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# The larger mammal palimpsest from TK (Thiongo Korongo), Bed II, Olduvai Gorge, Tanzania

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ABSTRACT

Ever since Mary Leakey's initial excavations in the 1960s, TK (Thiongo Korongo) has been recognized as one of Olduvai Gorge's most important Acheulean sites. The significant concentrations of lithics and fauna reported by Mary Leakey have been augmented in recent years by Santonja et al., who argue that human activities appear to be largely related to the manufacture of lithic implements. In contrast, the faunal remains have been interpreted to be of uncertain origin, and their anthropogenic nature remains in question. This paper presents new data on the formation of the TK bone accumulation. Our results reveal a diverse list of taxa, many of which reflect open habitats. Only limited evidence of anthropogenic activity is documented.



## 1. Introduction

At Olduvai Gorge (Tanzania), multi-taxonomic faunal sites are particularly numerous, although their interpretation remains contentious. The large and well preserved lithic and faunal assemblages from FLK (Frida Leakey Korongo), for instance, have generated a more-or-less continuous debate, from Leakey's (1971) pioneering work to the recent studies of Domínguez-Rodrigo et al. (2014a). The collection from Level 22 (the *Zinjanthropus* Floor, or FLK-Zinj) has been presented as the earliest evidence for repeated hunting of small and medium-sized ungulates (Domínguez-Rodrigo and Barba, 2006; Domínguez-Rodrigo et al., 2007, 2010, 2014a), although models based on opportunistic scavenging have also been prevalent in the literature (Blumenschine and Selvaggio, 1988; Blumenschine, 1989, 1991, 1995; Capaldo and Blumenschine, 1994; Capaldo, 1997; Pante et al., 2012).

Other Bed I occurrences such as those at FLKN and FLKNN preserve deep, multi-leveled deposits of taxonomically diverse faunal assemblages in association with lithic artefacts (Leakey, 1971). Unlike FLK-Zinj, however, taphonomic analyses on these assemblages suggest only limited hominin, and significant carnivore, intervention with the bone accumulations (Domínguez-Rodrigo et al., 2007; Bunn et al., 2010). This mirrors the situation in Bed II, which preserves numerous sites with diverse taphonomic histories.

At BK (Bell's Korongo), for example, hominins enjoined recurrent primary access to numerous carcasses from a wide range of sizes, from about 50 kg to >5000 kg (Egeland and Domínguez-Rodrigo, 2008; Dominguez-Rodrigo et al., 2009a, 2014b). Other sites experienced more complex taphonomic histories. SHK (Sam Howard Korongo) yielded a large lithic accumulation associated with the remains of different animals (Díez-Martín et al., 2014). Taphonomic studies demonstrated that hominidns had access to the flesh of hippopotamids and equids, although most of the bone accumulation is interpreted as a palimpsest of uncertain origin (Domínguez-Rodrigo et al., 2014c). The bone accumulations from other Bed II sites such as MNK or HWK East Levels 3–5 are reconstructed to be largely of carnivore origin with only very

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limited human intervention (Domínguez- Rodrigo et al., 2007; Egeland, 2007, 2008; Egeland and Domínguez-Rodrigo, 2008). Sites such as TK (Thiongo Korongo) and FC West contain very poorly preserved faunal assemblages, which hinders definitive taphonomic interpretations (Egeland, 2007, 2008; Egeland and Domínguez-Rodrigo, 2008). Some authors consider TK to be a Type A assemblage due to the contrast between the large number of lithics and the scarcity of bone remains (Isaac and Crader, 1981; de la Torre, 2004). This paper discusses the zooarcheology and taphonomy of the Lower Floor at TK (TKLF) based on recent re-excavation of the site.

Our work shows that the site comprises assemblages with different depositional histories and these reflect hominin stone tool manufacture activity with no securely identified indication of any significant bone modification. This casts doubts on functional interpretations of lithics and bones at sites where taphonomic studies have not been made. One of the most relevant examples in this regard can be found in the analysis of Olduvai Bed I sites. These sites were once interpreted as living floors (e.g., Leakey, 1971) given the discrete vertical clustering of spatially-associated stone tools and fossils bones,and subsequent taphonomic research showed a lack of functional association between most stone tools and bones at several of these sites (Domínguez-Rodrigo et al., 2007). Therefore, most of these sites were palimpsests with either a lack of hominin input or very marginal participation of hominins in the accumulation and modification of fauna. TK is another example of a similar type of palimpsest.

## 2. TK (Thiongo Korongo), Olduvai Gorge, Tanzania

### 2.1. The site

TK is located in a lateral north-south running korongo (gully) situated on the north slope of Olduvai's Main Gorge approximately 2 km east of the junction with the Side Gorge (Fig. 1). The site was identified in 1931 by L. Leakey, who noted the presence of hand axe made on quartzite slabs and correctly identified the stratigraphic position of the site within Bed II (Leakey, 1951: 85). However, excavations were not conducted until 1963 when two areas, Trench I and Trench II, around 46.4 $m^2$ and 40.5 $m^2$ respectively, were excavated by M. Leakey (1971: 172–197). Although materials were found scattered throughout the deposits, M. Leakey identified two main archaeological levels, termed the Upper Floor (TKUF) and Lower Floor (TKLF), as livings floors. Leakey (1971), as well as Isaac and Crader (1981), argued that both TKLF and TKUF were only minimally altered during burial. Petraglia and Potts (1994), in contrast, suggested that the site experienced prolonged exposure prior to burial, which resulted in the displacement of small items and reorganization of the site down slope.

Between 2010 and 2012, The Olduvai Paleoanthropological and Paleoecological Project (TOPPP) has excavated an additional 113 $m^2$ in two zones (Fig. 2), Sector A (SA) and Sector B (SB) (Santonja et al., 2014), immediately adjacent to M. Leakey's 1963 trenches. This new work reveals that the materials in M. Leakey's (1971: 186) Trench II correspond stratigraphically and topographically to TKLF and, hence, do not correspond with TKUF (see discussion in Santonja et al., 2014: 184). This has significant consequences, as some authors have assumed that the lithic material from Leakey's Trench II, as those from Trench I, can be ascribed to TKUF (de la Torre, 2004: 258 ff), when they belong to TKLF.

Recent technological and paleoeconomic study of 5805 artifacts (including 3812 pieces of shatter) from TKLF and the channel in SA show that a majority of the raw material is quartzite that likely derives from Naibor Soit, an inselberg located a few hundred meters from the site. Two different *chaînes opératoires* were identified in TKLF: one based on obtaining flakes from volcanic rocks and quartzite, and the second on the manufacture of standardized hand axe that were produced, used, and abandoned at the site (Santonja et al., 2014). In addition to the artifacts, numerous small cobbles between 6 and 29 g and sizes from 2 × 2 to 3 × 4 cm have been observed. Santonja et al. (2014) argue that these materials may have been incorporated via natural mechanisms such as fluvial transport or overland flow conditioned by a small channel.

### 2.2. Geology

From bottom to top, the volcanic and sedimentary outcrops of TK display parts of Hay's (1976) Beds II, III, and IV. The stratigraphic

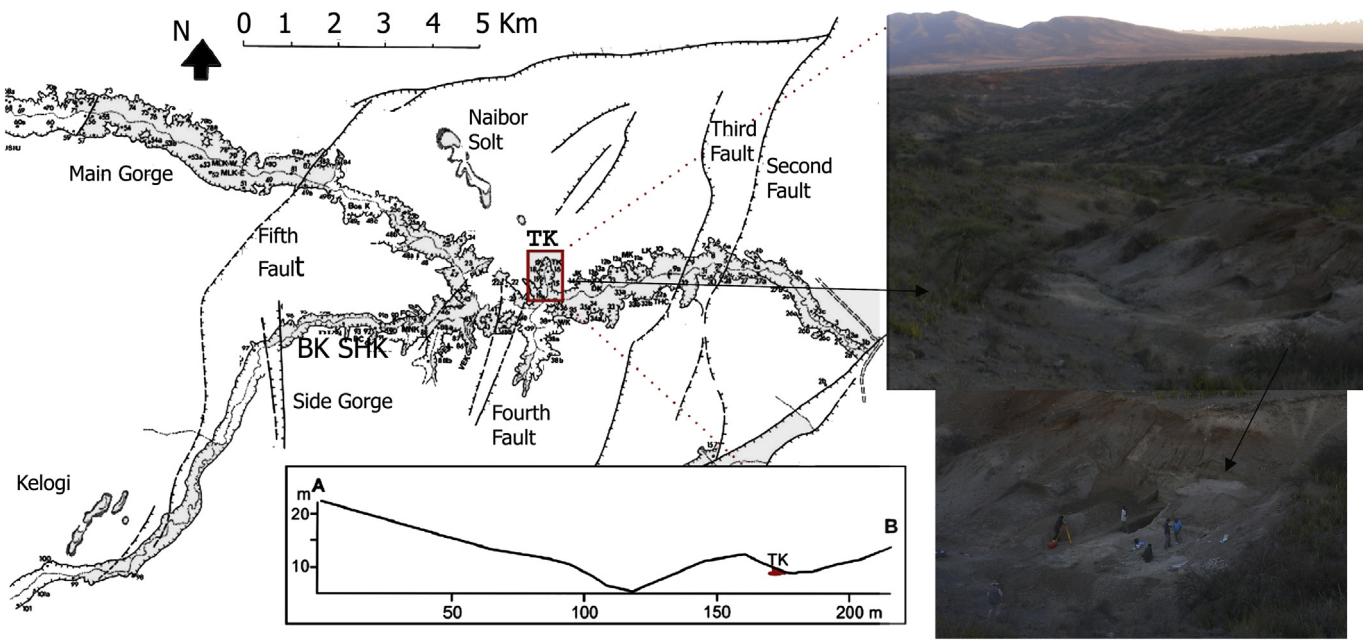


**Fig. 1.** Position of TK in a lateral korongo in Olduvai Gorge (modified from Hay, 1976) and two pictures of the 2011 excavation.

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