



AFRICAN HERITAGE RESEARCH INSTITUTE

Affiliated to the Universities of Bergen & Oslo, Norway and the Institute for
Human Evolution, University of the Witwatersrand

Report on the 2005 archaeological excavations at Blombos Cave, southern Cape, South Africa and an update on current research with regard to the Blombos site and materials.

Report compiled for Heritage Western Cape by:

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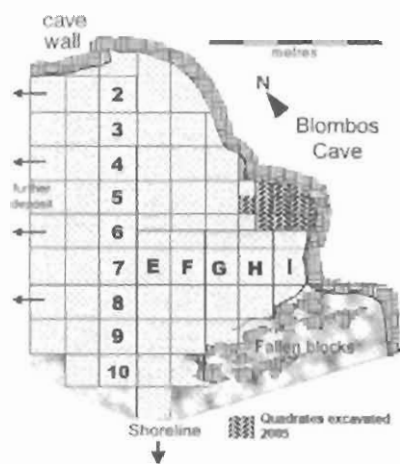


Figure 1. Blombos Cave floor plan: Quadrates excavated in 2005

The following quadrates and MSA units were excavated at Blombos in May, 2005

Unit	Quadrate
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DUN	I6b
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M1 Phase

CA	I5d, I6b
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CB	I5d, I6b
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CC	I6b, I5d
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CDh1	I5d, I6b
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CDh2	I5d, I6b
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M2 Phase

CFB/CFC	I5d, I6b
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CFD	I5a, I6a, I5d
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CG	I5d, I6b
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LSA has infiltrated the MSA levels. In I6b the soil is more compact and darker in the western part and up to approximately 10 cm from the edge. This suggests that the material here is *in situ*. The burrow is visible here becoming larger and deeper. CB contains many large mammal bones and tortoise. Shellfish are not well preserved. One quartz bifacial rough out recovered in I6b. Roofspall blocks present throughout these quadrats.

Unit CC (Quadrates I5d and I6b)

This unit contains loose sandy sediment. A burrow has resulted in deposit from CA, CB and CC being mixed. A dark coloured hearth recorded in I6b. A lot of tortoise and large mammal bone recorded, as well as one quartzite bifacial point (in I6b).

Unit CD/CDh1 (Quadrates I5d and I6b)

CDh1 contains medium to dark brown loose soil, with a lot of burnt and broken shell. The deposit in I6b slopes up towards the south. The matrix in the east is loose and fairly sterile. The matrix is more compacted than in the unit above CC and most of the material is *in situ*. In I5d there is deposit in the western section but in the east there is a 10 cm wide hole (very little deposit material) and the rest of the quadrat is cave wall. CD does not seem to extend into the I5d and I6b quadrates.

Unit CD FILL (Only in Quadrate I6b)

Loose khaki sand in eastern part of square against the cave wall. This material was removed separately as it was different to the material in the west ie CD/CDh1, which is clearly *in situ*. This unit contains bone and tortoise.

Unit CDh2 (Quadrates I5d and I6b)

In I5d the deposits are dense, hearthy and shelly and are *in situ*. The soil is firm, dark and ashy in some parts, and far more consolidated than the CDh1. In I6b the sand is loose and khaki coloured, particularly in the east, and CDh2 slopes strongly down towards the north. Two bifacial points and two bifacial rough-outs

This unit is a sticky, dark brown compact soil that is almost sterile. There is some comminuted shell that derives from the layer above. In I5a the unit is lighter in colour and is less compacted. Very small amounts of shell and bone in I5a.

Unit CGAA (Quadrates I5c, I6a, H5b, H5d, H6b)

The unit has a very compact and sticky soil, with a medium to light brown colour which gets darker and more humic further down. It appears to be a sterile unit, with small quantities of shell and bone. Dissolved roofspall pieces are common. In H6b the material in the North Western corner below this unit is probably what was taken as CGAB previously. It can be seen in the section that the dark hearth, CGAC, runs out in this corner.

Unit CGAC (Quadrates I5c, I6a, H5b, H5d, H6b)

The unit is a dense, black-grey, moist and ashy unit. It is part of a very large burnt unit that can be seen along the north section of row 6 ab/cd. The burnt material might be the remnants of a large bushfire at the cave entrance that set alight shrubs or a tree. The ash is very distinctive in its dark grey ashy colour and is difficult to remove as it is compacted. There is a small amount of burnt fauna but essentially CGAC is a sterile unit.

In H6b a burrow was removed separately as CGAC BURROW. This contains only loose light coloured sand. The base of the burrow is dark in patches (CGAC), but also light in places (might be CH/CI). H6b also contains a large amount of lithics, many of them burnt.

Unit CH/CI (Quadrates I5d, I5c, I6b, I5a, H5b, H5d, I6a, H6b)

This unit is a dense, fairly compact, light coloured shell midden. In H5d it is particularly compact. In the south western corner of H6b a dense hearth contains a lot of broken/burnt shellfish and a large amount of lithics. CH/CI is defined by its high density of shellfish, bone and lithic material. Silcrete seems to be the preferred raw material. I5a contained two ochre grinders (upper) and one lower, all with evidence of ochre grinding.

Unit CH/CI FILL (Quadrates I5c and I6a)

were obtained from single-grain measurements that enabled unrepresentative grains to be rejected. The MSA occupation levels have ages that, within error limits, are in stratigraphic order and fall between the OSL age for the oldest dune sand (143.2 ± 5.5 ka) and a previously published OSL age for the sterile sand (c. 70 ka) that separates the Middle and Later Stone Age deposits. The earliest MSA archaeological phase, M3, from where fragments of ochre were found as well as human teeth, is dated to 98.9 ± 4.5 ka, coinciding

with the sea-level high of oxygen isotope substage 5c. The cave then appears to be unoccupied until oxygen isotope substage 5a on the basis of four OSL ages for archaeological phase M2, ranging from 84.6 ± 5.8 to 76.8 ± 3.1 ka; these levels contained large hearths and bone tools. An age of 72.7 ± 3.1 ka was obtained for the final MSA archaeological phase, M1. In the paper Jacobs et al (2006) suggest that the periods of occupation at Blombos Cave were determined by changes in sea level, with abundant sources of seafood available in times of high sea level and with the cave being closed by the accumulation of large dunes during periods of low sea level, such as during oxygen isotope stages 4 and 6.

Lithics

The lithics recovered during the 2005 season are included in the research on the Blombos lithics currently being undertaken by Drs. Villa & Soressi and Ms. Lombard (see reports below).

Bifacial points are the most common retouched tools in the M1 phase, some are broken and a few bifacial rough-outs were recovered (Fig.2). Other formal tools include end and side scrapers and MRP's. Hammerstones, cores, flakes and chunks were recovered. Quartzite is the most common raw material in M1 with similar quantities of silcrete and quartz (Fig. 3). Lithics are less common in M2 compared to M1 (Fig.1). Silcrete and quartz are marginally more common than quartzite. No retouched or bifacially worked pieces were recovered from the M2 phase during this excavation. A small amount of ochre was recovered from M1 and M2.

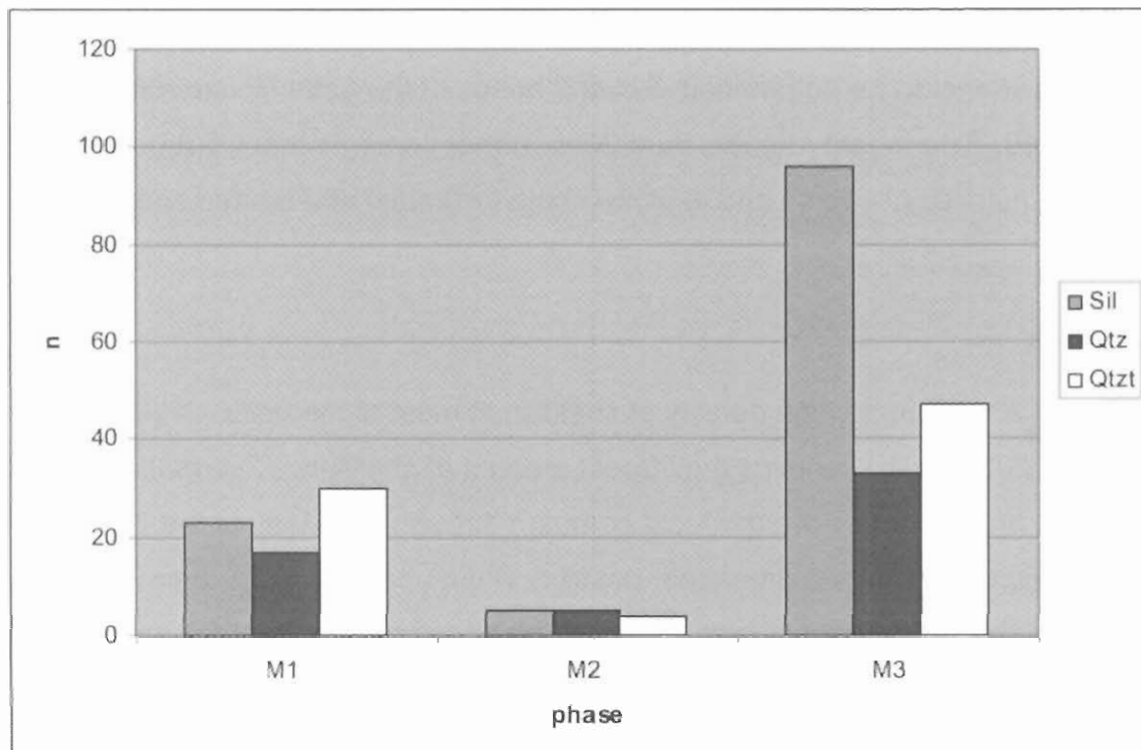


Fig. 3. Raw materials by phase from the 2005 excavations

Fauna

Mammals/Reptiles

The recovered fauna has been sorted but analysed to genus/species. The fauna excavated in 2005 forms part of the current study of the Blombos fauna by J. Thompson (Arizona State University – see report below). Apart from small bone fragments all bone was plotted and individually bagged during excavation.

A single hippopotamus (*H. amphibius*) tooth shows no signs of utilization, but is slightly burnt at one end. Large shaft fragments provide evidence of utilization of large bovids, such as eland (*T. oryx*) and possibly bushbuck (*T. scriptus*). .

Mandibles and shaft fragments of small bovids are present, including grysbok (*R. campestris*). Juvenile bovid juveniles are abundant. Small mammals like Cape dune mole rat (*B. suillus*) and rock hyrax (*P. capensis*) are present. Tortoise (*C. angulata*) is common in most of the units. A single seal tooth as well as seal bones were recovered. In CH/CI2 the spine of a cat fish (*G. feliceps*), found in two pieces, was recovered. Fish bones were present in some units but the

PART 2. UPDATE ON CURRENT RESEARCH

A. Recent Publications

Peer-reviewed Journals & Books related to Blombos: 2004 -2006

In press

Henshilwood, C.S. (In press). Symbols, Spirituality & Shamans? Exploring Middle Stone Age Material Culture from Blombos Cave, South Africa. Templeton Foundation Conference, Les Eyzies, France, Cambridge, Cambridge University Press.

Published

Henshilwood, C.S. 2006. Modern humans and symbolic behaviour: Evidence from Blombos Cave, South Africa. In *Origins* (ed. G. Blundell). Cape Town: Double Storey: 78-83

d'Errico, F. & Henshilwood, C.S. 2006. Additional evidence for bone technology in the southern African Middle Stone Age. *Journal of Human Evolution* doi:10.1016/j.jhevol.2006.08.003.

Tribolo, C., Mercier, N., Selo, M., Joron, J-L., Reyss, J-L., Henshilwood, C., Sealy, J. & Yates, R. 2006. TL dating of burnt lithics from Blombos Cave (South Africa): Further evidence for the antiquity of modern human behaviour. *Archaeometry* 48 (2): 341–357.

Jacobs, Z. Duller, G.A.T. Henshilwood, C.S. Wintle, A.G. 2006. Extending the chronology of deposits at Blombos Cave, South Africa, back to 140 ka using optical dating of single and multiple grains of quartz. *Journal of Human Evolution* 51: 255-273.

Henshilwood, C. S. & Marean, C. W. 2006. Remodelling the origins of modern human behaviour. In : *The Prehistory of Africa: Tracing the lineage of modern man* (ed. H. Soodyall). Johannesburg: Jonathan Ball Publishers: 31-46.

Henshilwood, C. S. 2006. Stratigraphic integrity of the Middle Stone Age levels at Blombos Cave. In *From Tools to Symbols. From Early Hominids to Modern*

Conference organized by the Eastern African Archaeological Society and the Smithsonian Institute, Nairobi & Addis Ababa, July, 2005.

Henshilwood, C.S. & D'Errico, F. 2004. Being modern in the Middle Stone Age: Individuals & Innovation. British Academy Centenary Project. Lucy to Language: The archaeology of the social brain. Conversazione, 7-9th July, Chester University College, Chester.

Henshilwood, C.S. 2004. Symbols, spirituality & shamans: Exploring Middle Stone Age material culture from Blombos Cave, South Africa. Innovations in Material and Spiritual Cultures: Exploring the conjectured links. 14 – 16th May. Symposium organised by the John Templeton Foundation, Les Eyzies, France.

Henshilwood, C.S. 2004. The African evidence for the origins of modern humans. Invited address to the National Science Museum, Tokyo, Japan, March, 2004.

B. MASTERS THESES RELATING TO BLOMBOS

Completed Masters Theses

University of Bergen, Norway

1. **Karen van Niekerk.** The Archaeology of Fishing: Establishing a Comparative Collection and Subsequent Analysis of Marine Fish Bone from Holocene levels at Blombos Cave, South Africa. (copy of thesis enclosed on CD)
2. **Rune Fredriksen.** The Later Stone Age-pigments from the Byneskranskop 1 Cave, South Africa. (copy of thesis sent to HWC)
3. **Turid Hillestad.** Reconstructing the palaeoenvironment from the Middle Stone Age at Blombos Cave, South Africa using stable carbon isotopes and faunal analysis. (copy of thesis sent to HWC)

(perforated and un-perforated). The total amount of ostrich eggshell beads recovered from the Blombos Cave LSA levels is 290. In addition to this, there is also a small amount of pendants made of other seashell types and two pieces of string from Blombos Cave. The sorting also yielded a few "new" findings of ostrich eggshell beads from the other GSF sites.

The material is currently being organized and each ornament will be given an individual number and its information will be stored in a Microsoft Access database. Every shell and ostrich eggshell bead will be registered in this database with a description of which unit and section it was recovered from, weight and measures, and a description of wear-traces, perforation types and other modifications done to the shell, after being studied under a microscope.

A copy of all the records will be deposited at Iziko and AHRI.

2. Heidi Strandman: University of Oslo

Determining differences in the use of open-air sites and enclosed sites: a case study from Garcia State Forest, South Africa

Report: Material to be analyzed: Lithic material from the LSA levels in Blombos Cave.

The lithics from the LSA levels in BBC make up 2 boxes from the 1992 excavation, 1 box from 1997, 3 boxes from 1998 and 2 boxes from 1999. The boxes from 1992 and 1997 had already been catalogued, but the boxes from 1998 and 1999 were not.

I have sorted through the material from 1998, washed it and labelled each piece with an individual number. Material which had traces of ochre, charcoal or other substances has not been washed. I have created a Microsoft Access database which corresponds to the number on the pieces. In the database each piece is described according to layer, unit, square, raw material, type, burning, platform, breakage category etc. The number on the piece does not contain information of the layer or unit as this information is provided in the database. Most of the pieces are too small for this information to be written on the piece itself.

Report – Thesis has been submitted to the University of Oslo. Copies will be made available once the thesis has been graded to AHRI, Iziko & HWC

C. CURRENT RESEARCH PROGRAMMES

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1. Marlize Lombard, Assistant Director Human Sciences, Natal Museum

Progress report on Blombos use-trace research

During the month of September 2006 I conducted a macrofracture analysis on selected stone tools from the Blombos Middle Stone Age (MSA) assemblage in order to investigate possible differences in hunting strategies between the identified MSA archaeological phases at the site. A full report and results has been submitted to AHRI and Dr. Sarah Wurz of the IZIKO Museums, Cape Town, during October 2006.

I have also submitted an article for peer review at the South African Archaeological Bulletin titled "Evidence for change in Middle Stone Age hunting behaviour at Blombos Cave: results of a macrofracture analysis". This paper has been accepted for publication in the July 2007 Volume of the journal, and is included in my PhD thesis (Archaeological use-trace analyses of stone tools from South Africa) that has been submitted to the Faculty of Science at the University of the Witwatersrand in December 2006. A copy of the draft manuscript of the paper is available on request, and a PDF file will be forwarded to AHRI as soon as it becomes available.

During 2007 I plan to conduct a feasibility study for micro-residue analysis on a small sample of the Still Bay tools from Blombos. Should there be adequate

6) All larger mammal fragments, including hares, dune mole rats, and dassies (anything not considered microfauna) have been provided with a separate specimen number. Where fragments are large enough to accommodate a label, the number has been written neatly with a technical pen directly on the bone surface. The number includes the lot number so that if any piece is ever separated from its bag it has the provenience information written directly on it in shorthand.

7) All larger mammal fragments have been sorted by skeletal element and placed in separate bags.

8) All fresh (excavation) breaks have been repaired and where bones are very fragile they have been further cushioned using cotton.

The 2000, 2002 and 2004 faunal assemblages have then been subjected to study using the following methods:

1) Each analyzed fragment has been identified to the highest possible degree to skeletal element, body size, and basic taxon (non-ID mammal, seal, bovid, equid, carnivore, etc.).

2) Each analyzed fragment has been placed under a 10 – 40x binocular zoom light microscope and examined for evidence of human, carnivore, raptor, and rodent surface damage.

3) Each analyzed fragment has received a separate entry into an Access database that details attributes of its fossilization level, color, breakage, burning, weathering stage, surface modification, surface preservation, and taxonomic information.

4) All long bone fragments identifiable to element have been drawn into an image-analysis GIS program, and all cut and percussion marks identified under the microscope have been drawn onto the virtual fragment to show their positioning relative to one another and to anatomical landmarks on the bone.

presented at the 12th Congress of the Pan African Association for Archaeology and Related Disciplines, Gaborone, Botswana.

Papers and publications in preparation that employ data from this study:

Thompson, J.C. (2007). "Zooarchaeological tests for modern human behavior at Blombos Cave and Pinnacle Point Cave 13B, Southwestern Cape, South Africa." Dissertation to be submitted for the degree of Ph.D. in Anthropology from the School of Human Evolution and Social Change, Arizona State University.

Thompson, J.C. (2007). "Contrasting faunal exploitation strategies at two Middle Stone Age sites, Western Cape, South Africa". Paper to be given at the 72nd Annual Society for American Archaeology conference, Austin, Texas.

Thompson, J.C. (in preparation). "Long bone portion survivability and estimates of the Minimum Number of Elements (MNE): a comparison of results from carnivore and human faunal accumulations" (for submission to the Journal of Taphonomy)

3. Marie Soressi, Max Planck Institute, Leipzig.

Report on research : Project title: Symbolism and the pace of early behavioural modernity development in South-Africa, 75,000 years ago

My research objective was to add **new insights into the pace of development of behavioral modernity and its connection with the appearance of symbolism** by analyzing Middle Stone Age lithic production at Blombos (Western Cape Province, South-Africa). To help to determine the tightness of the connection between behavioral modernity and the appearance of symbolism, my research focused on assessing the "modernity" of another aspect of tool production by Blombos inhabitants: its lithic industry.

Field work had been done at Iziko: South Africa Museum in Cape Town, South Africa, from late January 2003 to late July 2003.

There is an apparent correlation between the scheduling of knapping activities and symbolic behaviors as attested by engraved ochre during the Still Bay stage. This favors:

- *a sudden development of behavioral modernity, once symbolic behavior as engraving is attested,*
- *a link, in South-Africa, between full behavioral modernity and anatomically modern Humans.*

Units	Core s	Bifacial points	Flakes>3 cm	Flakes 2-3 cm	Debris (<2 cm) number deduced from weight	Total
CA (Phase 1)	2	64	170	988	~3920	
CB (Phase 1)	2	52	133	602	~2430	
CC (Phase 1)	6	44	133	366	~1300	
CD (Phase 1)	5	37	141	594	~1660	
CE (Phase 2)	15	1	2	33	Indet.	
CF (Phase 2)	13	3	137	336	~940	
CG (Phase 2)	18	0	75	193	~520	
CH (Phase 2)	93	0	111	258	~700	
CI (Phase 3)	21	0	891	3289	10450	
CJ (Phase 3)	3	0	Indet.	Indet.	Indet.	
CK (Phase 3)	1	0	Indet.	Indet.	Indet.	
Mixed layers	0	2	8	33	Indet.	
Total of classified, labeled & studied artifacts from						
Blombos	179	203	1801	6692	~21920	~30795

Figure 1. Count of analyzed artifacts

provenience. In addition to measurements such as L,B, Th and height of maximum width, the main attributes she coded are: raw material, stage of abandonment (if the point is finished, almost finished, irregular, broken during manufacture, retouched after break), kind and position of fracture, shape of the base and of the point.

My work was done to enlarge Marie Soressi's data base and to record morphometric attributes that are currently used to study prehistoric weapon technology, such as tip thickness and width at fixed positions (at 1,2 and 3 cm from the apex), to calculate the tip penetrating angle and the tip angle in profile, the tip-cross-sectional area, and fracture morphologies. All measurements were taken with a digital caliper.

All new pieces and pieces not previously numbered (a total of 200 pieces) have been bagged in individual ziplock bags with pre-printed labels providing square and layer provenience, assigned catalogue numbers and type.

Impact scar were recorded and photographed using a stereomicroscope (Leica A16APO) and a JVC digital camera, courtesy of researchers at the Iziko Museum. About 100 macrophotos were done with a Nikon Coolpix 5700, using a photo stand also provided by the Iziko Museum

The Excel data base now contains 309 pieces, that is:

- 64 complete or almost complete points
- and 244 broken points, including 77 small tip fragments and a small number of retouch flakes from the tip, done for modifying or recycling the point.

Silcrete is the most common raw material (72.8 %) followed by quartzite (16.8 %) and quartz (10,3 %).

Almost all points are from the M1 phase of Blombos, but 6 comes from layer CF of the underlying M2 phase.

Outreach activities