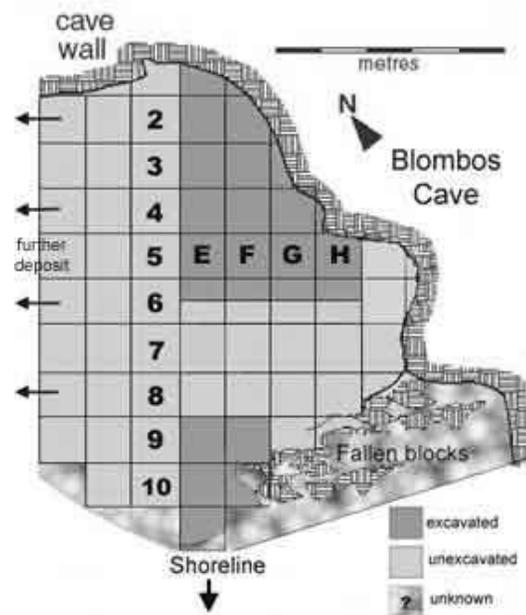


## *Blombos Cave, South Africa*

*Report by Christopher Henshilwood for the Hessequa Society for Archaeology*

Blombos Cave (BBC), situated near Still Bay in the southern Cape (34025°S, 21013°E), is some 100 m from the coast and 35 m above sea level. Professor Christopher Henshilwood, University of Bergen, Norway and the University of the Witwatersrand, South Africa discovered the site in 1991. Initial excavations were by him and Cedric Poggenpoel and later with a team of excavators. Under Henshilwood's direction the cave has been excavated from 1997 - 2009. Further excavations are planned for the future. The interior of the cave contains 55 sq. m of visible deposit with an estimated depth of ~ 4 -5 m at the front and ~ 3 m toward the rear. When excavations at BBC commenced in 1992 the cave entrance was almost totally sealed by dune sand, also, c. 20 cm of undisturbed aeolian sand overlay the surface of the Later Stone Age indicating no disturbance of the cave's contents since the final Later Stone Age (LSA) occupation c. 290 years ago.

The LSA deposits are less than 2 000 years old, not as deep as the Middle Stone Age (MSA), and are more massively bedded and undistorted. In addition, burned layers tend to be thicker and several appear to preserve their original hearth-like structures. In the MSA levels the matrix is composed mainly of aeolian, marine-derived dune sand, blown in through the cave entrance and is intercalated with marine shell, decomposed humic materials and limestone, and wind-borne halites. Ground waters rich in calcium carbonate (CaCO<sub>3</sub>) percolate through the cave roof and walls creating an environment suited to the preservation of bone and shell, particularly near hearths and ash deposits. Carbonised partings represent occupation horizons and separate major units. The MSA deposits undulate considerably from the back to front of the cave due to subsidence that produces a 'wrapping effect' over the rock falls and occasional slump faults into gaps between rocks.



*Prof. Henshilwood at Blombos Cave*

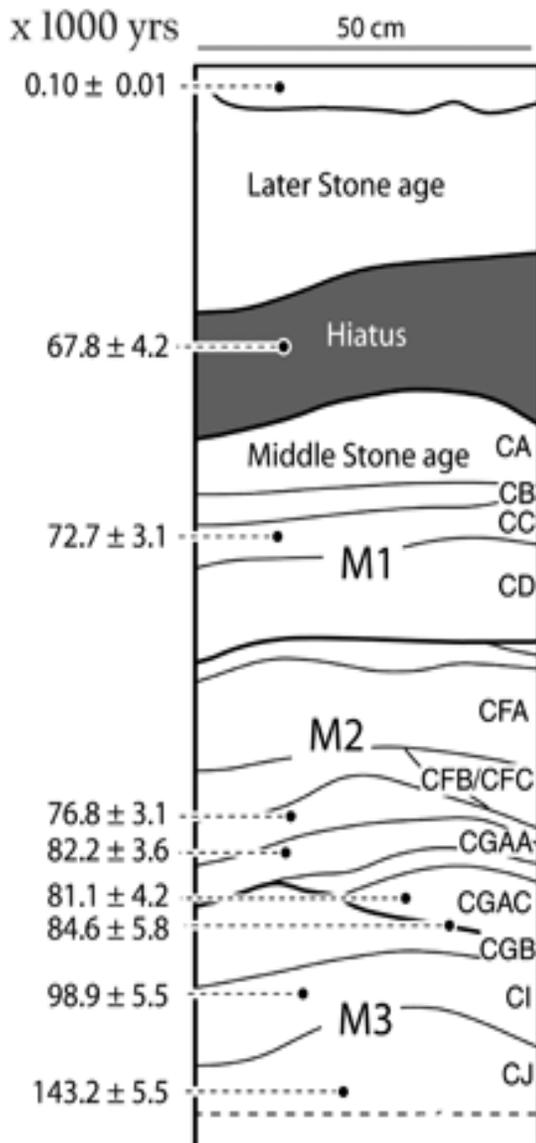


*MSA phases*

Sterile yellow dune sand c. 5–50 cm thick named BBC Hiatus blew into the unoccupied cave during lowered sea levels at c. 70 ka. Shortly afterwards the cave entrance was blocked by a dune over 40 metres high. It is likely that the cave only reopened after the mid-Holocene when higher sea levels eroded the base of this dune 30 metres below the cave causing the dune at the entrance to subside. Fossilised stalactites that had formed atop this dune when the cave entrance was closed are visible on the cliff face about 5 metres above the cave entrance. Relic dune sections that date to this event are evident below and to the east of the cave and date to the same time period as the Hiatus phase in the cave. BBC Hiatus separates the LSA and MSA across more than 95 per cent of the excavated area and provides visible evidence that the LSA occupation did not disturb the underlying MSA deposits .

The five uppermost layers below BBC Hiatus are assigned to the M1 phase. Small basin-shaped ash and carbon hearths are common in this phase. Carbonised sand and organic ‘partings’, a few millimetres thick, act as visual markers for the separation of discrete occupation layers. M1 phase lithics are typified by Still Bay type bifacial foliate points, the *fossile directeurs* of the Still Bay Industry, and end and side scrapers.

Four levels typified by carbonised deposits, large hearths and shellfish comprise the M2 phase. Bifacials were recovered in the M2 phase. Shaped bone tools, possibly used as awls and projectile points, came mainly from the CFA/CFB layers in M2, but also from the M1 phase. Dominant in the upper M3 phase, with an age of 100 ka, are shellfish deposits and a high density of ochre pieces; the lithic assemblage has yet to be analysed but a preliminary study indicates it does not conform to the typical MSA I or MSA II pattern observed at Klasies River.



Ages and levels at Blombos Cave

## Dating

### Dr Zenobia Jacobs at BBC

The Still Bay levels at Blombos Cave have been dated using a number of methods (Jacobs et al 2006; Tribolo et al 2006). An hiatus level composed of undisturbed aeolian sand above the M1 phase is dated by optically stimulated luminescence to  $69 \pm 5$  ka (ka = 1000 years) and  $70 \pm 5$  ka (Henshilwood et al 2002; Jacobs et al 2006) and provides a minimum age for the Still Bay deposits at the site. An optically stimulated luminescence (OSL) age of  $72.7 \pm 3.1$  ka was obtained for the upper part of the Still Bay M1 phase (Jacobs et al 2003 a,b). Thermoluminescence (TL) dates for the M1 phase indicate that  $74 \pm 5$  and  $78 \pm 6$  ka are the likely dates for these Still Bay levels (Tribolo et al 2006). OSL dates for the M2 phase fall between  $84.6 \pm 5.8$  ka to  $76.8 \pm 3.1$  ka (Jacobs et al 2006). Similar dates for the M2 phase were obtained using the electron spin resonance method. The lower c. 85 ka levels of the M2 phase (CG levels) seems to represent a hiatus at the site and do not contain artefacts associated with the Still Bay. The upper M2 phase does contain these markers and the inference that can be drawn is that the date of  $76.8 \pm 3.1$  for the CF level (Jacobs et al 2006) should be regarded as the *terminus post quem* for the Still Bay levels at the Blombos site. Using single aliquots an age of  $98.9 \pm 5.5$  ka was obtained for the CI level within the upper M3 phase. The level below, CJ, is dated at  $143.2 \pm 5.5$  ka by the same method (Jacobs et al, 2006). The stratigraphic integrity of artefacts recovered from these levels has been demonstrated and there is minimal evidence for movement of artefacts between the MSA phases (Henshilwood, 2005).



## THE MIDDLE STONE AGE LEVELS

### Artefact Review

#### Lithics

The uppermost Middle Stone Age (MSA) levels named the M1 phase at Blombos Cave (BBC) contains high densities of bifacial points, the *fossile directeur* of the Still Bay Industry. Still Bay points are defined as bifacially retouched, narrowly elliptic to lanceolate shaped tools, with two sharply pointed apices. Finely made end- and circular scrapers suggest hide preparation tool

place at the site. There is a distinct preference for silcrete as a raw material in the uppermost M1 phase and the choice of fine-grained stone is one characteristic of the Still Bay.



There are fewer retouched stone tools in the middle MSA phase, M2, compared to M1, but bifacial points in silcrete still occur. Aside from bifacial points, retouched tools are made mostly on quartz. In the lower phase, M3, provisionally dated at c. 100 000 years, the frequency of retouch declines further and, despite the large sample of lithics, there are no bifacial points. Retouch in M3 is mostly informal and, consistent with the absence of bifacial points, bifacial flaking is rare. A higher incidence of ventral flaking and denticulate or notched edges

distinguish the retouched lithics in M3 from those above. Preliminary findings by Dr. Marie Soressi indicate that the lithics in M3 do not conform to the typical MSA I or MSA II pattern observed at the Klasies River MSA site also located in the southern Cape.

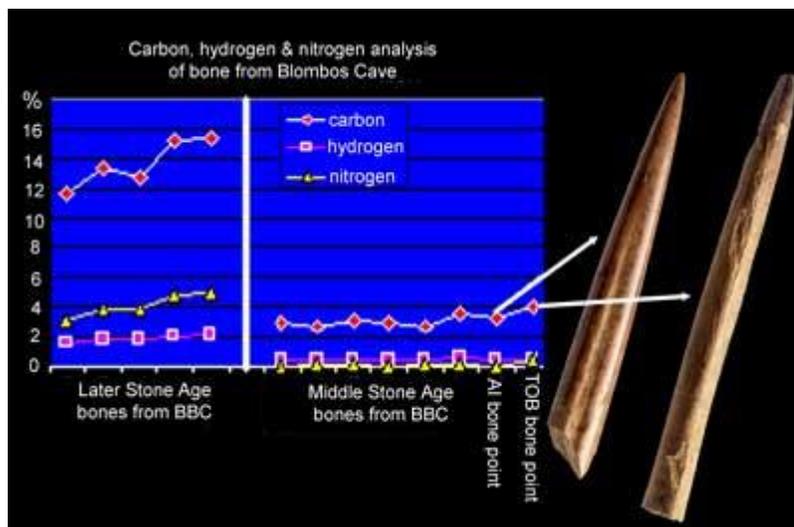
### ***Bone Tools***

Bone tools are an unexpected technological innovation in the Still Bay at Blombos Cave. Regarded as a distinctive marker in the Eurasian transition to modern cognitive behaviour they are rare at Middle Stone Age sites. More than thirty formal bone artefacts have been recovered from the Still Bay



levels at Blombos Cave, including awls and ‘points’ (Henshilwood & Sealy 1997; Henshilwood *et al.*, 2001a,b; d’Errico & Henshilwood, 2007). There is clear evidence that these tools were *in situ* when recovered (Henshilwood, 2005). The majority are awls made on long-bone shaft fragments, further manufactured by scraping and then used to pierce soft material such as leather or pierce shells to make beads (d’Errico *et al.*, 2005). At least some bone tools that were carefully polished after being shaped by scraping are probably projectile points made for hafting. It is noteworthy that points are treated differently to awls. The high polish on these points has no apparent functional reason that can be detected but seems rather a technique that gives a distinctive appearance - an “added value”

- to these artefacts. These too may have formed part of a material culture exchange system amongst groups to maintain or even enhance social relations. The Blombos bone tools provides comprehensive evidence for systematic bone tool manufacture and use but we cannot be certain if this was also the case at other Still Bay sites. A note of caution is that we are not certain that the production of worked bone gives a modern character to all Middle Stone Age material culture since little is known about the evolutionary significance of bone shaping (Henshilwood and Marean, 2003). Symbolic marking on bone is a likely feature that supports a symbolic interpretation. Microscopic analysis of a bone fragment marked with eight parallel lines from the Still Bay levels indicates they are the result of deliberate engraving and were possibly made with symbolic intent (d’Errico *et al.*, 2001).



*Engraved bone from M1 phase at Blombos Cave*

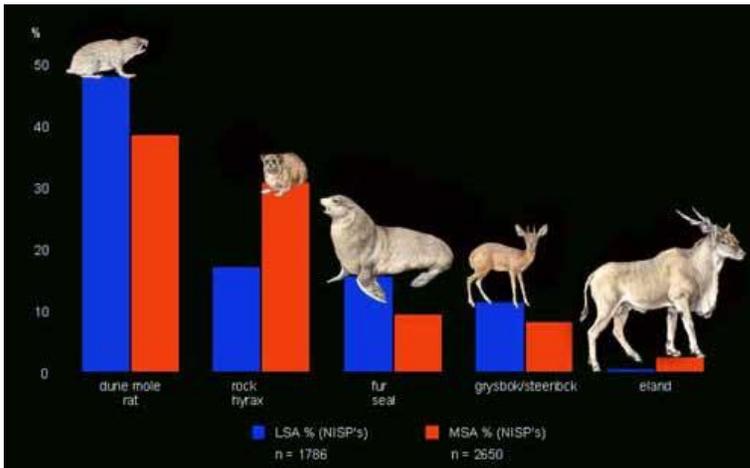


### ***Subsistence***

The faunal collection from BBC shows that MSA people practiced a subsistence strategy that included a very broad range of animals. This means they were able to hunt large animals, such as eland, but also gathered, collected or trapped small animals such as tortoises, hyraxes and dune mole rats. They also brought seal, dolphin and probably whale meat back to the cave. The latter two were almost certainly scavenged from beach wash-ups, but seals may have been speared or clubbed.

The BBC shellfish provide early evidence for the use of sea foods. Shellfish were collected and brought back to the cave, and the M3 phase, possibly dating to 140 000 years, is a particularly

rich shell midden. The shellfish species present in the MSA levels are similar to those from the LSA. Common species include the alikreukel (*Turbo sarmaticus*), limpets (*Patella sp.*) and brown mussels (*Perna perna*). Species variations may, with larger sample sizes, inform us of past changes in ocean palaeo-temperatures.



*The five most common faunal species in the MSA & LSA levels at Blombos Cave (based on information provided by Richard Klein & Kathy Cruz-Uribe)*

More than 1200 fish bones have been recovered from the MSA and occur in all the phases M1, M2 & M3. This means that people living at Blombos Cave had probably started fishing at least 140 000 years ago. The fish species identified include, for example, the black musselcracker, (*Cymatoceps nasutus*), red stumpnose, (*Chrysoblephus gibbiceps*), the white sea catfish, (*Galeichthys feliceps*) and kob, (*Argyrosomus japonicus*).

Dr Karen van Niekerk, is studying the fish bone collection from Blombos Cave. Chemical analysis of fishbone from the LSA and MSA levels using the carbon/nitrogen method confirms the antiquity of these specimens. It is possible the fish were lured close to shore by chumming with local bait, perhaps red bait (*Pyura stolifera*). The bait was possibly thrown into the water to attract fish that were then netted or speared, possibly with bone or stone tipped projectiles. No equipment directly associated with fishing has been recovered so we cannot be certain how the fish were caught. Fish are seldom recorded at other southern African MSA sites, and by implication, it was thought MSA people were unable to exploit coastal resources effectively.

*Karen van Niekerk identifying fish bones*



The overall subsistence pattern at Blombos Cave signifies that no clear distinction can be made between Later Stone Age and Middle Stone Age subsistence behaviour at the site (Henshilwood *et al* 2001a; Henshilwood, 2004). The implication is that during the Still Bay occupations the subsistence mode was essentially modern.

### **Beads**

A strong argument for early behavioural modernity in the Upper Palaeolithic is the presence of personal ornaments (d’Errico *et al.*, 2005). The discovery of more than 65 shell beads in the Still Bay techno-tradition at Blombos Cave has added a new dimension to the modern human behaviour debates. An analysis of 41 of these shell beads has been published (Henshilwood *et al.*, 2004; d’Errico *et al.*, 2005) and a report on the additional beads is



pending. All the recovered *Nassarius kraussianus* ‘tick’ shells were carefully pierced using a bone tool to create a keyhole perforation (d’Errico *et al.*, 2005). These perforations are anthropogenic and deliberate. These were then strung, perhaps on cord or sinew and worn as a personal ornament. Repeated rubbing of the beads against one another and against the cord resulted in discrete use wear facets on each bead that are not observed on these shells in their natural environment. Microscopic analysis shows distinct facets which flatten the outer lip or create a concave surface on the lip close to the anterior canal. A similar concave facet is often seen opposite to the first one, on the parietal wall of the aperture. These use-wear patterns are the principal factor that defines the shells as beads. Microscopic residues of ochre occur inside some of the beads and result from deliberate colouring or by transfer when worn (Henshilwood *et al.*, 2004; d’Errico *et al.*, 2005).

The wearing and display of personal ornaments during the Still Bay phase was not idiosyncratic. Discrete groups of beads with wear patterns and colouring specific to that group were recovered from various levels and squares within the site. This patterning suggests that at least a number of



individuals may have worn beads, perhaps on their person or attached to clothing or other artefacts. The shell beads also provide insights into technological aspects of the Still Bay including the ability to drill, the use of cord or gut for threading and the probable tying of knots to secure the beads. A comprehension of self-awareness or self recognition is implied by the wearing of the beads or other personal ornaments and was likely an important factor in cognitive evolution that was selected for long before the introduction of beads. Further, syntactical language would have been essential for the sharing and transmission of the symbolic meaning of personal ornaments within and between groups and also over generations, as is also suggested for the engraved ochre pieces (Henshilwood *et al.*, 2004; d'Errico *et al.*, 2005).

*Drs. Francesco d'Errico & Marian Vanhaeren in the Bordeaux laboratory with the BBC shell beads*



***Ochre and early evidence for abstract 'art'***

Red ochre is a hydrated iron oxide with sufficient haematite ( $\text{Fe}_2\text{O}_3$ ) content to be used as pigment. At Blombos Cave more than 2000 pieces of ochre, many

bearing signs of utilisation have been recovered from the Still Bay (M1 & M2 phases) (Henshilwood *et al.*, 2002). Two deliberately engraved pieces come from the M1, AA-8937 and AA-8938 (Henshilwood *et al.*, 2002) and a further fourteen engraved pieces from M1, M2 and the M3 phases have been published (Henshilwood *et al.*, in press). Two ground facets are present on specimen AA 8937 and on the larger of these a cross-hatched design is engraved. Specimen AA 8938 has one ground facet and on this a complex cross-hatched pattern was engraved. On both pieces it is clear that the designs result from deliberate intent and arguably are among the most complex and clearly-formed of objects claimed to be early abstract representations (d'Errico *et al.*, 2003). These pieces would certainly not be out of place if placed amongst symbolic representations in the Upper Palaeolithic. It is reasonable to contend that the ochre assemblage from the Still Bay levels at Blombos Cave, and arguably at other Still Bay sites, provides evidence for social and stylistic elaboration during this period.

In a recent paper by Henshilwood et al (in press) we demonstrate, for the first time, the presence of engraved ochres at Blombos from the 75 000, 85 000 and 100 000 year levels. This evidence indicates an uninterrupted tradition for the production of geometric engraved representation in the MSA; that this tradition has roots that go back in time to at least 100 ka ago, and that the tradition includes the production of a number of different patterns. Our findings support the view that the use of ochre during the MSA at Blombos was not only functional but that it also served, perhaps primarily, in a symbolic role. In a wider context this was also likely the case at other MSA sites in the southern Cape. Incised ochre pieces recovered from these latter sites also fall within the definition of engraved representations and demonstrates that there was a spatial and temporal continuity in the production and use of symbols in the region. The intra-site similarity of the abstract designs and methods used for the motifs at Blombos and on regional intra-site level during the MSA are consistent with the continuity found in more recent symbolic systems that have been globally described for the Later Pleistocene and early Holocene.

### ***Humans***

The amount of human material recovered from the BBC MSA is small – seven teeth. The crown diameters of at least some of these teeth suggest the people at BBC were probably anatomically modern. This conclusion is supported by similar evidence from a nearby archaeological site, Klasies River that dates to a similar time period.

Deciduous teeth indicate the presence of children, at least at times, and probably that women were present. The recovery in 2000 of a probably un-erupted incisor from a c. 5-month-old child at BBC suggests the baby died at or near the site. It is possible that adults will have died here also. The lack of any human bone at BBC, apart from teeth, is typical for many MSA sites – possible explanations are that human bodies were not buried or discarded within cave sites, or that bodies were processed, perhaps cannibalised, and the remains mostly discarded away from living sites. Removal of bodies or body parts by scavengers such as hyenas may also account, in part, but the expectation is that some traces of human bone would remain.



### *Summary*

The origins of 'modern' human behaviour generates lively debate, world wide, but evidence for its origins has long remained elusive. Published results from the BBC excavations complement recent and older findings from a number of African MSA sites that suggest some aspects of modern behaviour evolved during the early Late Pleistocene. Recent finds in > 70 000 year old African sites of objects bearing abstract engravings, large quantities of pigment and formal bone tools have been rejected by some as clear-cut evidence for behavioural modernity on the grounds of context, dating and/or because deliberate symbolic intent could not be warranted. The find of the BBC beads in the 75 ka levels and engraved ochres in the 75 – 100 ka levels adds an unambiguous marker of symbolically mediated behaviour to the list of innovations already identified in the MSA. It clearly reflects the acquisition of fully modern cognitive abilities by southern African populations by perhaps 100 000 years. Further analyses of the BBC material and ongoing excavations is continuing to provide a firm foundation for investigating the early behavioural modernity of southern African hominids.

	Years BP	Oxygen Isotope Stage	Inferred World-wide Climate	<b>Blombos Cave Sequence</b>	Geological Time Scale
Present Interglacial		1	very warm	<b>Later Stone Age</b>	<b>Holocene</b>
	12 000				
		2	very cold		
	32 000				
Last Glacial		3	cold with warm oscillations		
	64 000				
		4	very cold	<b>HIATUS</b>	<b>Late Pleistocene</b>
	75 000			<b>M1</b>	
	82 000	5a	warm	<b>M2</b>	
		5b	cold		
	105 000	5c	warm	<b>M3</b>	
		5d	cold		
		5e	very warm		
	128 000				
Last Interglacial		6	cold with warm oscillations		<b>Mid Pleistocene</b>

Present Interglacial



Last Glacial



Last Interglacial

LATER STONE AGE

MIDDLE STONE AGE



### *Suggested readings on the Blombos site*

#### **In Press**

1. Henshilwood, C.S. In press. The origins of symbolism, spirituality & shamans: exploring Middle Stone Age material culture in South Africa. In *Becoming human: innovation in material and spiritual cultures*, (ed. C. Renfrew), Cambridge, Cambridge University Press.
2. Henshilwood, C.S. In press. The “*Upper Palaeolithic*” of southern Africa: the Still Bay and Howiesons Poort techno-traditions. In: *African Genesis: Perspectives on hominid evolution* (eds. S. Reynolds & A. Gallagher). Johannesburg: Wits University Press

#### **Published**

1. Henshilwood, C.S. & Dubreuil, B. 2009. Reading the artefacts: Gleaning language skills from the Middle Stone Age in southern Africa. In: *The Cradle of Language*, Vol. 2 (Botha, R & Knight, C. eds.). Oxford: Oxford University Press: 61-92 .
2. Henshilwood, C.S., d’Errico, F. & Watts, I. 2009. Engraved ochres from the Middle Stone Age levels at Blombos Cave, South Africa. *Journal of Human Evolution*.
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Further evidence for the antiquity of modern human behaviour. *Archaeometry* 48 (2): 341–357.

11. 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.
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#### **Television (selected sample)**

1. 2008 - Film made at Cape Point Nature Reserve with Henshilwood on the 'Origins of *H. sapiens*' for Foster Brother Film Productions, South Africa.
2. 2008 - Film made at Blombos Cave with Henshilwood in March, 2008 for display in the 'Anne & Bernard Spitzer Hall of Human Origins', American Museum of Natural History, New York.
3. 2008- Film made at De Hoop Nature Reserve with Henshilwood directed by Alan Wilcox on Human Evolution in Africa. SABC Production.
4. 2005 - Film ' *The first artists: the cave people of Blombos*' filmed at Blombos Cave with Henshilwood, C. for the EXPO 2005, AICHI JAPAN. Executive Producer Tetsu Itano.
5. 2005- Film ' *Blombos: the birth of imagination*' filmed at Blombos Cave with Henshilwood, C. for the EXPO 2005, AICHI JAPAN. Executive Producer Tetsu Itano.
6. 2005 - National Geographic Television, May, 2005. *The origins of modern humans*. (Filmed at Blombos Cave) Producer John Rubin.
7. 2004 - SABC 50/50. Programme titled ' *Blombos Cave*' , May 2004. Producer: Belinda Shaw.
8. 2003 - BBC Television: Horizon Series. February, 2003. " *The day we learned to think*". (Filmed at Blombos Cave). Producer Dan Clifton.
9. 2002 - BBC Television. February, 2002. " *Where we came from*" – series on Human Origins presented by Clive Gamble. Episode filmed with PI at Blombos Cave.