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There is some evidence to suggest that
the earliest ground-bone work in the
world may have come from Africa,
although worked bone is generally rare
in the MSA and is even absent in MSA sites
such as Strathalan Cave, where organic
preservation is good.19 In Congo, barbed
points, thought to be fishing implements,
have been recovered from Katanda MSA
sites said to be older than 80 000 years,20
although some researchers question the
reliability of the early date.21 Further
south, a similar barbed bone implement
was found in White Paintings Shelter,
Botswana, at the Middle Stone Age/Later
Stone Age interface.22 At Klisies River
Mouth, Eastern Cape Province, both
a single worked bone point and a piece
of notched bone were found in the
Howiesons Poort Industry.23 At Sibudu,
KwaZulu-Natal, there is a piece of bone
with ten deliberate notches dated by
accelerator mass spectrometry (AMS) to
28 889 ± 70 years ago (GrA-19670), yet
there is no worked bone in older layers in
which bone and seeds are well preserved.
At Blombos Cave, Western Cape, worked
bone points, bone awls and an incised
bone were found in a layer dated approxi-
ately 70 000 years ago.18 Early bone
points have also been found at Border
Cave24 and even the bone point tip found
in Boomplaas Cave, Eastern Cape, in a
layer lying between others dated 32 000
and 21 000 BP is unusually early.25 Bone
points are likely to be parts of projectiles
that suggest true hunting, although some
Later Stone Age (LSA) points seem to
have been used as pins to fasten garments
or shrouds.17 There is, however, more
convincing evidence for hunting from the
MSA of Klasies River Mouth, where the
tip of a stone point, presumably a broken
projectile head, was found embedded in
the vertebra of a giant buffalo.26 Thus true
hunting is unquestionably part of the
behavioural repertoire of MSA people.
This competence need not, however,
imply symbolic sophistication; Mithen27
has, for example, convincingly argued
that understanding how to exploit 'natu-
ral history' is an early cognitive ability
achieved prior to the development of
anatomically modern humans. Further-
more, Neanderthals, who are not consid-
ered cognitively modern, seem also to
have been competent hunters.28

How then can we assess the 'shopping
list' data mentioned thus far? In my
opinion this can only be done from a
theoretical viewpoint. The use of a list on
which technological items feature promi-
nently is theoretically flawed. There is no
intrinsic link between new techniques

How some archaeologists recognize culturally modern behaviour

Lyn Wadley

There is a great deal of debate over the
nature and timing of culturally modern
behaviour and well respected archaeolo-
gists do not necessarily agree with each other;
their interpretations depend, of course, on
their personal definitions of modern behav-
avour. I first describe a popular archaeological
view of how to recognize cultural modernity,
then I present my own perspective.

No Neanderthals have been discovered in
Africa and technological and Middle
Stone Age (MSA) cultural changes here
were not caused by the kind of population
replacement apparent in Europe. In this
respect Africa’s cultural evolution is quite
different from that in Europe. In Africa
(and also in the Near East) anatomical
modernity appears to antedate beha-
vioural modernity.1 Since anatomically
modern humans emerged first in Africa,
there is a good chance that the earliest
archaeological evidence for fully modern
behaviour might also occur here,2 although
we do not yet know to what extent cultural
development was homogeneous across
the vast continent of Africa.

Several archaeologists suggest a ‘shop-
ping list’ of items or behaviours that can
be attributed to cultural modernity, for
example the production of stone blades and
backed blades, bone tools, true hunt-
ing and art. I begin by examining the first
four items on this list.

Blade and backed blade production
began earlier in Africa than in Europe.
Blade production in Europe started in the
Upper Palaeolithic, after about 40 000 BP
and backed tools appeared in the Gravet-
tian Industry between about 27 000 and
21 000 BP.2 Backed tools made on blades
emerged much earlier in central Africa, at
about 300 000 yearsBP, but they did not become
common or standardized until the
Howiesons Poort phase of the MSA in
South Africa. The Howiesons Poort phase,
which is dated to between about 80 000
and 60 000 years ago,24 is both preceded
and replaced by MSA industries that are
very similar to each other. The presence of
the Howiesons Poort Industry has been
used by some archaeologists to argue for
early cultural modernity in Africa.25 Yet, if
this technology was an important marker
of modernity, it seems odd that it should
last for so long and then be replaced by
‘pre-modern’ methods. Thus the intro-
duction of backed blade technology does
not seem to be a reliable indicator of
modern behaviour.
and symbolism. Artefacts are not automatically imbued with symbolism; this happens only when they become important within human social life. Stone spearheads or bone points plainly become symbolic when they are metaphors for an aspect of social behaviour or when they begin to define individual or group identity. Arrows and spears are male sexual metaphors among some San groups and different arrow styles distinguish individual and group identities. However, it cannot be assumed that hunter-gatherers living hundreds (or even tens) of thousands of years apart had similar metaphors or means of individual or group identity.

Symbolically organized behaviour marks modern culture and individual cultures are distinguished by the variability of their symbolism. I use Terrence Deacon's definition of symbolism. Deacon points out that symbols are higher-order concepts than icons or indexes and that symbols point arbitrarily to their referents. Modern behaviour is, then, about social organization and relationships that are expressed and transmitted through symbolism. Such behaviour may be recognized in archaeological sites through material culture that has been symbolically manipulated. A modern example of how material culture can be exploited derives from the sports-shoe industry, where styles and models rapidly change because the shoes are not only functional, but are also status symbols. I discuss the issue of style in archaeologically recovered material culture later.

According to Donald, symbolic storage external to the brain is the final stage of symbolic evolution and when it takes place, material culture, for example sports shoes, mediates social behaviour. Material culture such as jewellery is demonstratively symbolic even in Stone Age contexts because it defines individual or group identity. In southern Africa the earliest presence of jewellery may be at Boomplaas Cave, where a complete and an unfinished ostrich eggshell bead were found in the OLP member (containing an MSA Industry) dated to about 42 000 years ago; Deacon comments, however, that the beads require independent dating. A perforated conus shellash from a layer believed to be of LSA origin at Border Cave was AMS dated to 33 570 ± 120 years ago. At White Paintings Shelter, Robbins found eggshell beads dating to 26 460 ± 300 years ago (AA 31279) and an eggshell disc dated to 31 880 ± 510 years ago (AA31280). Earlier dates between 37 000 and 40 000 years ago are claimed for eggshell beads further north, at Enkapune ya Muto, in Kenya. Ambrose believes that these beads are part of an early LSA tradition. Of course, the dates cited here for the African jewellery are similar to those for the European Upper Palaeolithic and jewellery does not, therefore, provide us with evidence for symbolism appearing in Africa earlier than in Europe.

Deacon suggests that art is the first concrete evidence for the storage of symbolic information outside of the human brain. Archaeologists appear to agree that art should also signify culturally modern behaviour, but the definition of art provides a stumbling block and not all archaeologists label engraved or painted artefacts in the same way. The issue of art and its origins is highly complex and archaeologists should be wary of reading too much into the implications of the absence of art, because not all hunter-gatherers produce art today and no one would think to claim that these people are not culturally modern. A definition of what constitutes art is as difficult as the definition of culturally modern behaviour and I shall not engage the debate about art here. However, I need to make it quite clear that implicit to the concept of art used in this article is a symbolic content. Having said this, the only incontestable example of early symbolic art in Africa comes from the site of Apollo 11 in Namibia, where painted slabs from the final MSA are said to date to about 27 000 years ago. What is especially important about the Apollo 11 paintings is that they are not merely representational; one is an anthropomorphic image of a feline with human legs. This expression of fantasy is clear proof of symbolic thought and it is easiest to recognize symbolism in this type of art.

At Blombos Cave, two ochre tablets engraved with cross-hatching were recovered from a layer dated 77 000 years ago. While the engraved tablets are frequently cited as art, and therefore as early evidence for symbolic thought, this interpretation is not as secure as that of the Apollo II paintings. The crosshatched pattern on the tablets might once have embodied symbolic thought, but if we are totally dispassionate in our interpretation we have to accept that the engravings could simply be patterns with no incontrovertible meaning. Nonetheless, the engravings are extraordinary and, even if they are interpreted as pattern rather than art, they are rare, they are earlier than any other engravings and they represent a new type of behaviour that occurs earlier in Africa than elsewhere in the world. Even if the ochre tablets are not symbolic, they appear to be an early precursor to symbolic actions. If the engraving had been sequentially executed, the tablets could have been considered algorithms (devices for solving problems, like an abacus or calendar: F. Coolidge and T. Wynn, pers. comm.), but the engraving seems not to have been sequential. Algorithms rely on enhanced working memory and they are interpreted as reliable indicators of modern thinking (Coolidge and Wynn, in prep.).

There are two ways in which archaeologists view early, rare items that, like the Blombos ochre tablets, have some potential for symbolic content. The first way has been suggested by Mellars. He argues that uncommon artefacts should not have symbolic meaning ascribed to them because they cannot incorporate widely shared cultural values. The second way of viewing the data is to claim that even a single early expression of ornamentation implies sophisticated cognition that perhaps is not recognizable archaeologically. This second contention can be used to account for the rather limited African data set and the variable preservation at archaeological sites across the continent. With the second approach we might cautiously suggest that symbolism may have been present in Africa at 77 000 B.P., but it is my belief that this interpretation should not yet be carved in stone.

Linked to the production of artwork is the use of colouring material such as ochre, and occasionally ochre was ground into crayons. Some archaeologists believe that the mere presence of ochre crayons is evidence for ritual and therefore modern symbolism, but in the absence of indisputable artworks this is problematic because pigment has many well-known secular functions. Ochre has medicinal qualities: it arrests haemorrhages and has antiseptic and deodorizing properties. Although ochre is not a requirement, it is effectively used in the preparation of hides: experimental work in France has shown that red ochre is a superior tanning agent that softens leather and prevents and even arrests and reverses bacterial action. At Sibudu Cave, residue analysis has shown that ochre may have been put to another use. A high proportion of proximal and medial sections of retouched MSA stone tools were impregnated with pigment, and this suggests that the pigment was included in the mastic (the Stone Age equivalent of 'Super Glue') for hafting tools. This interpretation is supported by French hafting experiments.
which show that ochre can be an important emulsifier in the mastic recipe. The ochre mixed into the mastic is invariably red because the mastic must be heated to make it malleable and the process of heating transforms even yellow ochre into shades of red. Since ochre has several potential uses, it would seem unwise to assume ritual use from its mere presence in archaeological sites.

Art and personal ornaments are the most obvious examples of symbolic storage in the Stone Age context, but style in stone tools and a social use of space could also qualify, although these two storage types are rather different from art. Wynn's definition of style is used here: it is repeated patterning that is geographically and chronologically restricted. Style becomes infused in material culture that is socially important. As such, style acts as an index of social identity; it is symbolic and suggests modern behaviour.

A social use of space is also culturally modern behaviour, providing that the patterning is more complex than a separation of sleeping and living areas from rubbish dumps. Peoples' use of space can be a good indicator of their relationships with others; modern formal dinner party seating arrangements illustrate this well. Private and public space can be controlled in order to create culturally specific messages. Among hunter-gatherers, space can symbolize social groups defined by kinship, gender, age or skill.

Thus both artefact style and a manipulation of space for social ends are symbolic.

I shall now briefly explore selected evidence for the use of space and style, drawing particularly from Rose Cottage Cave in the eastern Free State, South Africa. It is a large cave that was repeatedly occupied in the MSA and LSA. Sediment formation and site formation processes at Rose Cottage seem to have been predominantly anthropogenic.

In layer Dc containing MSA tools and dated approximately 30 000 years ago, 20 fireplaces and several ash smears were found close together, giving the layer a messy appearance. More than 25 500 stone tools were dispersed across the floor in the area of the excavation, with no discernible activity clusters. Similar unstructured spatial patterning was also recorded at a few other South African sites, but differing organic preservation at the sites means that there is some variability in what has been retrieved. On the approximately 121 000-year-old MSA occupation floor of the open site of Florisbad in the Free State there are scattered remains of stone-working and animal butchery, although recent work suggests that a carcass processing area may also be identifiable. In the Eastern Cape at Klases River Shelter 1B and Shelter 1C, shellfish remains were dumped away from the living areas. At Strathalan B, Eastern Cape, where the final MSA is dated between 22 000 and 29 000 years ago, tools and food waste are scattered in grassy patches that probably represent bedding areas. In Zambia, at Mumbwa, there is evidence for a more sophisticated use of space in the form of stone-lined hearths and post-holes that imply the erection of windbreaks.

LSA spatial patterns are different from the MSA ones at Rose Cottage; there appear to be activity areas that include grinding, the processing or use of colouring material, the use of backed tools and the processing of bone. Sometimes these activities cluster around their own fireplaces.

I now look at style in MSA tools. Active style in Rose Cottage Cave MSA stone tools may have first appeared at about 30 000 years ago in layer Dc. The tools in question are standardized, microlithic, white retouched or backed points of a type not present anywhere else in the cave or, to my knowledge, in South Africa. These disappeared by 29 000 years ago; by Stone Age standards this is volatile stylistic replacement. The concept of volatility is, of course, relative — a thousand years of style is volatile in MSA terms but the same period would be considered stasis in our own society. At Sibudu Cave, style may be represented earlier at about 42 000 years ago when hollow-based points appear. These tools were also found in the final MSA layers of Umhlatuzana Cave, which is about 100 km away from Sibudu, but hollow-based points have not been found elsewhere.

Conclusions

I take the stand that material culture cannot, per se, stand for behaviour; material culture signals cultural modernity only when it is used to intervene in social relationships, and when it can be linked without ambiguity to symbolic meaning. This does not mean that people did not display earlier expressions of symbolic thought, but we cannot hope to recognize symbolism that was locked inside people's heads and was expressed verbally. The only incontrovertible evidence for culturally modern behaviour, from the archaeologist's perspective, is when symbolism is stored outside the human brain. I therefore argue that artwork, jewellery, artefact style and formal spatial patterning must fulfil this role for archaeologists.

Style, archaeologically recognized in jewellery and in stone tools, may have acted as an index of social identity. Stone tool style is form that is culturally determined after the constraints such as those imposed by a particular rock type have been accounted for. As mentioned earlier, archaeologists can recognize style when regionally distinct tool forms that show standardization appear and disappear rapidly, so that there is time-restricted patterning to the stone tool industries.

In addition to style, culturally modern people use space to mark their relationships. A modern use of space is recognizable through structured hunter-gatherer campsite layout. Activity areas might be dedicated to groups that are defined by kinship, gender, age or skill. Both the use of style in artefacts and the employment of space in a campsite requires communication of 'cultural theory', a modern behavioural trait.

Although symbolic behaviour may well have been adopted rapidly when cognitive and social conditions became ripe for this change, it seems that the three elements of symbolic storage described here did not arrive simultaneously as a 'package'. Style in the form of morphologically distinct stone tool technology and personal ornamentation are the first visible elements of symbolic storage in the final stages of the MSA (and in the early stages of the LSA at some sites), at approximately 40 000 years ago. Based on presently available archaeological evidence, it seems that it was only tens of thousands of years later that the use of style and other forms of symbolism became more varied and more complex. For example, art that is incontrovertibly symbolic seems to have appeared at about 27 000 years ago at Apollo 11. The engraved ochre at Blombos may be symbolic, and may push the frontiers of symbolic behaviour back to about 77 000 years; but we should be circumspect about making this assumption because the content of the engraving is not as convincingly symbolic as the content of the Apollo 11 art. A formal use of space with clearly segregated work areas appeared even later than the Apollo 11 art. It is apparent that innovation does not neatly coincide with the onset of the LSA, a point that has been made elsewhere.

McBrearty and Brooks justifiably claim that events point to 'The revolution that wasn't' because innovations considered characteristic of modern behaviour do not appear concurrently. However, while
I agree with the process of innovation advocated by McBrearty and Brooks, I prefer to be more cautious in my interpretation of the timing. My circumstantial approach is founded on my definition of what constitutes modern behaviour and this definition differs from the one used by McBrearty and Brooks. I insist that it is only when material culture begins to participate in social behaviour that it takes on a symbolic role. Perhaps this participation does antedate 40 000 BP, but I argue that it cannot yet be unequivocally recognized in the archaeological record until 40 000 BP, when out-of-brain symbolic storage can be clearly identified. Further evidence and better archaeological theory is needed for the secure recognition of very early culturally modern behaviour in Africa. I shall be the first to rejoice if Africa can indeed be shown to have the earliest symbolic behaviour; a continent that is unquestionably the Cradle of Humankind is worthy of this additional title.

I thank Fred Coolidge and Thomas Wynn for allowing me to quote from an unpublished manuscript. I also thank two anonymous reviewers for suggestions that have improved this paper. I remain responsible for the interpretations expressed here.

17. Ref. 6, p. 478.
31. Ref. 45, p. 211.
46. Percy Byshe Shelley
47. It is well known that the most useful discoveries that have been made in every branch of art and manufactures have not been made by speculative philosophers in their closets, but by ingenious mechanics, conversant in the practises in use in their time, and practically acquainted with the subject-matter of their discourses.
48. Richard Arkwright,
49. Inventor of the spinning frame
50. I love a smith’s shop and anything related to smithery. My father was a smith.
51. Nothing beside remains. Round the decay Of that colossal wreck, boundless and bare. The lone and level sands stretch far away.