

Abstract

Establishing a Robust Reference Collection for the Analysis of Use-Wear on Heat-Treated Silcrete

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The study of use-wear on lithic artefacts is a foundation for reconstructing past activities. However, the application of this methodology is dependent on reference collections. In a country like South Africa, most archaeological assemblages consist of multiple raw materials. Not only do the assemblages contain various rock types, but the heat-treatment of specific rocks, such as silcrete, is also observed. This influences the nature and development of use traces. To understand and recognise these traces, a material-specific reference collection is needed. This study focuses particularly on silcrete, which was frequently used in the Middle Stone Age of South Africa. The inherent microtopography of heat-treated silcrete can mimic or obscure use-wear, leading to potential misinterpretations.

We present the results of a large-scale experimental program to build a reliable reference collection for wear traces on heat-treated silcrete, as no such reference is currently available. Experiments were mainly actualistic and controlled with a focus on both projectiles and other activities. Activities included scraping, cutting, drilling, and percussive tasks on a variety of contact materials (wood, hide, bone, stone). Subsequently, these experimentally used tools were analysed using a multi-scale microscopy approach integrating stereomicroscopy, metallurgical microscopy and scanning electron microscopy (SEM). This combined protocol was essential for overcoming the challenges of silcrete's complex surface, allowing for the study of possible micro-polishes, striations and edge fractures. The resulting reference collection provides a foundation for interpreting silcrete wear in archaeological assemblages.