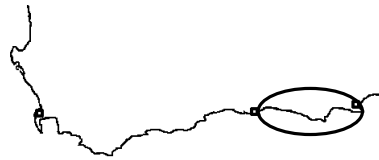


Guide to Klasies River 2001



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Figure 1. Klasies River main site and the cliff coast, the edge of the coastal platform

BACKGROUND

The Klasies River sites are on the Tsitsikamma coast between Port Elizabeth and Plettenberg Bay. The name Tsitsikamma, in the Khoekhoe ('Hottentot') language, means 'where the waters begin' and the name is preserved for the range of mountains that border the coast.

COASTAL PLATFORM

The journey to the Tsitsikamma is along this platform. It was cut by marine erosion as the southern margin of the African continent was formed following the break-up of Gondwanaland. The Falkland Plateau was wrapped around the southern coast and separation was along a sheer zone. The separation that started 140 million years ago was completed about 100 million years ago when the Falkland Plateau cleared Cape Point near Cape Town. New base levels for erosion were created and in the process, this remarkably uniform platform that steps down from the foothills of the mountains to the present coast, was created. The modern rivers are deeply incised into the coastal platform. One of the most spectacular examples is the Storms River. As sea levels have changed and as the margin of the continent has been uplifted, the rivers have cut deep narrow gorges.

TSITSIKAMMA MOUNTAINS

The Tsitsikamma mountains are part of the Cape fold mountains that run in an east to west direction from near Port Elizabeth to near Cape Town. They represent the crumpling up, some 250 million years ago, of the thick layers of rock formed of sands, silts and clays that make up the Cape Supergroup. The Cape Supergroup is a major geological sequence and is literally the largest pile of sand in the world. Table Mountain is part of this 400 million-year-old sand pile.

KNYSNA FOREST

This is an Afro-Alpine forest vegetation that occurs near sea level in the Tsitsikamma area but on highlands and mountains further north in the continent. The rainfall of 800 mm is marginal for forest and the trees are relatively stunted. The forest survives in those areas protected from drying catabatic winds, locally known as "berg" winds, and fire. The species diversity is high and this is an old flora.

FYNBOS

The local mediterranean-type vegetation is the fynbos, characterised by proteas, ericas and restios. It occurs on the mountains, between forest patches and on the coastal platform. At the coast it gives way to a shrub forest heavily infested with exotic acacias. The fynbos in the Tsitsikamma area is grassy because the summer rain component allows sub-tropical pioneer grasses to compete successfully with fynbos plants. Fynbos ecosystems are dominant in the Cape floristic region and the Cape Flora is noteworthy because it is very rich in species. An example is the more than 600 species of *Erica* that occur in the region. The heathlands of Europe boast only some 12 species.

The fynbos is a fire climax vegetation. This means that fire plays an important role in the succession of fynbos plants and is a necessary stimulus for the regeneration of some. Some species will only germinate after being exposed to the smoke of fires. Fire has been an important selective agency in the propagation of fynbos. Pollination may depend on very specific agents and animals as different as ants and small mammals may play a role in seed dispersal. The substrate or soils are another factor. Fynbos plants are specialists growing on acid soils, sandy soils low in bases and nutrients. Plants that are specialists are rich in species. Many species are restricted to a single montane area suggesting that valley frost due to temperature inversion was an isolating mechanism promoting species richness on a landscape scale.

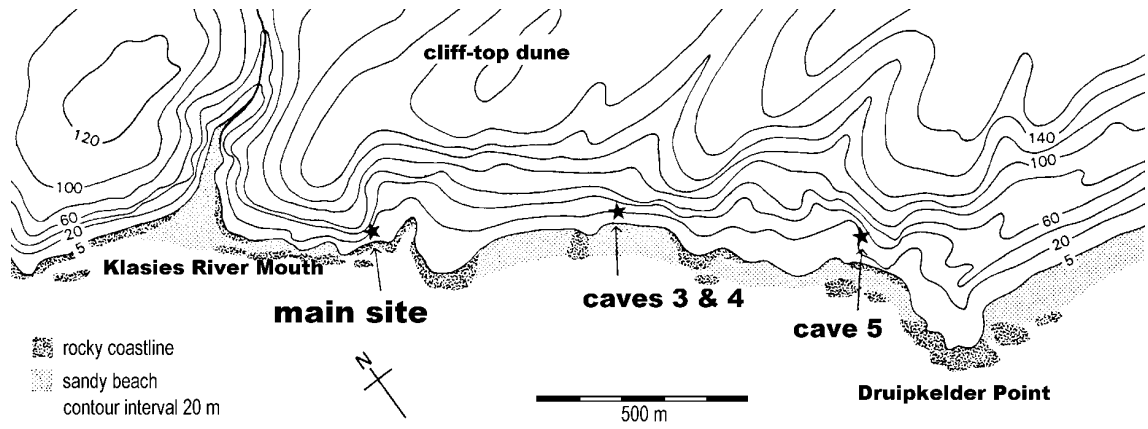


Figure 2. Map of the coast at Klasies River.



Figure 3. The coast looking from main site towards Druipkelder Point, caves 3 and 4 are in the middle distance and cave 5 in the far distance.

KLASIES RIVER

Cliffs are a feature of the Tsitsikamma coast and they represent step faulted seaward margin of the coastal platform. In places, as in the Klasies River area, there are fossil dunes resting on the margin of the platform above the cliffs. These dunes are relicts of a Pliocene higher sea level and mark the regression from that high stand. They are cemented cross-bedded sands or calcarenites. On the farm Geelhoutboom there is a large dunefield, formed by the weathering of the fossil dune and in deflation hollows artefacts are numerous. This site was collected by Laidler in the 1940s and has produced numbers of very elegant Acheulian bifaces. The bulk of the artefacts are Middle Stone Age and the density is as high as 50 artefacts per square metre and the site extends for more than a kilometre. There are circular stone hearths that can be associated with Khoekhoe herders. Weathering has decalcified and ferruginised the sands. These posolic sands do not preserve any bone. The encroachment of alien vegetation has reduced exposures and made the dunefield less accessible.

The Klasies River is a small stream with a limited catchment. It descends in a narrow gorge, by way of a number of waterfalls, to a blind river mouth. Incised to lower Pleistocene sea levels the mouth has become choked with sand in the Holocene transgression. The gorge of the river provides a section through the cliff top dune exposing the base. The base is some 40 m above sea level at the coast. This one of several bevels cut at different elevations in the coastal cliffs, all relating to past high stands of the sea. The caves at 18 m, 6 m and 0 m and the rock bench and offshore stacks at 6 m. are noteworthy features cut by higher sea levels in and below the coastal cliff. The 18 m and 6 m elevations correspond to major and minor emergence, defined in 1927 by Krige, a geologist who rode the length of the South African coast on horseback measuring the heights of marine-cut features. These features are Plio-Pleistocene in age and are much older than any associated archaeological deposits.

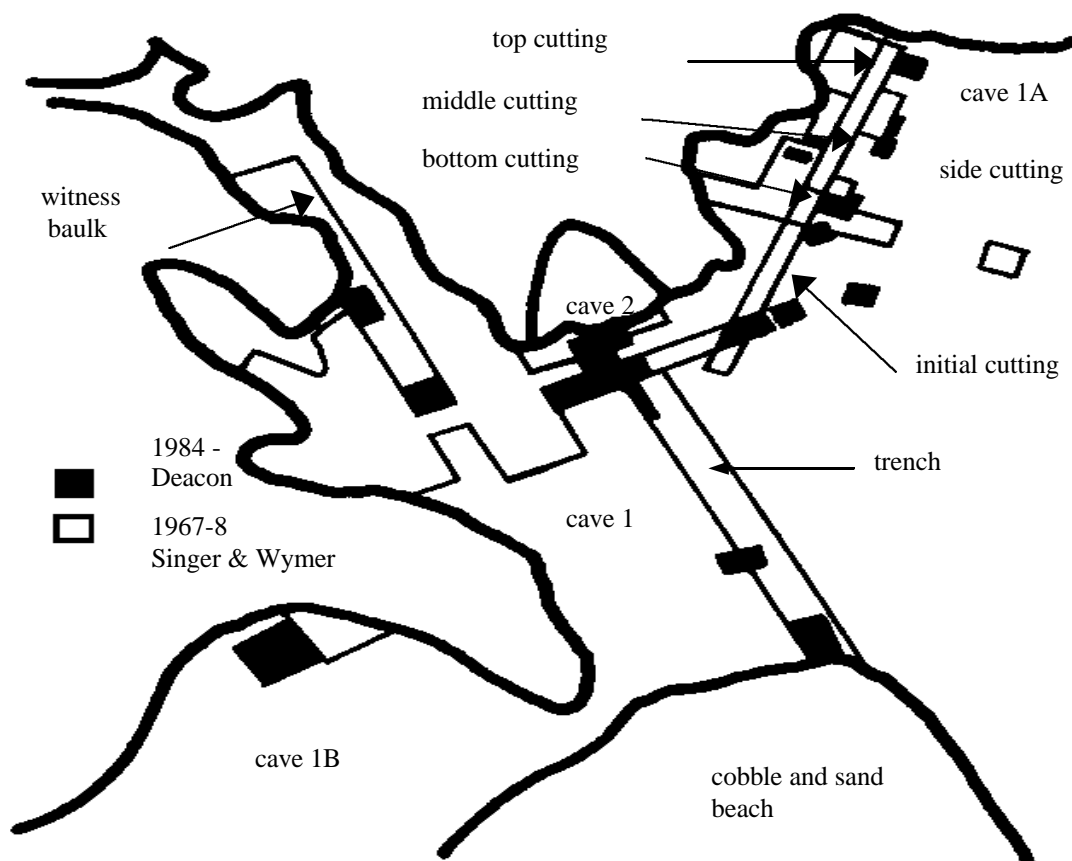


Figure 4: Plan of Klasies River main site.

HISTORY OF ARCHAEOLOGICAL RESEARCH

The section of coast between the mouth of the Klasies River and Druipkelder Point, a distance of 2,5 km, is where the archaeological sites occur. This section has been proclaimed as a National Monument and a Natural Heritage Area. There are no sites at the mouth of the river. The main site (Figure 4) is 0,5 km from the mouth and is formed by a reentrant of the cliff face. Although several caves are cut into the cliff and contain deposits, this is an open-air site in the lee of a cliff. The interconnected caves 3 and 4 are a further kilometre away and furthest from the mouth is cave 5 near Druipkelder Point to which it gives its name.

There are artefacts and bone cemented to the cliff wall at main site and these were reported to the museum in Port Elizabeth independently by Paul Haslem and Ludwig Abel. In 1960 Ray Inskeep and Ronald Singer visited the site and appreciated that the artefacts were Middle Stone Age and the potential the site had to resolve the issue of what humans were associated with this Age. Singer had recently shown that the concept of a 'Boskop' human type that was presumed to occur in the Middle Stone Age was flawed. The fossil fell within the range of variation of modern examples. This re-opened the question of who were the ancestors of the Later Stone Age San. Singer reasoned their ancestors were to be found in the Middle Stone Age.

In 1967 and 1968 the first investigation of the Klasies River sites was undertaken by Ronald Singer and John Wymer. Extensive excavations were made at main site and a cutting was dug in cave 5. The results were published in 1982 in a monograph put out by the Chicago University Press. Since 1984 research has been directed by H.J. Deacon and has aimed at substantiating and extending some of the findings of Singer and Wymer.

The sites are significant because they have produced important human remains and early evidence for shellfish collecting. However, the importance lies less in individual finds than in these sites being an archive of information on stone artefact technology, food gathering and settlement organisation in the Middle Stone Age. The deposits record changes in coastal geology and ecology due to the rise and fall of Pleistocene sea levels. The same species of shellfish that were harvested in the past are to be found on the present day coast and cormorants that have contributed fish bones to the deposits still shelter on the cliffs in bad weather. It is for such reasons that conservation not only of the archaeological sites but also their immediate surrounds is a priority.

MAIN SITE

Site, Stratigraphy and Dating

Main site has been described in the literature as a series of caves and shelters, 1, 1A-1C and 2. It is a single depository (Figure 4) and the deposits have accumulated against the cliff face, spilling over into the cave openings in the cliff. The base is the 6 m rock bench and on this are piled 20 m of sediments. The pile of sediments, originally anchored between the cliff and a seaward dune, was truncated about 6 000 years ago when rising sea levels undercut the deposit. The slip feature caused by this erosion is clearly visible and it is estimated that two thirds of the deposit was removed by slumping. The trace of the original cone of deposition is marked by remnants cemented to the cliff face.

The stratigraphic sequence is cemented grits on bedrock overlain by sands that fine upwards. Human occupation horizons are interbedded with the sands. The lowest sand unit is the LBS (light brown sand) member and these sands are similar to those of the modern beach. They accumulated when sea level was close to the present level and there was a nearby beach sand source. Prior to the Holocene, the last 10 000 years, sea levels were as high as the present in the Last Interglacial (130 000-118 000 years ago). The oxygen isotopic composition of turban shells from the deposit measured in two independent studies supports the contention that the LBS member was deposited in the Last Interglacial, MIS (marine isotope stage) 5e. Human occupation took place as sea levels fell from the high of the Last Interglacial and a back-of-the-beach dune

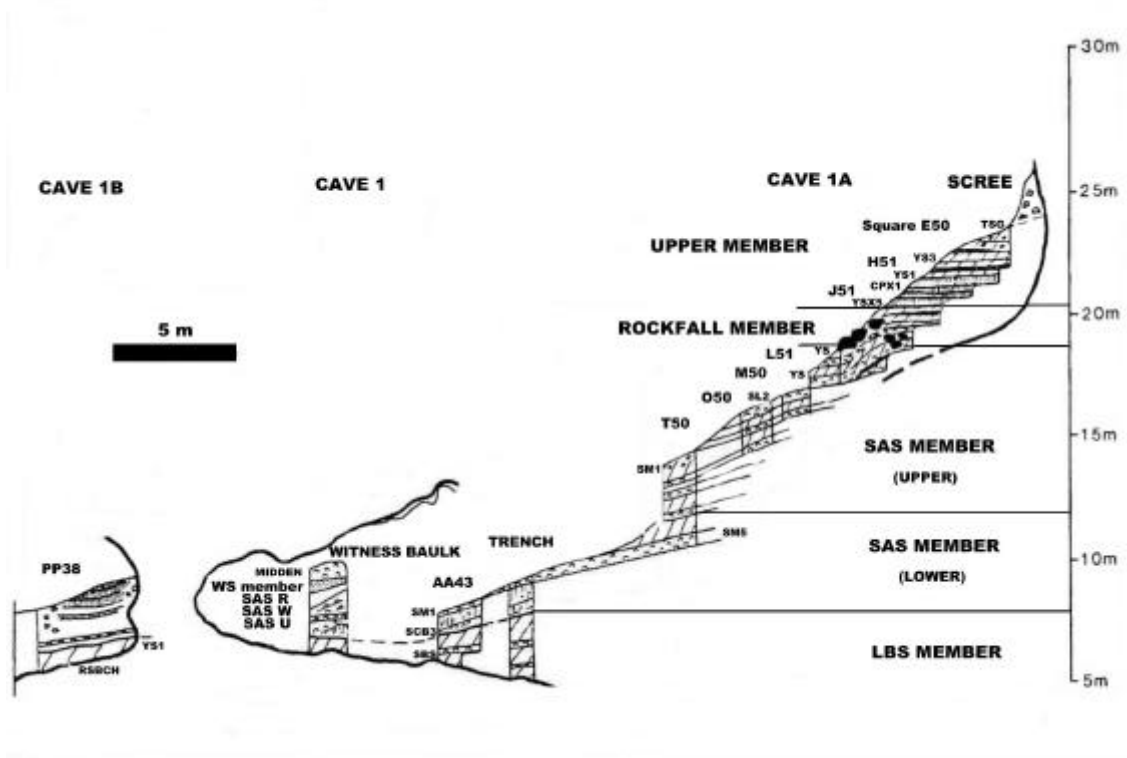


Figure 5. Diagrammatic section through the main site deposits

Table 1. Stratigraphic descriptions

<p style="text-align: center;">Scree</p> <p style="text-align: center;">Upper member</p> <p style="text-align: center;">2.0-5.0 m</p>	<p>Non-occupation deposits on top slope</p> <p>Carb partings with microfauna-rich sand interbeds with multiple ash layers in the lower half associated with the Howiesons Poort - caves 1A and 2 (equivalent to S&W layers 1-21)</p>
<p style="text-align: center;">RF (for rock fall) member</p> <p style="text-align: center;">0.5 m</p>	<p>Red brown sand with minor carb partings includes flowstone blocks - caves 1A and 2 (S&W Layer 22)</p>
<p style="text-align: center;">SAS (for shell and sand) member</p> <p style="text-align: center;">6 m</p> <p>In cave 1 a truncated WS member (13) overlies the sub-members SAS R (14), SAS W (15), SAS U (16), SAS L (17) and the RBS (37)</p>	<p>Shell-rich middens and carb partings interbedded with sands. The base is the RBS (37) a carbonaceous layer which shows plastic flow structures and is partly infolded with the LBS</p>
<p style="text-align: center;">LBS (for light brown sand) member</p>	<p>Sands with shell midden and ash lenses (S&W 38) overlying beach sand, a cemented crust and grit (S&W 39-40) on bedrock</p>

formed to provide for a sheltered place. John Vogel has obtained a series of uranium disequilibrium dates for the sequence that put the base at some 110 000 years, the SAS member between some 100 000 and 78 000 years, the Howiesons Poort at 65 000 years. His radiocarbon dating of the top of the sequence shows this to be older than 50 000 years. The oxygen isotope profile through the sequence measured by Siep Talma correlates the SAS with MIS 5c-b (103 000-90 000 years) and the RF (rock fall) and the Upper members with MIS 5a with MIS 4 (70 000 years) registered in the middle of the Upper member at the top of the Howiesons Poort culture stratigraphic division. There are large mammal indicators of open country in the 1967-68 faunal sample analysed by Richard Klein from the top half of the Upper member. Such a fauna is consistent an open plain bordering the coast and with a marine regression (Klasies River regression) in MIS 4, a three-quarter glacial. In Klein's analysis and that by Liezl van Pletzen of the 1984- sample a marked contrast is evident between fauna of the Upper member and that of the SAS member. The latter is a fauna of a more closed habitat consistent with a transgression and with MIS 5c. Various alternative dating methods like electron spin resonance, luminescence and amino acid dating have been attempted with varying success. The importance of the sequence for chronometric or biostratigraphic dating is that the top (beyond the range of radiocarbon) and bottom (MIS 5e is a terminus post quem for the accumulation of the deposits) ages are fixed at between 120 000 and more than 50 000 years old.

The deposits are variously cemented and there are speleothems in the side caverns. The source of the lime is the fossil dune above the cliff. As the regional ground waters are acid and the ground waters from the dunes are alkaline, there are sharp pH gradients in the deposits. The pH controls the preservation of materials like bone and shell and preservation falls off away from the cliff face. Even in an area of the site like cave 1 which is partially roofed preservation of organic materials is highly variable. This has influenced the recovery of specimens and therefore the interpretation of data like that for the large mammals. Much has been written about the evidence from Klasies River in the debate on hunting versus scavenging based on the analysis of the 1967-8 museum collections. These collections are biased by factors of preservation, sampling and recovery and from a taphonomic perspective they have limited value.

Contents of the Deposits and their Interpretation

The cave deposit includes materials accumulated by non-human and human agencies. The non-human agents are mainly cormorants and owls that roost or nest in the cliff. They contributed abundant fish and small mammal bones. Cormorants still shelter there in bad weather and pellets of regurgitated fish bones can be picked up on the surface. The fossil fish bones are a record of the near shore species of fish that the cormorants were feeding on in the Late Pleistocene. A project being undertaken by Angela von den Dreisch is the analysis of the thousands of fish bones sorted from the sediments. Carnivores also used the place and they added their food remains. Owls were probably responsible for the other small mammal, amphibian and reptile remains. The largest concentrations of small mammal bones are against the cliff face in 1A where dripstone bosses adhering to wall rock provide ample perches. John Wymer recovered the articulated skeleton of a leopard in the deeper recesses of the cave 1 side chamber and there are some hyaena coprolites in the deposit. Large carnivores used the site as a den and would have accumulated some but not a significant part of the large mammal bone. Genet cats still have latrine areas at the site and they would have left small mammal remains. Otters through their scats were another potential contributing carnivore agency and are still common in the area. Land snails of several taxa are a consistent if minor component of the deposits. Their preservation may mainly reflect the sandy habitat but their significance as ecological indicators has still to be assessed.

People living at main site made the major contribution to the remains found. The carbonised partings and associated ash lenses, the piles of discarded shells and bones and the many stone artefacts are the most visible traces of human activities. Numbers of brief discrete human

occupations are represented in the units composed of these materials. The stone artefacts are Middle Stone Age flakes and blades that were struck from variously prepared cores. Ochre 'pencils', pieces of ferruginous clay with grinding facets, have been found importantly showing the use of colour coded symbolism. There are some artefacts in bone and none in shell preserved. No wooden artefacts are preserved although wood was probably used to haft some stone tools. Beach cobbles provided the bulk of the raw material for making the artefacts. John Wymer described the artefact sequence in a typological scheme describing the culture stratigraphic order from oldest to youngest as the MSA I, MSA II, Howiesons Poort, MSA III and MSA IV. The Howiesons Poort was designated a distinctive industry because it includes standardised backed tools and the selection of exotic raw materials for making some artefacts. As he suggested should be done, his interpretation of the culture stratigraphic sequence has been updated, recently by Sarah Wurz in her D.Phil. dissertation. She recognises the following culture stratigraphic sequence:

Upper member (top units): not formally named **post-Howiesons Poort sub-stage (circa 60 ka)**

Upper member (bottom units): **Howiesons Poort sub-stage (circa 70 ka)**

SAS member (topmost units) and possibly RF member: **Still Bay sub-stage (circa 80 ka)**

SAS member (mid and lower units): **Mossel Bay sub-stage (circa 100 ka)**

LBS member: **Klasies River sub-stage (circa 110 ka)**

These sub-stages are defined on the technology employed in artefact production and in the imposed style of the artefact end-products. In the Klasies River sub-stage long (upwards of 100 mm) blades made almost exclusively in quartzite and elongated points are characteristic. The blades were struck from appropriately prepared cores, platforms are plain and relatively small and the bulbs of percussion are diffuse. This suggests a soft (wooden) hammer technique. In the Mossel Bay sub-stage the end-products are very different. They are shorter, wide, faceted platformed, convergent-sided pieces or blanks. The bulbs of percussion are prominent and the point of percussion is set well below the upper surface of the core with the result that the butt of the blank is thick. Such pieces are conventionally called Levallois flakes. The Still Bay is represented by a relatively small sample from main site that include bifacially worked pieces. This sub-stage is better represented in the sample from Paardeberg inland of main site. The Howiesons Poort sample from main site is large and informative. It represents a return to blade production as in the Klasies River sub-stage but blade dimensions are much reduced (circa 40 mm). These blade blanks, a percentage in non-local raw materials, were used to make backed artefacts in geometrical forms like segments and trapezes which are typologically very distinctive. The sample of the post-Howiesons Poort layers is too small to be useful for technological study but seems to be yet another different and distinctive artefact production schema.

There are few bone tools; edge-notch decorated pieces and pointed pieces. Bone was not worked to any extent. What is not preserved is wood, the probable alternative material for hafting artefacts. There are no shell artefacts although both marine and ostrich shell are preserved. This means there are no archaeologically visible indications for wearing personal ornaments. Although the presence of personal ornaments in shell and bone is given much significance in research on the western European Upper Palaeolithic, such items are rare or absent in the Upper Palaeolithic in the Levant or in prehistoric sites elsewhere like Australia. At all Late Pleistocene, Middle and Later Stone Age sites in southern Africa and through the whole main site sequence red ochre is present. It is still used extensively throughout Africa for body decoration. Red ochre is more than simply a cosmetic and together with white clay and black earth it forms a triad of colour symbols used to mark events like rights of passage, from birth to death. The occurrence of ochre, examples of ground pointed 'pencils' are known, is convincing evidence for symbolic communication in the Middle Stone Age. Thinking in symbols is the hallmark of the modern mind and communicating the meaning of symbols presupposes language, as we know it.

There are an impressive number of hearths with carbonised surrounds to be seen in exposures at the site. These are artefacts in the same sense as stone tools but they can only be studied in the field. The hearths are simple hollows, 300 mm in diameter, and are associated with burnt shell and

bone. Vegetable materials, the residues from preparing plant foods, are not noxious and accumulated around the hearths and may be burnt to form the carbonised halo. The preparation of food around small hearths suggests these were individual domestic fireplaces. In traditional San and other communities a hearth is 'owned' by a woman with a family and the placement of hearths serves to separate different families. This pattern can be discerned in the Later and Middle Stone Ages. A further pattern that is found at Later and Middle Stone Age sites is the discard of some food residues, like shells, in middens that are separate refuse areas. This is in direct contrast to the plant food residues allowed to accumulate in the domestic space.

In this ecological setting plant foods would have been staples of the diet as they are among most present-day hunter-gatherers. The dominant fynbos vegetation is very rich in geophytes, corms and bulbs that have the bud underground. This is an adaptation to seasonal aridity and more specifically to fire. On the nutrient-poor substrates in the fynbos biome, geophytes with their underground carbohydrate-rich food storage organs are a slowly renewing resource. Regeneration may take a number of years but propagation through flowering and or corm division is markedly increased after fire. Middle and Later Stone Age sites occur on the coast as well as high up in the mountains and on the mountains fynbos ecosystems are completely dominant. Occupation of the mountains where geophytes are virtually the only food resource would be possible only with fire stick farming. Later Stone Age sites in the mountains, young enough to preserve plant food residues, are rich in geophyte remains. This reasoning points to Middle Stone Age groups being conversant with veld management, burning needs to be done at the correct season to be effective. The multiple hearths show they could make fire at will.

Animal foods are a high quality supplement necessary to balance the carbohydrate intake and need only be episodically ingested. There is a physiological limit to the intake of protein before protein poisoning sets in. African bovids are notoriously lean and this limits their importance in the diet. Eland may carry relatively more fat than other antelope and hence the importance of this animal. Seal and penguins, both well represented in the fauna at main site, would have had similar importance as sources of fat. One can suggest some form of ranking of animal resources setting off those most desired against those most easily got. The small grysbok is the most abundant antelope in the main site deposits. It is territorial but can be snared and even chased down if its runs are known. This species must qualify as easily got. Animals like the Cape buffalo on the other hand are rare and only make up 2% of the bovid prey species. It seems the hunters took animals largely in proportion to the available in the surrounds of the site.

The bovid bones preserved in the deposits have generated considerable interest. The sample from the 1967-8 excavation was analysed by Richard Klein. He suggested that there was a pattern of hunting the old and the young of the more dangerous species like buffalo and the hunting of more prime adults of the docile species like the eland. Mortality profiles suggested to Klein that animals like eland were hunted by being driven over cliffs. Klein has made much of the apparent absence of the bones of flying birds and of fish in his arguments that Middle Stone Age people were not capable of exploiting the potentials of their environment as effectively as people in the Later Stone Age. He accepts Later Stone Age people as modern but holds that the Middle Stone Age people were non-modern. From an assessment of Klein's faunal results Lewis Binford has argued that the bovid bones had got into the deposit through scavenging rather than hunting. This would also indicate non-modern behaviour. In Binford's view main site was not a base camp but simply a sheltered place conveniently near water-holes where people went to consume but not to share meat scavenged from carnivore kills. The scenario sketched by Binford encouraged a fuller analysis by Dick Milo of the incidence of cut marks and other damage in the bone sample. His study concluded that there was evidence for the hunting of all size classes of bovids from the extinct giant buffalo to the small grysbok. The sample of fauna excavated since 1984 and analysed by Liezl van Pletzen with assistance from James Brink is less selective than the original sample and includes evidence for a much higher frequency of small antelope that were missed by using coarse sieves. The evidence for active hunting and for butchery on site is overwhelming. This was not a sheltered place where individuals came to consume their scavenged proportions without sharing as Binford (1994) suggested but a home where hunters gathered with their families much as they did in the

Later Stone Age and do in the ethnographic present.

Shellfish was collected on a large enough scale for midden heaps to form. The brown mussel (*Perna perna*) beds like those on the rocks below the site at the present provided the bulk of the food. They attest to a rocky shore. There are a variety of other species collected and the Turban shell is perhaps the most important. A point made by Klein is that the shellfish was not farmed down by over exploitation because the specimens are large size. In his view this is further evidence of an inability of the Middle Stone Age people to use their resources effectively. Economic arguments like those of Klein assume that hunter-gatherers were compelled to optimised the yield of available resources and that the success they achieved was a direct reflection of their mental capabilities or cognitive potentials. It is more plausible to assume hunter-gatherers had a choice and adopted a least effort strategy. The absence of fish larger in size than those represented in the bones regurgitated by cormorants and of sea birds like cormorants in the deposit can be explained by these being low ranked dietary items. The technology to make the catching of fish or shooting/trapping of cormorants a viable option may have been lacking in the Middle Stone Age. San hunters today may use rifles and horses to hunt whereas their grandfathers used bows and arrows but this has no bearing on mental abilities. This is the weakness in using economic arguments based on faunal evidence to assess whether Middle Stone Age people were modern or non-modern in their behaviour. The cultural evidence is more germane and that supports behavioural modernity.

Human Fossils

The oldest human remains from the site are dated to 110 000 years old and are among the oldest known remains of morphologically modern people. The long held belief that modern humans had their origins in western Asia 40 000 years ago has been challenged through the new finds in new areas, better dating of the fossils and the advances in DNA studies. The hypothesis, sometimes called the Out-of-Africa hypothesis, that has gained most support is that a 100 000 or more years ago modern people emerged in sub-Saharan Africa and later dispersed to Eurasia. The founders of any emigrants from Africa would have been drawn from regional populations to the north rather than from one isolated in the southernmost part of the continent. Interest in the Middle Stone Age human remains from sites like Klasies River and Border Cave is in the information they carry on the ancestry of San inhabitants of southern Africa. The very gracile San are a people restricted to southern Africa and their divergence from other African populations is ancient. The time scales provided by genetics need refinement but on such grounds the divergence of the San genotype more than 150 000 years ago is conceivable. The robust and sexually dimorphic people described by Philip Rightmire from main site are good candidates for ancestors of the San.

The human remains from Klasies River are fragmentary. The study of the taphonomy of the human fossils is a current project. The human bones are mostly skull parts and they show cut and tear marks, percussion impacts and burning. The human bones are not randomly distributed through the deposit but occur in particular horizons. The remains are not from conventional burials and the question is whether their occurrence indicates some ritual of second burial practice or interpersonal violence. Episodic cannibalism seems to be indicated. In South Africa cannibalism, the so-called muti-murders, is the subject of numbers of court cases each year and is not only something of the past. Archaeologists are now better able to recognise cases of cannibalism or inter-personal violence in their finds and examples are found on all continents and in all time ranges. There are Later Stone Age burials from the capping of 2000-4000 year old midden deposits preserved in cave 1. In South Africa there is no incontrovertible archaeological evidence for conscious burial of the dead prior to the last some 12 000 years.

PERSPECTIVE

Klasies River main site is an icon for the studies of modern human origins. The site preserves among the oldest evidence for modern humans and some of the oldest evidence for the use of marine resources. It is a very impressive deposit and is a unique window into the past. The investigations there have stimulated research in many aspects of archaeology, palaeontology and

physical anthropology. Importantly, they have stimulated a debate on the cognitive abilities of early anatomically modern people. On economic grounds one school has argued that these early people



Figure 6. Right. Frontal bone that shows the orbit, nasal bone and forehead. Note the absence of marked brow ridges and the verticality of the forehead. There is a fresh bone tear at the top right of the specimen and cut marks to the left of it which show the removal of the hair and the breaking open of the skull. Left. Two views of a metatarsal (foot bone), one of the few finds of post-cranial remains. This is the foot of a surprisingly large individual. Sexual dimorphism was pronounced and this is probably that of a male.

were anatomically but not behaviourally modern. The opposing school argues that the Middle Stone Age people some 100 000 years ago at Klasies River structured their lives through a web of symbols as do all living peoples. This debate has more than local significance because it brings into question the accepted wisdom that the Upper Palaeolithic of Europe and Western Asia at some 45 000 years ago is the earliest archaeological signal of modern people. There were no Neanderthals to be replaced in Africa and no phenomenon like the Upper Palaeolithic. From the perspective of the evidence from Klasies River and other African sites, rather than marking universal stage in human progress, the Upper Palaeolithic can be seen as a still impressive but specifically regional behavioural response to unique environmental conditions in the northern high latitudes. The roots of modern humans are African and long predate the Upper Palaeolithic.

Research is continuing at the site and on the collections under the umbrella of a research project “Origins of modern humans *Homo sapiens* in Africa”. Sarah Wurz has completed an MA thesis (1997) on the Howiesons Poort and a D.Phil. dissertation (2000) on the Middle Stone Age artefacts from Main site. She has published a paper on symbolism and the Howiesons Poort and co-authored other papers relevant to the Klasies River sites. Through her dissertation she has developed an interest in the contrasts between Middle Stone Age–Middle Palaeolithic technology in North and South Africa, an interests she is exploring through an association with researchers at the University of Leuven and elsewhere. Her dissertation reflects her other main interest and that is in the links between the evolution of the brain and the origins of language. She argues that the origins of symbolic communication, language as we know it, are in the Middle Pleistocene. The implication is that the inhabitants of main site, more than 100 000 years ago, were able to converse and think in concepts. Liezl van Pletzen (MA 2000) analysed the large mammal faunal sample from the post-1984 excavations. From this sample she has been able to show that in only retaining what were considered identifiable elements and in using large screens the original investigators introduced a sampling bias in the 1967-8 sample they collected. This bias is over and above that inherent in a deposit of this nature where the soil chemistry results in differential preservation of some elements. This revises some previously held ideas on selective hunting patterns and publication of the results is planned.

Measures have been taken by the owners of the properties to protect the Klasies River sites and their surrounds and to preserve them as a scientific resource. They have been supported by the South African Heritage Resources Agency (SAHRA), formerly the National Monuments Council (NMC) and the Department of Environment Affairs and Tourism. Access by road across private

land is controlled but there is public access to Druipkelder Point along the coast from Huisklip to the east. The latter route used by fishermen is difficult to control. This is a concern because the sea life on the rocks, an analogue for what is found in the sites, is being stripped for bait. Protection of the sites is afforded by sandbags. There is an ongoing programme of bagging to stabilise the natural slopes and excavated sections from erosion. Military sandbags are filled with a mix of sand and wrapped in geotextile painted with UV resistant PVA. The rehabilitation of the sites is in itself a major but important task. The sites are sensitive to the impact of visitors and for this reason access has to be managed. Other sites along the coast that are more accessible and less vulnerable but convey the same kinds of information are open to the public. There are displays on the Klasies River sites locally in the museum at the Cango Caves and further displays are planned at the cultural centre at Humansdorp. Other major museums like the Iziko museums of Cape Town and even the American Museum of Natural History have displays presenting the results of scientific studies.

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