

# A late Middle Stone Age artifact assemblage from Sibudu (KwaZulu-Natal): comparisons with the European Middle Paleolithic

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## Abstract

It has been suggested that many behavioral innovations, said to appear during the late Middle Stone Age in sub-Saharan Africa, facilitated the expansion of anatomically modern humans from Africa and the Near East into Europe at about 50 kyr; the process eventually led to the replacement of Neanderthals by modern humans and the emergence of the Upper Paleolithic. However, assemblages in this time range are little known in South Africa. In fact, the transition from Middle to the Later Stone Age in Southern Africa is controversial. The early appearance in South Africa of many innovations, such as sophisticated knapping techniques (e.g. the use of soft hammer or indirect percussion in blade production, of composite tools, of microlithic and bladelet technologies) remains to be established through technological analysis.

We present here the first results of a project designed to carry out detailed technological studies of several lithic assemblages in South Africa and France dated to the transition period. At this time we have completed the study of a post-Howiesons Poort assemblage from the rock shelter site of Sibudu.

The > 2 m deep stratigraphic sequence of Sibudu extends from Howiesons Poort at its base to final Middle Stone Age, directly under Iron Age layers. We have analyzed in detail layer RSP (ca. 53 kyr, 1 m above the Howiesons Poort levels) which has provided a large assemblage of several thousand stone artifacts. Compared to published MSA assemblages this industry is unusual for the very high proportions of retouched pieces (15%). The technology is not very elaborate and there is no strong standardization of the end-products. There are no flakes of predetermined shapes; retouch is used to modify irregular flakes to obtain desired edges. Knapping of flakes and blades is done by hard hammer; soft hammer is used only for retouching tools. Interestingly the older Howiesons Poort blades were produced on the same raw materials by soft hammer. Raw material (hornfels and dolerite) was procured from distances of less than 20 km. Unifacial points are the dominant type and there is strong evidence of hafting and use as spear armatures. Detailed comparisons with Middle Paleolithic assemblages of Western Europe show that the late Middle Stone Age technology in South Africa is very similar to that of the Middle Paleolithic; in fact we see no fundamental differences between the two entities, as far as lithic technology is concerned. Implications for the Out of Africa hypothesis are discussed.

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## 1. Introduction

This paper is a progress report on an international research program which includes South African and French archaeologists. Our project addresses issues

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which are central to current Paleolithic research such as the nature, the variability and the evolution of human technologies in the time range broadly comprised between 80 and 25 kyr, a time of important changes in human behavior. The goal of our research is to investigate the transition from the Middle to the Later Stone Age in South Africa and from the Middle to the Upper Paleolithic in Western Europe, focusing on lithic technology. Comparisons of African and European data are relevant to ongoing debates on behavioral evolution during the Upper Pleistocene. What is at issue in these debates is: (a) whether advanced technologies which are a consistent feature of Upper Paleolithic and Later Stone Age (LSA) sites appear earlier in Africa than in Western Europe; (b) whether these innovations appeared together during the late Middle Stone Age (MSA), in the context of evidence of other behaviors, and played a role in the expansion of population and dispersal of anatomically modern humans from Africa into Europe at about 50 kyr; (c) whether these features appeared earlier, with the advent of the MSA, and coalesced in a slow, long-term process with a progressive increase in the complexity of behavioral patterns [1–3,35,36,65–70,79].

It should be clear that the data to be collected during this project are more relevant to questions about the origins of early Upper Paleolithic cultures and whether the LSA lithic technology appeared suddenly or as part of a continuum, than they are to the question of the origins of “behavioral modernity”. Sub-Saharan Africa and Western Europe represent the beginning and the end of the hypothetical expansion of anatomically modern humans out of Africa and given the precocious appearance of features said to define “modern” behavior such as evidence of symbolic culture in South Africa and microlithic technologies in East Africa [3,57,58,60] sub-Saharan Africa has been considered a likely source of developments in Eurasia. In fact the broader subject of “behavioral modernity” is highly complex, there are fundamental disagreements over the interpretation of the archaeological record and the trait list for the recognition of cultural modernity is controversial [33,59,116,118]. Our use of the term does not imply acceptance of this concept. Our project is limited to just one of the archaeological aspects of this debate, as presented in the important synthesis of McBrearty and Brooks [79]. We concentrate on technological innovations that have been seen as having a greater time depth in Africa than in Europe thus being the probable source of the important behavioral changes that characterize the Upper Paleolithic.

We are well aware that factors such as available raw material, site function, natural processes of artifact and sediment accumulation and social and environmental context influence techniques of tool production and processes of assemblage formation. Historical links or

their absence in patterns of lithic technology occurring in widely separated areas may be very hard to demonstrate. Stone tool production is controlled by responses to environments unique to each context; behaviors of adaptive significance may have changed many times as they passed from one area to the next. For these reasons we are not looking for specific artifact markers but for general trends of technical behaviors. Regardless of the meaning assigned to technical innovations, the fact remains that we lack precise information on time of appearance, patterns of persistence and even diagnosis verification of lithic innovations at the time of transition in South Africa. Although South Africa and France have provided abundant empirical data on these subjects, comparisons of South African and European assemblages have been carried out only at a general level [95,112]. The data still awaits more detailed analyses. This is the reason for our project.

## 2. Why technology?

Technological innovations, that are said to appear during the later MSA in sub-Saharan Africa, include long-distance transport of fine-grained lithic raw materials, blade production by soft hammer or the punch technique [37], hafting, composite tools and microlithic technologies, hypothetical use of the pressure technique, formally shaped bone tools, and greatly accelerated variation in stone artifact assemblages through time and space. Planning depth (as indicated by long distance transport of desirable high-quality raw material) and sophisticated technologies are considered important features of evolved human culture because they indicate the ability to predict future needs, the expanding home range of human groups and the ability to adapt to diverse and challenging environments by technological innovations. In contrast to Neanderthals who seemed to have been limited to hunting by close-range weapons such as hand-held spears, long range projectile technology, such as use of spearthrower darts and bows and arrows, is considered a superior way of hunting because it allows killing at a distance. Projectile technology improves the success of a hunt, diminishes the physical danger of hunting at close range and allows killing of a wider range of dangerous or fleeting prey [96]. Composite tools made by hafting small blanks of standardized dimensions are seen as an indication of human inventiveness. In sum, archaeologists view the development of technologies allowing greater flexibilities in subsistence strategies as a tangible expression of expanding hominid capabilities, directly tied to the evolution of an advanced grade of behavior.

The period around 50,000 years and right afterward is the time when shifts to Upper Paleolithic forms of

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