



San origins and transition to the Later Stone Age: New research from Border Cave, South Africa

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How to cite this article:

 Mitchell P. San origins and
transition to the Later Stone
Age: New research from
Border Cave, South Africa.
S Afr J Sci. 2012;108(11/12),
Art. #1147, 2 pages.
[http://dx.doi.org/10.4102/
sajs.v108i11/12.1447](http://dx.doi.org/10.4102/sajs.v108i11/12.1447)

In the past decade, southern Africa has confirmed its crucial role in understanding the emergence of those patterns of behaviour that may uniquely characterise our species. This realisation – founded largely in projects undertaken at Blombos,¹ Sibudu,² Diepkloof³ and Pinnacle Point⁴ – builds on genetic studies that identify sub-Saharan Africa as the area where *Homo sapiens* evolved and to which all humans alive today trace their ancestry.⁵ It builds, too, on earlier archaeological fieldwork, notably at Klasies River,⁶ the finds from which remain among the oldest anatomically modern human remains in the world. Another South African site, Border Cave in KwaZulu-Natal's Lebombo Mountains, has also long been at the heart of these discussions, as a paper published in this journal in 1978 made clear.⁷ Now, in two papers just published in the *Proceedings of the National Academy of Sciences*,^{8,9} Paola Villa, Francesco d'Errico and their collaborators identify new patterns of material culture dating to about 43 000 years ago that they see as marking both the beginning of the Later Stone Age and the emergence of adaptations directly ancestral to those recorded ethnographically among southern Africa's San peoples.

The finds concerned come principally from Border Cave's 1WA and 1BS Lower B+C layers, now unequivocally dated by multiple accelerator mass spectrometry radiocarbon determinations to 44 ka – 42 ka cal. BP, as well as from underlying layers associated with a post-Howiesons Poort Middle Stone Age (MSA) toolkit dated by radiocarbon and electron spin resonance to 60 ka – 45 ka. Detailed analysis of the associated artefacts shows that some time after 56 ka the stone tools made by Border Cave's inhabitants underwent pronounced simplification toward a microlithic and much more expedient technology that lacked standardised reduction sequences, and eschewed the carefully made points and other retouched pieces of the MSA. The unretouched microliths now emphasised were clearly hafted, as rare examples that retain organic material indicate; the adhesive used probably comes from the bark of the Breede River yellowwood (*Podocarpus elongatus*), a species now confined to the Western Cape, but evidently more widespread during the generally cooler conditions of Marine Isotope Stage (MIS) 3 (59 ka – 25 ka). Interestingly, no trace was found of red ochre, which MSA people at Sibudu Cave in south-central KwaZulu-Natal added to resin to create a stronger mount.¹⁰

Border Cave's exceptionally dry conditions preserved many other organic remains, some not previously reported: worked bushpig or warthog tusks; notched bones; bone tools (including several points and awls); ostrich eggshell beads (some perhaps intentionally blackened) and others made from *Nassarius kraussianus*, an estuarine mollusc; fragments of a wooden digging stick; a shaped stick bearing traces of poison (probably from castor beans, *Ricinus communis*); and a lump of fibre-bound beeswax mixed with poisonous *Euphorbia tirucalli* resin. Several of these finds were directly dated: a bead to ~42 ka, the digging stick to ~39 ka, the beeswax to ~40 ka and the poison applicator to ~24 ka; these last two dates extend by almost an order of magnitude the use of poison in southern Africa. Some of the tusks and one of the notched bones are as old as 60 000 years, but the remaining finds are all associated with the expedient, microlithic toolkit from 1WA and 1 BS L.B-C.

Linking their papers, the authors argue that the Border Cave sequence documents the substitution of MSA stone spearpoints by the bow and (bone, probably poisoned) arrow, dismissing recent claims for the presence of bone and stone arrow tips in older, Howiesons Poort contexts at Sibudu. They further argue that 'the investment in lithic technology' characteristic of the Howiesons Poort and its successors was 'then directed to the manufacture of a much wider range of organic items'^{8(p.13212)}. Put another way, 'changes in technology constructed an environment in which new forms of sociality could prosper'^{8(p.13212)}, the material indicators of which constitute evidence 'supporting the view of an early emergence of San material culture'^{9(p.13215)}, some 20 000 to 30 000 years before the dates with which previous interpretations have been comfortable. As such, the organic finds from 1WA and 1BS L.B-C 'represent arguably the oldest instance of modern culture'^{9(p.13218)}, in the sense of material items associated with historically known hunter-gatherer societies. Their apparently abrupt emergence (suid tusks excepted) is at variance with the more gradual



shifts apparent in the lithic technology, suggesting that late Pleistocene cultural change followed nonlinear trajectories, a conclusion increasingly receiving due attention.¹¹

Villa, d'Errico and their collaborators are to be congratulated on the rigour and breadth of their analyses and rightly emphasise that similarly systematic work is needed at many other sites of this age in order to flesh out the still poorly understood archaeology of MIS 3. Their work — and that of Lyn Wadley and her colleagues at Sibudu — currently places KwaZulu-Natal very much in the lead in this task. Are similar congratulations merited on all aspects of their interpretations?

The answer here is largely affirmative. Recent studies of stone tool industries in the Western Cape, for example, document a gradual abandonment of MSA strategies of stone reduction and use, a loss situated in terms of their varying costs and benefits under rapidly changing ecological conditions.¹² But saying this is to highlight a point *not* developed in these papers, that is, why did the changes registered at Border Cave take place at all? And how far is their apparent abruptness a result of the preservational vagaries of the archaeological record? This question matters because, as the authors acknowledge, several southern African sites have produced MSA assemblages that significantly postdate Border Cave Layers 1WA and 1BS L.B-C. Comparably detailed technological analyses and more dates are, as they say, definitely needed, but the geographical extent and number of the claims for MSA technology surviving to ≤ 30 ka caution against reading the microlithic toolkit evident at Border Cave as the harbinger of a subcontinent-wide Later Stone Age dawn. Regionally variable trajectories must surely be considered a possibility and, with the nearest well-excavated site dating to ~ 43 ka (Sibudu) some 300 km distant and displaying a very different technological signature, the situational dynamics affecting how people organised their technology at Border Cave necessarily remain little known. Indeed, one of southern African archaeology's enduring problems is the tendency to pursue the ghosts of Goodwin and van Riet Lowe's Middle and Later Stone Ages as if the terms genuinely possess value in themselves or comprehensively summarise all the variation that they purport to encompass. By perpetuating a static and technologically dominated view of past societies, at best they compress and elide enormous variability: good news, then, that two major conferences (Association of Southern African Professional Archaeologists, Gaborone, July 2013; Society of Africanist Archaeologists and PanAfrican Archaeological Association, Johannesburg, July 2014) will soon debate their continued utility.

Whether a new range of material culture was (re-)innovated as 1WA started to accumulate is also moot as it is unclear if the manufacture of beads, bone points and engraved art really did cease after the Howiesons Poort. Were it not for Border Cave, their extreme scarcity from 60 ka to 40 ka could readily be doubled in length, good evidence for how much difference a single site can make! Until many more sites

of the right age have been investigated we cannot know if we are seeing preservation bias or genuine discontinuity in cultural transmission (possibly because demographic networks were interrupted at times of climatic adversity or perhaps because non-aesthetic motives for making beads and art no longer applied).¹¹ Claims that 'San material culture' and, by implication, 'the San lifestyle' emerged ~ 43 ka thus require a pinch of salt. Moreover, recovery of ostrich eggshell beads and bone points patently does not prove the presence of Ju/'hoan-like *hxaro* gift exchange networks.¹³ Nor are aggregation and dispersal universal among Kalahari San. As Judy Sealy¹⁴, for example, has shown, precolonial variation in southern African hunter-gatherer lifeways likely exceeded the narrow range documented by anthropologists in the 20th-century Kalahari and even more narrowly sampled by archaeologists. An identical point holds for the ecological settings within which those lifeways were played out. More effort needs to go into determining how – if at all – we can connect material objects to 'San social organization, world view, and symbolic systems'^{9(p.13214)}.¹⁵ To do otherwise risks portraying recent and contemporary San as living fossils, unchanged for tens of millennia – a conclusion with real world political implications as recent experience in Botswana shows. These, however, are issues for future fieldwork, analysis and debate: the newly reported research at Border Cave shows just how rich a set of results modern archaeology can produce, just as it emphasises the necessity of placing such spectacular sites within a regional framework that approximates more closely the landscapes exploited by those who lived in them.

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