285ka old and are found in the Kapthurin Formation of Kenya (Deino and McBrearty 2002).

The technology of MSA artifacts at GsJj 75, has not been adequately described. Cartwright's and Wetherill's (GsJk 12) sites are dated by ⁴⁰K/³⁹Ar (Potassium argon) to 440 ka and 557 ka respectively. The ages of industries termed "Pseudo-Stillbay" and Stillbay in Kenya are still unclear. These sites include GvJm 16, Malewa Gorge and Prospect Farm (Anthony 1967). The Pseudo-Stillbay artifacts from GsJj 75 described by Leakey (1931, 1936), housed at the National Museums of Kenya, include points, tools diagnostic of the MSA but they were from surface collections. Artifacts collected by Allen Turner in 1929 are also housed at the National Museum of Kenya in Nairobi but this collection is highly selected and comprised only of formal tools. Merrick carried out the first controlled test excavations at Cartwright's site in 1982/1983 but the results have not been pub-

Table 1 Tool types and cores from GsJj 75

Tool	Number	Percentage
point	22	73.3 %
limace	4	13.3 %
scraper	1	3.3 %
radial core	2	6.7 %
other core	1	3.3 %
Total	30	100.0 %

lished. This collection is also housed at the National Museum of Kenya in Nairobi but according to Merrick (pers. comm.), these materials have been poorly curated and their provenience is lost.

Preliminary work at Cartwright's site and adjacent areas: the 2001-2002 survey and excavation

Preliminary work on the Kinangop plateau was carried out in two seasons of three weeks each in 2001 and 2002 (Figure 1). In 2001, I surveyed the greater part of the North Kinangop plateau with the aim of relocating Cartwright's and Wetherill's sites and discovering new MSA sites. Wetherill's site was relocated but it had been destroyed by farming activities. Cartwright's site was found to be in part intact and a controlled surface collection was carried out in an area of 3 by 3 m (Figure 2). All 94 artifacts in this 9 m² area were collected. Three rock shelters were also found in the vicinity of the site, two with LSA material on the slopes overlooking the Kitiri River and GsJj 77, located 800 m north west of Cartwright's site. The rock shelter GsJj 77, lies on the edge of the escarpment and contains LSA artifacts on the immediate slope.

Fieldwork in the summer of 2002 focused on mapping Cartwright's site, measuring stratigraphic sections and excavating a geological trench (Figure 2). Artifacts considered diagnostic of both the LSA and MSA lie on the eroded, gently sloping surface. A stratigraphic sequence of 13 superimposed units was observed. With the exception of a paleosol, all are tuffaceous units (Figure 3). The paleosol is probably developed on a volcanic unit. Under low magnification, some tuff samples appear to contain feldspars, which are necessary for ⁴⁰Ar / ³⁹Ar dating but further analysis is needed to ascertain if the tuffs are datable.

Additional uncontrolled surface collections in 2002 were mostly carried out in the area 25 m north east of geological trench d-d¹ (Figure 2). This section of the site was fairly intact in 2001 but on returning in 2002, considerable erosion was found to have exposed more artifacts. However, slope collapse makes the stratigraphic origin of these artifacts difficult to determine. Many points were found but their provenience can only be established with further excavation. A large crescent was found here. A second crescent fragment was recovered when clearing the

slope of debris near geological trench d-d¹. These large crescents recall those of the Mumba and Howieson's Poort industries that are found interstratified within the MSA at Mumba, Tanzania (Mehlman 1989) and Klasies River, South Africa (Wurz 1997). Crescents are part of the LSA tool repertoire and are thought to represent tool miniaturization attributed to specialization. Ambrose and Lorenz (1990), argue that microlithic elements in the MSA at Klasies River Mouth are an adaptation to scarce resources during cold and conditions. This model has not been tested for the Mumba industry.

Geological trench d-d¹ is 2 m by 5 m and reveals an occupation horizon consisting of a clayey paleosol containing artifacts. The paleosol has well-developed root casts and a carbonate layer at its base (Figure 3). None of the artifacts appears to be rolled, and the presence of micro debitage <1 mm in width suggests that little disturbance has taken place (Schick 1992). Several types of obsidian were observed among the artifacts and samples of obsidian debitage collected for geochemical analysis.

Analysis of both in situ and surface material was carried out at the National Museum of Kenya laboratory in Nairobi. A total of 102 artifacts were recovered from in situ context in the occupation horizon. Maximum artifact dimension averages 3.5 cm. None are larger than 6 cm and smaller class sizes are well represented (Figure 4). The 2002 excavated sample contains only 5 points, and 25 more were selected for analysis from the surface collection of Allen Turner housed at the National Museum of Kenya. Thirty pointed tools were analysed for symmetry, angle and intensity of retouch. Some points are symmetrical, bifacial, with flat invasive retouch and basal thinning indicating that they may very well have been hafted. Sub-triangular points with unifacial retouch are also present. While they have been retouched to an apex, they have steep angles and non-invasive retouch. A few points have serrated edges. Some points that are symmetrical, bifacially flaked with invasive retouch and have basal thinning qualify as projectiles. It can be argued that not all the tools that fit the definition of points were used as projectiles. Tools that have high retouch angles and are sub-triangular may have been used as scrapers (see D  benath and Dibble 1994). The analysis of larger assemblage and micro-wear studies are required before any conclusions can be reached regarding the function of the various pointed tools found at GsJj 75.

Figure 1: Map of the Kinangop area. The escarpment corresponds with the 2400 m contour.

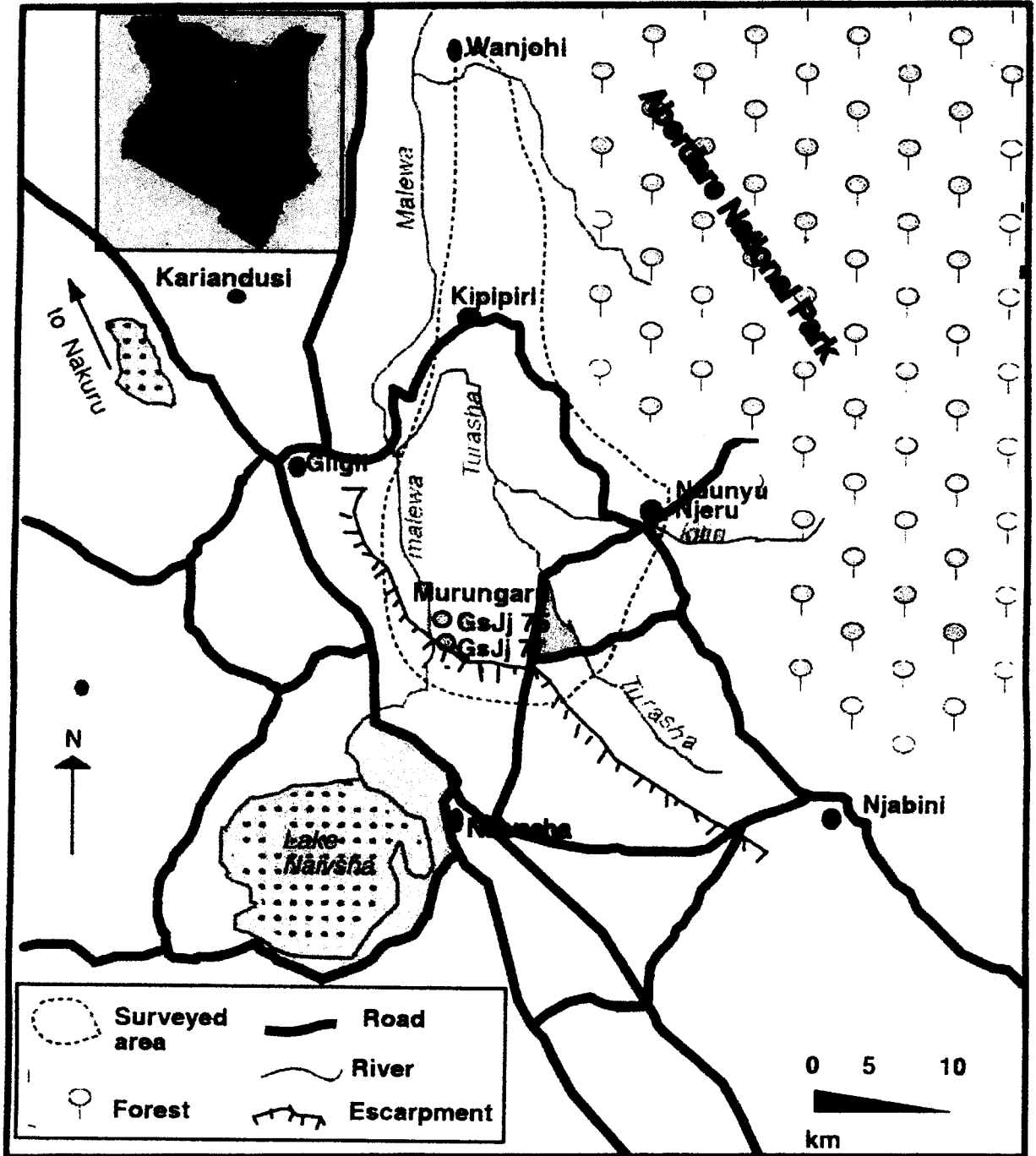


Figure 2: Geological map of Cartwright's site (GsJj 75).

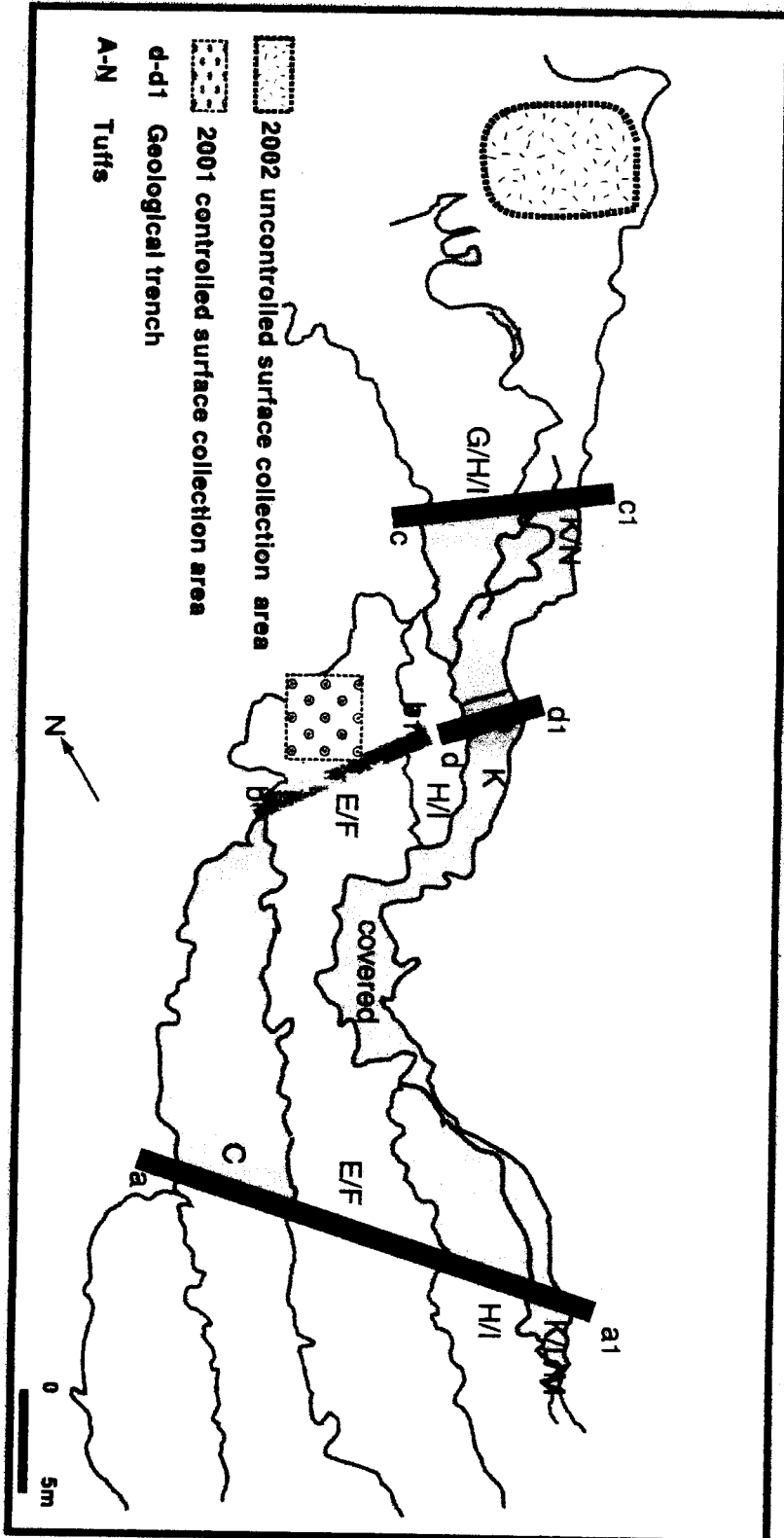
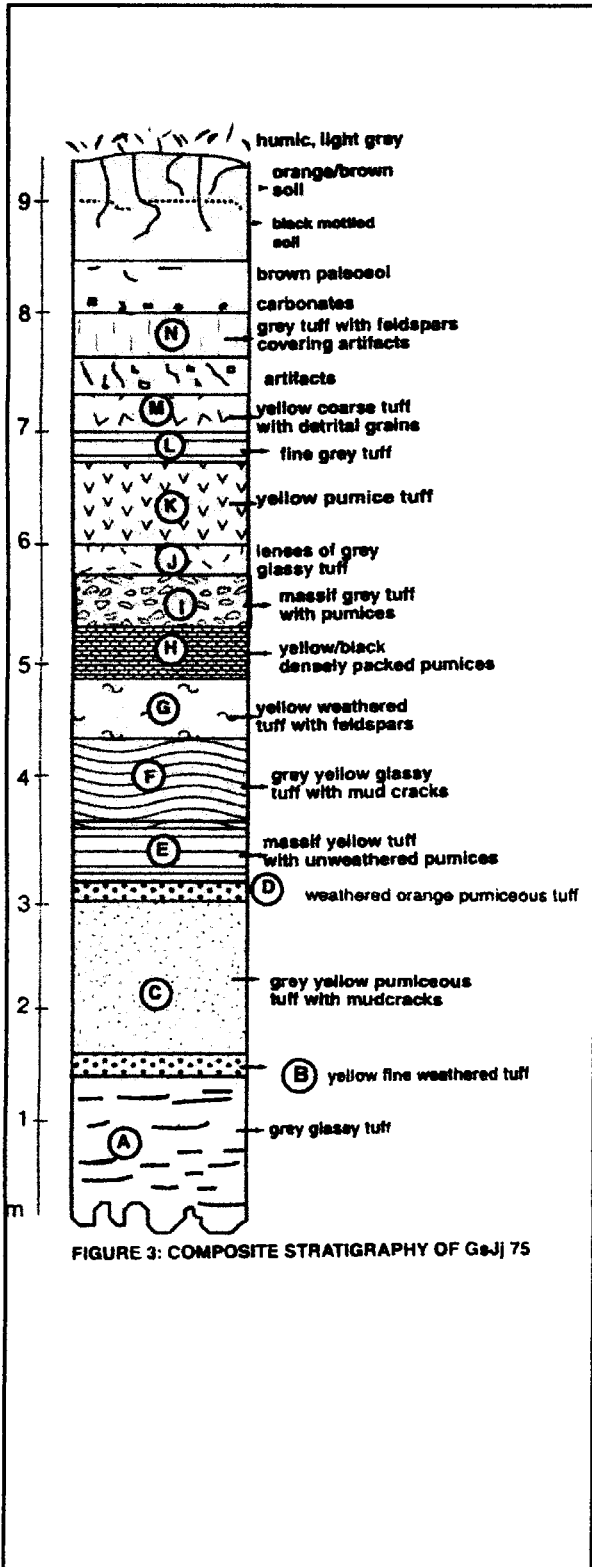


Figure 3: Composite stratigraphy of GsJ 75.



Discussion and conclusion

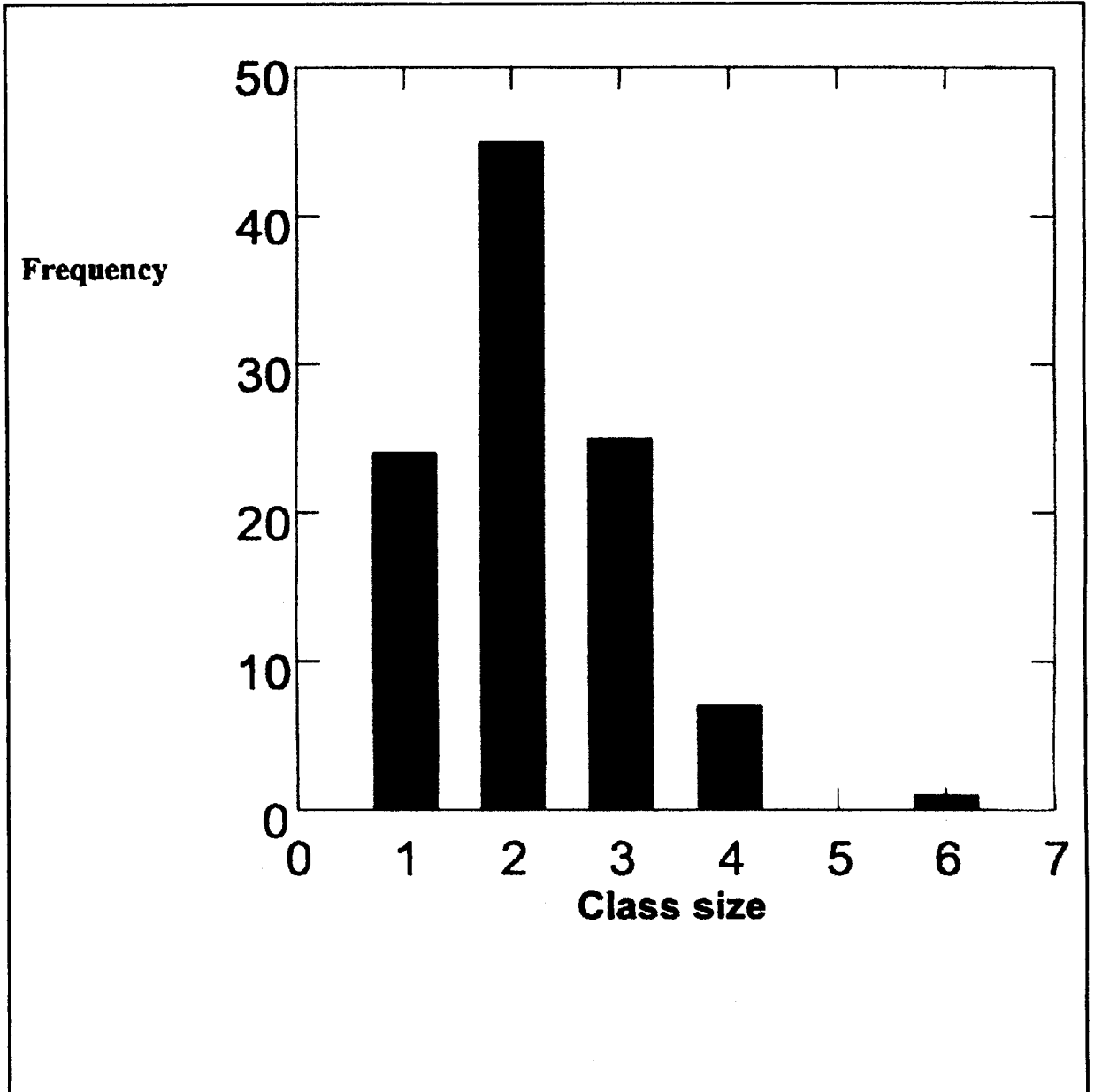
While points are tools widely accepted as diagnostic of the MSA, the functions of the various persistent forms of unifacially and bifacially retouched points have not been adequately investigated. In addition, few if any microwear studies have been carried out on tools from the Middle and Later Pleistocene of Africa. Such studies will shed more light on the functions of MSA assemblages.

Exchange networks are also evident in the MSA in the form of long distance transport of obsidian (Brown et al. 1994). Yet the ranging patterns of MSA hominids in the Central Rift of Kenya and adjacent areas are poorly understood (Ambrose 2001). Geochemical analysis of obsidians from Merrick's test excavations at GsJ 75 in 1982/1983 point to at least 7 sources in the rift valley. Njorowa Gorge and Maasai Gorge provided the bulk of the obsidian analyzed. These flows are located 351 km and 16 km from GsJ 75 respectively (Merrick and Brown 1984). Four percent of the obsidians were traced to the Kinangop Plateau. The sources of 10 other obsidians at GsJ 75 have not been identified (Merrick 1986). It is likely that other sources were used but further research is required to ascertain this.

Availability of raw material through exchange networks is expected to have a bearing on the technology and to influence the size and type of artifacts at any given site. For example, the points at GsJ 75 are diminutive, and tool transformation, by which points are transformed into scrapers, is common. The frequency of retouched pieces is also high at GsJ 75 compared to the MSA site of Prospect farm, which is closer to the Central Rift obsidian sources.

Settlement patterns for the MSA of east Africa are poorly understood (Ambrose 2001), and the effects of global climatic change on site location are unknown. Ambrose (2001) argues that the pattern of settlement during MSA centered on the savanna/forest ecotone. Cold conditions resulted in aridity that caused the savanna/forest ecotone to shift to higher elevations. It is thus expected that during cold and periods, more MSA sites will be found at higher elevations. This may explain the presence of MSA sites like GsJ 75 and Wetherill's (GsJk 12) that lie at an elevation of 2420 m. If the dates of 440 ka (GsJ 75) and 557 ka (GsJk 12) are correct, the sites represent occupation during cold oxygen isotope stage 12

Figure 4: Class sizes of artifacts from GsJj 75.



(Klein 1999). Paleo-climatic data from GsJj 75 will be useful in testing the savanna/forest ecotone model. Future work at GsJj 75 will document technology, tool function, ranging patterns as well as the influence of global climate that can be used to infer adaptive behavior.

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