9. Oldowan Technology and Raw Material Variability at Kanjera South

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Abstract

Advances in the study of Oldowan research have suggested that the earliest tool-makers had the technological capabilities usually suggested in later time periods. Work in West Turkana and Gona research areas suggests that Pliocene hominins had a concise understanding of stone fracture mechanics and had a clear conception of how to reduce cores in a manner that maintained flaking surfaces. Here we investigate if these same patterns existed at the Pliocene site of Kanjera South in Western Kenya. Technological analyses suggest that although many of the technological capabilities described for other Oldowan sites are present in the Kanjera South assemblage, specific aspects of the context of the site (raw material variability) produced a different expression of these behaviors. The most obvious difference between the Kanjera South site and other Oldowan sites is that as reduction continues several different reduction patterns can be seen. This suggests that a reduction sequence or core reduction mode is not an immutable formula and can change depending on its context.

9.1 Introduction

The analysis of Oldowan technology has largely been focused on archaeological localities excavated in the East African Rift Valley. The majority of our knowledge of the earliest technology derives from archaeological sites from the Afar region (Kimbel et al. 1996; Semaw et al. 1997; Hovers et al. 2002; Hovers 2003), the Turkana Basin (Isaac 1972; Isaac and Harris 1997; Roche et al. 1999; Delagnes and Roche 2005), and Olduvai Gorge (Leakey 1971; de la Torre and Mora 2005). The Oldowan archaeological locality of Kanjera South is therefore initially important because of its geographic location. Placed between the two major rift valleys in East Africa, in the Kavirondo rift system, the Kanjera South Formation is host to the only site, other than Senga 5 (Harris et al. 1987) and Nyabusosi (Texier 1997), outside the East African rift valley. However, several aspects of the stone artifact collection from Kanjera South make it a vital part of the discussion of resource use and technological decisions in the Pliocene. The collection of artifacts from Kanjera South is one of the largest collections of stone artifacts from a Pliocene context (n=4474). Further it is associated with one of the largest excavated Pliocene faunal collections. The high diversity of raw materials in the local area makes the collections from Kanjera South an ideal sample to understand the interaction between technological decisions and raw material quality and availability. This study represents the initial description of the technology of Oldowan artifacts in relation to raw material sources in the Plio-Pleistocene. The analysis of the stone artifact collections from the Kanjera South Fm. requires a comprehensive analysis of raw material sources in the South Nyanza District of western Kenya, where the site is located. Therefore this paper will outline different technological strategies within the Kanjera South Fm. assemblages relative to raw material differences. The technological analysis here complements previous work (Braun 2006) but does not include the detailed metric analysis. Rather this analysis focuses on the core production modes (Roche 2000) present in the Kanjera South Formation in order to fit it into a broader picture of technological modes in the Oldowan.

9.2 Homa Peninsula: Site Context and Raw Material Availability

The southern member of the Kanjera Formation is a relatively small group of deposits (~800 square meters) situated on the southern shore of the Kavirondo Gulf of Lake Victoria. It has six beds, from oldest to youngest KS-1 to KS-6 (Behrensmeyer et al. 1995; Ditchfield et al. ms). The Oldowan archaeological occurrences are largely restricted to Beds KS-1 to KS-3.

The site is anomalous among Pliocene Oldowan archaeological sites because of its large assemblage of lithic materials, diversity of raw materials, large faunal assemblage, and C4 pedogenic carbonate signal indicating an open habitat setting (Ditchfield et al. 1999; Plummer et al. 1999, 2009; Plummer 2004). Sedimentological analyses suggest the site was situated on the shores of a Paleo-Kavirondo Lake (Ditchfield et al. 1999). The Oldowan archaeological occurrences are largely restricted to Beds KS-1 to KS-3. A combination of chronometric methods (paleomagnetism, biostratigraphy) indicates the archeological occurrences pre-date the base of the Olduvai Subchron at 1.95 Ma, so a date of ~2.0 Ma is used here (Ditchfield et al. 1999; Plummer et al. 1999, 2009; Plummer 2004). Artifacts and archeological fauna were buried on an alluvial plain by KS-1 to KS-3 fine pebbly sands. Water flow was directed northwards towards a paleo-lake and was generally diffuse and of low energy. The lake transgressed from North to South through time, completely covering the