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Refitting evidence for the stratigraphic integrity of the Kudu Koppie Early to Middle Stone Age site, northern Limpopo Province, South Africa

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ABSTRACT

Stone Age sites that demonstrate long sequences of occupation that span the Earlier through to the Later Stone Age are uncommon in southern Africa. The site of Kudu Koppie, in the Mapungubwe *National Park* of Limpopo Province, South Africa has evidence for extended and intense occupation by prehistoric populations in the context of a talus slope deposit adjacent to the Koppie itself. This paper describes the use of refitting of late Earlier Stone Age (ESA) and Middle Stone Age (MSA) lithics to address issues of stratigraphic integrity and taphonomy in a slope deposit context. Specifically, it is shown that approximately 80% of all refits fall with a vertical separation of between 0 and 10 cm. It is concluded that lithics associated with Kudu Koppie have not been greatly affected by post-depositional disturbances and therefore the material represents the general discard patterns of groups occupying the site between the late ESA and MSA periods. As such, this study provides additional evidence for earlier interpretations of the stratigraphic integrity of archaeological deposits at the site.

1. Introduction

In 2003, as part of a University of the Witwatersrand research programme led by Kathleen Kuman, a survey was carried out for the purpose of exploring observed Stone Age occurrences in the Mapungubwe *National Park* (previously known as the Vhembe-Dongola National Park), close to the confluence of the Limpopo and Shashe Rivers near the northern border of South African border with Zimbabwe and Botswana (Kuman et al., 2005). Three sites were identified for excavation: Hackthorne, Kerratic Koppie and Kudu Koppie (Fig. 1). In the case of Kudu Koppie (Site 2229AB415; 22° 13′40.5″S, 29° 20′21.6″E; 604 m altitude), the programme has thus far resulted in a number of postgraduate studies and publications related to the technology, raw material procurement patterns, and stratigraphy of the site (Pollaralo, 2004; Kempson, 2007; Wilkins, 2008; Le Baron et al., 2010; Pollaralo et al., 2010; Wilkins et al., 2010).

This paper describes a refitting study of late Earlier Stone Age (ESA) and Middle Stone Age (MSA) lithics selected from the Kudu Koppie assemblages. There have been two goals of this research: first, a technological analysis of the types of reduction strategies used at the locality during the later ESA and MSA (Sumner, 2013), and second, to determine if an expanded refitting project would support the findings of earlier work that used a much smaller number of refits plus raw material matching to demonstrate stratigraphic robusticity at the site (c.f. Wilkins, 2008; Pollaralo et al., 2010; Wilkins et al., 2010). The first of these goals has since been published and will not be reviewed here.

Apart from a few initial refits and the raw material matching study noted above (Wilkins, 2008; Pollaralo et al., 2010), evidence for the post depositional integrity of the deposits at Kudu Koppie has relied on the identification of two stratigraphic units of clastic sediments—a lower unit with ESA artefacts and a middle unit with MSA (Pollarolo et al., 2010; NB: an upper unit of aeolian sediments with sporadic Later Stone Age artefacts is also present but is not relevant to this study). The ESA-MSA tool-bearing deposits and some limited fauna are preserved in a ca 1.6 m-thick colluvial deposition of rocks and sediments accumulated at the base of a large koppie (or large rocky outcrop), formed in the local sandstone bedrock. Kudu Koppie is thus in the apron of this clastic koppie debris, where deposits accumulated at depth on the southwestern and, to a greater extent, the southeastern sides (Gibbons, pers.

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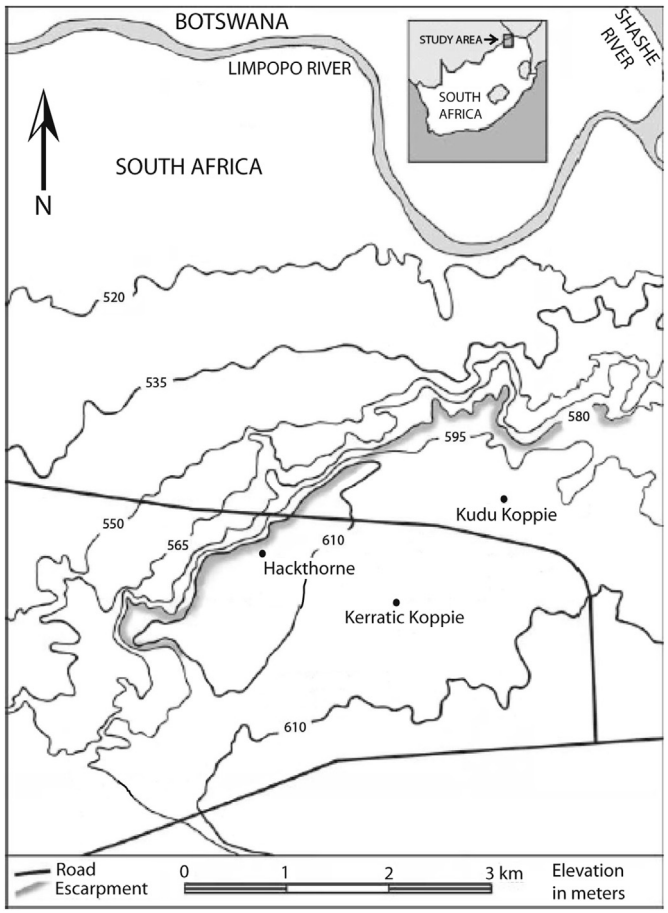

Fig. 1. Location of sites identified as part of University of the Witwatersrand research programme. Kudu Koppie is located top right. (By permission, adapted from Le Baron et al., 2010:8).

comm.) of the outcrop due to the specifics of topography and rainfall runoff. Preservation of lithics is extraordinary, with large amounts of small flaking debris amounting to over three quarters of both assemblages, also captured. An extensive test-pitting programme over a 20 km^2 study area has demonstrated that Kudu Koppie is unique in capturing sediments of this age, as all other open sites in the area consist of lag deposits, which also lack bone preservation (Kuman et al., 2005; Kempson, 2007; Le Baron et al., 2010).

The larger refitting programme described here was intended to test the stratigraphic interpretation of the two units and to search for additional direct evidence for the integrity of the Kudu Koppie deposits. Specifically, lithic refitting is used as an effective way to demonstrate the degree of stratigraphic association between lithics from the same raw material nodule and therefore the extent to which post depositional forces affect the movement and vertical separation of material deposition within a talus slope context. The results show that the majority of conjoins exists within the same 5 cm spit with a much smaller proportion of conjoins occurring anywhere between 20 cm and 45 cm. In the case of the greater displacement of the minority of the refits, the reasons for this are discussed with respect to the nature of the talus slope itself and related non-anthropogenic taphonomic influences, along with possible evidence for human practices such as reuse and recycling, a prehistoric human behaviour that was not uncommon (Hofman, 1992; Vaquero, 2011).

2. Materials and methods

2.1. Kudu Koppie Site

The site of Kudu Koppie is located on the confluence of the Limpopo and Shashe Rivers which delineates the countries of Botswana to the west, Zimbabwe to the east and South Africa to the south (Fig. 1). The site is situated on sandstone bedrock but immediately adjacent to a Miocene aged terrace, the remains of which form a 3 km long escarpment that is about 4 km south of the present Limpopo River basin. Geologically, the escarpment is associated with the Tuli Basin, a formation that characterizes the northeast region of South Africa. The formation is comprised of four litho-stratigraphic units, one of which, the Clarens Formation, typifies the aeolian sandstone geology of Kudu Koppie (Pollarolo et al., 2010). The plateau on which the study area is situated is mantled by aeolian sands that are not derived from this local sandstone but probably have a more distant origin, accumulating or at least being re-worked during times of extreme aridity ca 23 and 15 ka, as confirmed by OSL dating of the sands (Le Baron et al., 2010). The Kudu Koppie excavation is adjacent to a large sandstone outcrop which would have provided a significant degree of shade at times during the day, as well as shelter from the prevailing winds. The bottom of the deposits rests on bedrock, which is ca 2.3–2.4 m below the modern surface which suggests that even better shade and shelter were available prior to the accumulation of sediments in the site.

Excavation at Kudu Koppie began as a series of three small test pits in 2003 on different sides of the koppie (Le Baron et al., 2010), which demonstrated that the southwestern side of the koppie would be most productive for excavation. This was followed by more intensive fieldwork by L. Pollarolo between 2004 and 2007 that revealed Earlier, Middle and a limited amount of Later Stone Age cultural material in what was interpreted as three geo-cultural stratigraphic units (Pollarolo, 2004; Kuman et al., 2005; Pollarolo and Kuman, 2009; Pollarolo et al., 2010; Wilkins et al., 2010). In relative terms, the excavated squares comprise a limited area of the talus slope itself (see Fig. 2) which, when artifact density from the excavation is considered, demonstrates that the site was a significant point on the landscape which was frequented by ESA and MSA populations (Le Baron et al., 2010).

Following LeBaron's 2003 test pits, ten 1 m^2 squares along with five test trenches were excavated between 2004 and 2007 by L. Pollarolo for his PhD and postdoctoral research (Fig. 2). The result of these excavations was the collection of an extremely dense

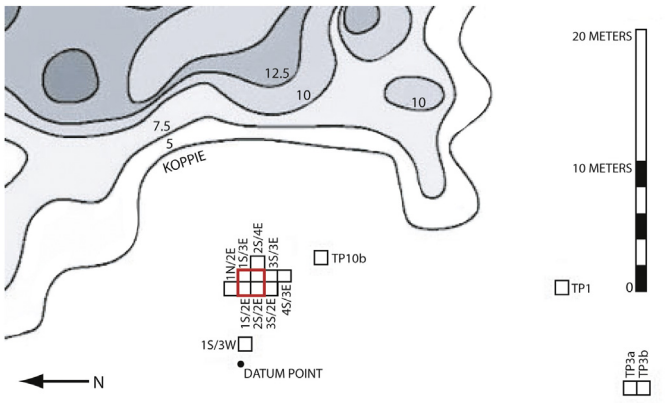

Fig. 2. Map of Kudu Koppie and associated excavation. Four squares discussed in this paper are: 1S3E, 2S3E, 1S2E, 2S2E (red square, centre of grid) (By permission, redrawn from Pollarolo et al., 2010: 154). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)