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ARCHAEOLOGICAL USE-TRACE ANALYSES OF STONE TOOLS FROM SOUTH AFRICA

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A thesis submitted to the Faculty of Science,
University of the Witwatersrand, Johannesburg,
in fulfilment of the requirements for the degree of
Doctor of Philosophy

2007

DECLARATION

I declare that this thesis is my own unaided work. By thesis, it is understood to mean my contribution, as described in Chapter Two, for submission for the degree of Doctor of Philosophy at the University of the Witwatersrand by published and submitted articles. It has not been submitted before for any degree or examination at any other University.

_____

Marlize Lombard

Date_____

ABSTRACT

Analytical methods for extracting detailed functional and technological information from Middle Stone Age stone tools were refined and developed. This was achieved within a theoretical framework that insists on multiple-stranded evidence for behavioural interpretation. The methods include micro-residue analysis, macrofracture analysis and usewear analysis. Stone tool assemblages – spanning the period between about 100 000 and 50 000 years ago – from Sibudu Cave, Umhlatuzana Rock Shelter, Klasies River Cave 2 and Blombos Cave were analysed.

Results derived from macrofracture analyses, that are often conducted as an initial study to assess whether tool classes could have been used in hunting weapons, are used to formulate the following working hypotheses for Stone Age hunting technologies in South Africa: a) some pre-Howiesons Poort pointed tools were used as hafted butchery knives, while others could have been used to tip hunting weapons; b) Howiesons Poort backed tools were probably used as interchangeable pieces in hafted hunting weapons; c) post-Howiesons Poort points were used to tip hunting weapons; d) Later Stone Age hunting technologies were different from those practiced during the Middle Stone Age. The macrofracture results also provided interesting comparable data showing distinct time-related clustering of the results. Although more tools that could have functioned as hunting weapons must be analysed to evaluate the authenticity of these observations, the results suggest that macrofracture studies are important for the study of change in Stone Age hunting behaviours.

The main methodological contribution of this thesis is micro-residue analysis. Advances in this method developed from blind tests on replicated flakes with residues derived from the processing of plant and animal products. Lessons learned from previous blind tests shaped the new research reported here and lead to improved methodology and interpretative skills. The last test in the series of four resulted in the most accurate interpretations because, prior to Test 4,

identification difficulties experienced during the first three blind tests were addressed through replication. The new work reported here highlights some of the difficulties that can be experienced in the morphological identification of microscopic organic residues, particularly the distinction between animal and plant residues. It is specifically recommended that multi-stranded evidence be used for the identification of animal and plant residues.

Micro-residue analysis of archaeological samples provided direct evidence for functional and hafting interpretations. These can be used to evaluate the hypotheses based on the results of macrofracture analyses and to provide data for further detailed interpretations. For example, it is shown that: a) retouched points from the Still Bay were used as knives hafted to wooden handles; b) segments from the Howiesons Poort were probably hafted in bone and wood shafts in different hafting configurations that varied during the span of the technocomplex; c) Howiesons Poort segments were mostly used on animal material; d) ochre was mixed into the adhesive recipes during the post-Howiesons Poort, the Howiesons Poort and possibly during the Still Bay technocomplexes at Sibudu Cave.

Thus, the multi-analytical approach followed throughout the study contributes evidence for the early development of sophisticated and variable hunting and hafting technologies used by anatomically modern humans in South Africa. Our current knowledge of behavioural trends during the Middle Stone Age has been expanded, allowing rare glimpses into the everyday activities of people living in the deep past. Perceptions of a static, pre-modern technology and unvaried faunal exploitation during the Middle Stone Age in southern Africa are unfounded.

DEDICATION



Lyn, this one is for you.

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