Early Archaeology of the Vhembe-Dongola National Park and Vicinity
Report for 2002

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Research Focus

The goal of this project has been to produce the first systematic work on the Earlier and Middle Stone Age prehistory of the Vhembe-Dongola National Park and adjacent farms. Surface finds indicate that the earliest prehistory of this region can be assigned to the Acheulean tradition of the Earlier Stone Age, dated broadly in Africa from 1.6 to 0.2 million years. Acheulean artefacts were made initially by *Homo ergaster*, the African ancestor of our own species also referred to as African *Homo erectus*. After *ca* 1 million years, Acheulean sites were made by a more evolved species, generally referred to in southern Africa as *Homo rhodesiensis*. By *ca* 250,000 years, tools of the Middle Stone Age replaced the Acheulean. It is during the course of the Middle Stone Age that *Homo sapiens* evolved, and its complex of industries continued to *ca* 30,000 years ago. Our research in the Limpopo basin is focused on survey and excavation of both the Earlier and Middle Stone Age sites.

Our overall study area extends from Riedel in the East not far from the Venetia Mines to the Parma farms in the West near Pontdrift. However, our work in the past two years has focused on Hackthorne, Machete and Parma, with some limited inspection of locations on Greefswald, Schroda and Riedel. This report outlines the research done in the last calendar year.

Research Activities

In July and August 2002, we continued with extensive excavations on the Hackthorne Acheulean site, conducted for over five weeks, and specific results are reported below. On 21 August, we conducted a test-excavation of a potential Acheulean site on Machete (S22.15.29, E29.17.25 GPS reading), but the results were unproductive as deposits were shallow and artefacts were limited to surface finds. In addition to these excavations, my students in 2002 conducted seven weeks of survey work on the Parma farms (Morris Sutton, assisted by Geeske Langejans and Ryan Gibbon), and several weeks were devoted to mapping and study of the sediments and geomorphology at Hackthorne (Joel LeBaron, assisted by Christine de Champs.

The work to date confirms the existence of an ancient terrace of the Limpopo, which lies at *ca* 600 to 635m altitude, *ca* 50 m height above the modern-day Limpopo River, and 4

km to its south. Along the 3 km escarpment that crosses the Machete, Hackthorne and Samaria farms, Acheulean artefacts are eroding from an unconsolidated sand horizon that covers extensive layers of consolidated fluvial sediments of the ancient terrace. Although these latter sediments are labelled as Quaternary in published geological maps, these sediments are not described in published literature and other local deposits of the Limpopo are known to be of much greater antiquity (T.C. Partridge, pers. comm.). In one road-cutting through the terrace (between Hackthorne and Samaria at S22.13.38 and E29.18.53), over 5m of strata are exposed. The uppermost layer consists of up to 2m of calcified fluvial sediments with cobbles. This is underlain by up to a metre of sandstone, which in turn is underlain by 3.5m of decayed basement stone exposed above the road surface. The sand horison and consolidated fluvial sediments thus overlie early Jurassic rocks that are over 190 million years old (E. Bordy, pers. comm.).

Thus far we have only found artefacts in association with the unconsolidated sand horizon that overlies the ancient terrace. This sand layer varies from a few centimetres thickness at the northern edge of the remnant terrace, where erosion is most active, to over 1.5m depth towards the south. Our excavation has thus far concentrated on the Hackthorne farm, above the road-cutting described above. Sediments consist of fine unconsolidated sands which J. Le Baron has determined are derived from local sandstone sources and not transported by water. While artefacts occur throughout the sand, their concentration is greatest at the base of the layer which overlies calcrete and other consolidated sediments of the terrace. Some artefacts are also cemented into the top laminar rind of this buried calcrete, and where the calcrete is decomposing, artefacts are more abundant. Although two calcretes are present in the Hacthorne site, a trench excavated by jackhammer shows that stone tools only occur in the laminar rind of the uppermost calcrete. One way that a laminar rind forms is through a process of chemical dissolution at the uppermost level of a buried calcrete, which acts as a barrier to the passage of rainwater. As the rind hardens, artefacts in contact with it become cemented. We also not yet found artefacts in any of the deposits below the topmost laminar rind at a second site worked on Hackthorne described below.

In July 2002, Dr Stephan Woodbourne of the Quaternary Dating Unit (CSIR) visited these two sites--Hackthorne 1 where our prolonged excavation is conducted, and the Hackthorne Borrow Pit, a site over 2 km to the south where artefacts have been exposed by quarrying of calcrete for road materials. Dr Woodbourne took samples of sand for Optical Stimulated Luminescence (OSL) dating and calcretes for Uranium Series dating. He reports that the calcrete appears to be too old for the Uranium Series method, but he expects to have OSL dates for the sand around mid-2003.

Mr LeBaron's conclusion of a locally derived, aeolian source for the unconsolidated artefact-bearing sand unit confirms that our main site on the escarpment is preserved in good context, undisturbed by flowing water. We have now excavated approximately 3000 artefacts from Hackthorne, and the material reflects this good context: the majority is small flaking debris under 20 mm size, which is characteristic of undisturbed, primary context sites. Only the smallest fraction of artefacts (under 10 mm size) is under-represented, which is probably due to loss of material through run-off with heavy rains.

The majority of material is also in fresh condition, with sharp edges. Many of the pieces that are weathered suggest exposure to sun rather than physical abrasion through transport in water. I expect we will find some correlation between artefact condition and the type of raw material, with the softer or more porous rocks weathering more quickly.

Hominids were attracted to the escarpment because exposures of the underlying fluvial terrace sediments provided good quality cobbles for tool-making. A variety of cobbles was available, including quartz, quartzites, chert, chalcedony and an igneous rock we must still identify. Away from the escarpment, we find some evidence for direct knapping of rock outcrops. However, the rocks in the presently identified outcrops are of poorer quality, and our richest sites are thus far associated only with the sands the overlying fluvial sediments. Our task will now be to determine the age of the sand containing the artefacts at Hackthorne. It is possible that the artefacts were buried by wind-blown sand as they accumulated, but it is also conceivable that artefacts were exposed on the escarpment by deflation of older sediments and later came to be buried by younger aeolian sands. Hopefully the OSL dates will provide some answer to the question of whether the sands and artefacts are contemporary in age. The artefacts themselves have not yet demonstrated any obvious mixing of material through time, but continued excavations will produce a larger sample that should provide more diagnostic tool types.

While most of the work thus far has focused on the Acheulean site at Hackthorne, Mr Morris Sutton has also spent seven weeks surveying the Parma farms as part of his MSc research project. Parma was chosen because a collection of Middle Stone Age artefacts from this locality was donated to the Wits Archaeology Department in 1935. These pieces consist of selected artefacts that include a handful of types characteristic of the Howiesons Poort Industry, an important cultural phase of the Middle Stone Age. Similar artefacts have not been located in Mr Sutton's survey, but he has recorded a large number of Middle Stone Age find spots. Although the sites are not worthy of excavation, Mr Sutton's thesis will make an important contribution to the overall project as he relates these occurrences to the geology and geomorphology of the area and interprets their distribution in the context of site formation in an open-air context.

Future Activities and Student Involvement

The research team consists of myself and four post-graduate students. I will continue with the large-scale excavations on the Hackthorne Acheulean site for six weeks in April and June/July in 2003 if sufficient funds are granted from the university this year. If the grant should not be as large as previous years, the excavations may then be limited to 3.5 weeks in June/July. Three PhD students are undertaking research projects in the programme and one Honours student will devote her thesis to the Hackthorne archaeology. The DeBeers Educational Trust Fund is providing some funds for the student projects and lab work, while a grant in 2002 from the L.S.B Leakey Foundation continues to support the work and the dating costs. The students involved in the research are:

1) Mr Joel LeBaron

The geomorphology of the Hackthorne Acheulean sites and the depositional history of the sediments are undertaken by geography and geoarchaeology student, Mr Joel LeBaron, for an M.Sc. Thesis by Research. With sieving, thin sections, and SEM microscopy, he has analysed grain size, grain composition, surface texture, shape and angularity to determine the source of the sediments and their depositional history. This task has included extensive mapping and study of the composition of the terrace deposits and overlying sand from systematic transects across the study area. Mr LeBaron's MSc research has demonstrated that the Hackthorne site is contained in aeolian sand that sits atop an ancient aggrading river terrace of unknown age. In April this year, Mr LeBaron will be evaluated for an upgrade to the PhD by expanding his research to include a landscape archaeology component. This work involves the excavation of approximately 20 test pits across an area of 8km^2 of the escarpment and adjacent plateau, which will be done between April and July. The results will indicate which areas have dense, patchy or no distribution of artefacts, and how this may relate to the underlying strata, which in turn should provide information on the past geomorphology of the landscape. In 2002 Mr LeBaron excavated three such test pits between the main site and the Borrow Pit, which showed that similar artefacts were contained in pits overlying cemented deposits, but not in the pit overlying sandstone. This expanded fieldwork on the larger landscape will provide valuable information and assist with the direction of future research.

2) Mr Morris Sutton

Mr Sutton will complete his MSc by Coursework and Thesis in the first quarter of 2003 when he submits his research report on a survey of the Parma farms for Middle Stone Age sites. This work consisted of an intensive survey of a 6 km^2 area, which has resulted in the recording of many artefact find spots. His results have allowed him to draw correlations between the location of sites and the geomorphology and local geology. His experience in surveying will lead to the first component of his PhD project. This will focus on a survey for Middle Stone Age sites in specific landscapes where broken topography with rock outcrops could potentially preserve sites with greater depth of deposits: eg., on Reidl, Greefswald, Schroda, Samaria, Machete, Little Muck, Mona and Armenia. The second component of his PhD will then focus on excavation of the best sites in order to investigate Middle Stone Age adaptations in the Limpopo basin.

3) Ms Geeske Langejans

Ms Langejans has completed her MSc and begins her PhD research in mid-February. She has assisted us extensively with survey work on Parma and with excavations on Hackthorne, and she included a sample from a Vhembe-Dongola Iron Age site in her thesis on element analysis of archaeological residues. Her focus for the PhD will be on expanding the research on the Acheulean sites. There are two fieldwork aspects of this research which need further development. First, other sites on the terrace may in the course of the year be opened for comparison with Hackthorne, which will expand our sample of artefacts from sealed contexts. Secondly, excavation of Acheulean quarry sites at quartzite outcrops away from the terrace will provide a fuller picture of the early archaeology in a different geographic context. We have located two such sites at Schroda

that need to be tested for their potential value. Ms Langejans also has another skill which will be explored for its potential contribution to the project. For her Masters, she has specialized in PIXE analysis: Proton Induced Xray Emission analysis uses a nuclear accelerator to determine the elements present in a target sample. Working at the Schonland Centre, Ms Langejans analysed ancient use-residues on the surfaces of a number of stone tools from various sites and from one Iron Age feature (a dolly hole) in our study area. Thus far, a pilot study by Dr Bonnie Williamson has found at least one stone tool from Hackthorne with plant residue (out of 10 studied). Dr Williamson is currently studying further artefacts for residues, and if she is successful, Ms Langejans will analyse the residues with PIXE to determine the potential of this line of research for our sites. Both we and the Wits Schonland Centre are keen that Ms Langejans continue with her PIXE research. If residues are sufficiently well preserved, she will focus on this avenue of research and limit her fieldwork component accordingly.

4) Ms Helen Kempson

Ms Kempson joins our project as an Honours student in Feb. 2003. Although the Honours year is largely devoted to coursework, she will in the course of the year work on a technological study of the artefacts from the main Hackthorne site for her Honours thesis. Such a study is important for a detailed description of the archaeology. It will particularly address how the several different types of raw materials available in the area influenced the hominids' technology, either helping or hindering the expression of their technical abilities.

Appendix
Sites mentioned in the foregoing report

Hackthorne 1 (site of main excavations)
S22.13.47; E29.18.56 GPS reading; Altitude 619m
Sieve mesh used: 2 mm

Hackthorne 2
Test trench by J. LeBaron
0.8 km south of escarpment edge / Hackthorne 1 site
Artefacts in sand unit overlying calcrete

Hackthorne 3
Test trench by J. LeBaron in vicinity of Borrow Pit
2.4 km south of escarpment edge / Hackthorne 1 site
Artefacts in sand unit overlying calcrete

Machete 1
Acheulean find spot
S22.15.29; E29.17.25; Altitude 576 to 586m
Location is below the sandstone outcrop with A. Schoeman's excavated Rain-making Iron Age site. Calcrete is exposed in the dirt road leading to the hill and contains

cemented cobbles. There is a scattering of ESA-like artefacts at the base of the hill. A test excavation was unproductive as sediments were too thin in this location

Machete, area north of the heritage Rock Art site near the Drifters Camp
Eg: S22.14.49; E29.17.33; 591m Altitude
Walked an extensive area along the ridges where sandstones are frequently exposed. Occasional artefacts noted in various places but all were out of context and there is no indication of potential sites.

Greefswald, Smuts House
S22.10.51; E29.24.35; Altitude 548m
Artefacts present in small numbers in limited areas with pockets of sediment, including the area of the outhouse. Some flake scars were noted on outcrops of fine quartzite. MSA artefacts may be located but accumulations are likely to be minor due to the poor nature of sediment traps. The best potential sediments were probably exploited for the outhouse.

Greefswald, Little Mapungubwe
S22.12.52; E29.23.2; Altitude 564m
LSA and MSA artefacts are known to occur on the hilltop site, but we did not have time to climb to the top; tools in cryptoscrystalline and fine quartzite rocks were, however, noted on the slopes behind the hill near the road leading to an old research house.

Greefswald, area of dolerite and sandstone
S22.12.25; E29.22.12; Altitude 561m
Noted a concentration of artefacts in sandy areas near a stream bed; some artefacts had calcrete coatings. The site should be tested for the potential presence of buried Acheulean material.

Schroda, quartzite quarry site with artefacts
S22.11.11; E29.25.33; Altitude 560m
Sands traps at the base of the outcrop should be tested for potential buried Acheulean material.