A Terminal Pleistocene Assemblage from Drotsky’s Cave, Western Ngamiland, Botswana

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Introduction

This article reports on archaeological materials dated to 12200 ± 115 BP (S16591) excavated from Drotsky’s Cave located in the northern Kalahari sandveld of western Ngamiland, Botswana. The site is significant because it fills a blank in the regional chronology, provides additional data for one of the less understood periods of southern African pre-history and indicates that an essentially modern strategy for faunal procurement had been established in pre-Holocene times.

Drotsky’s Cave

The Kwihabe Hills which contain Drotsky’s Cave (S. 20 2’, E. 21 25’) are located in an area of alab dunes approximately 110 km west of Tsau (Fig 1). The area has aptly been described as a “thirstland” since most rainfall sinks quickly into the thick sand mantle and near the hills water is available only in ephemeral seasonal pans. The hills are called “/twi haba” by local !Kung San (Bushmen) and this evidently is the basis for the “Kwihabe” designation. In 1932 Martinus Drotsky, an Afrikaner trader was taken to the hills by San and shown the cave which now bears his name. E.J. Wayland, then director of the Bechuanaland Geological Survey visited the site with Drotsky in 1943 (Wayland 1944). In 1969 and 1970 a group from Falcon College, Rhodesia, mapped the caverns and in 1971, H.J. Cooke made the first of several visits to the area (Cooke and Baillieul 1974, Cooke 1975). The following geological summary draws heavily on Cooke’s research.

The Kwihabe hills consist of six outcrops of dolomitic rock which protrude above the surrounding Kalahari sand cover. Cooke hypothesizes that faulting caused the original uplift of these hills and subsequent episodes are also clearly represented here. Drotsky’s cave, which is confined solely within Cooke’s hill A (Cooke 1975 Fig 3) results from penetration of acidulated groundwater through major faults. The cave is horizontal, has northeast and southeast entrances, and appears at one time to have had two major levels. The solutional nature of the cave itself and the occurrence of flowstones and dripstones indicate the presence of large amounts of water at multiple times in the past. Likewise the presence of a large quantity of windblown Kalahari sand fill points to at least one and probably several periods of increased aridity. Based on radiocarbon dating of stalagmites, Cooke places the three most recent wetter periods at ca. 14,000-17,000, 4350 and 1500-2000 BP.

Fig 2 presents a schematic plan of the northeast entrance to the cave. Cooke states that this large roomy cavern was created by the collapse of the upper of the two levels and that portions of the lower floor protrude through the resultant debris. The front portion of the shelter consists of a steep rock slope which descends at an angle of ca. 30-40 degrees into the shelter. Builders vary in size from several kg to hundreds of kg and derive from both the shelter roof and the outer cliff face. The rear floor consists of boulders and stalagmites with no earth deposit in the Northeast portion while a larger area is covered with fine reddish brown deposit of Kalahari sand. Several areas of the floor have a thin flowstone covering. An old filled-in trench can be discerned in the rear part of the rockshelter. By whom or when this was excavated is unknown.
The entrance to the rockshelter faces northwest and in September direct rays of the sun enter from ca 1:30 to 4:30. However the rockshelter is light enough throughout the day to allow easy reading and clear shadows can be cast on rocks facing outwards towards the entrance. !Kung informants said that bees nest in holes in the cavern wall and the site is regularly visited to collect honey. In 1969 when interviewing and excavation were conducted, four large branches, their bases buttressed by rocks, led up to a small smoke stained hole. Informants added that the cavern was used for no other reason and !Kung do not camp in it. The nearest permanent water source is at /xai/xai 36 km to the northwest. The mongongo (Ricinodendron rauteneni) provides an important food source for most western Ngamiland !Kung groups and a grove of these nut trees is located within several miles of the cavern. Informants also state the area is rich in game; in the winter of 1969 fresh eland, gemsbok and kudu spoor were seen in the immediate vicinity of the hills. Guinea fowl and red billed francolin are also common. Leopards inhabit the cave and fresh tracks were noted by Wayland, Cooke and Baillieu and Yellen. In the center of the shelter floor, a large boulder bears the inscription “Discovered 1 June 1932, M. Drotsky.”

In September 1969 Yellen, assisted by a crew of four !Kung men conducted test excavations in the northeastern chamber of Drotsky’s Cave. Four 5’ squares were excavated until large rocks or safety conditions precluded further work. Squares were labelled A through D in order of excavation and their position is indicated in Fig 2. Excavation proceeded in natural stratigraphic units with all depths measured from the base of the letter “Y” in the Drotsky inscription. For the sake of convenience, the Northeast side of each square is labeled as “North”. The stratigraphy in the front portion of the cave is complex and the excavation of three unconnected 5’ squares does not provide sufficient exposure to draw general conclusions. Three processes however do seem to control deposition: rockfall, stalagmite formation and infill by windblown sand. Square A contained one stalagmite layer which covered the western half of the square and dipped sharply downwards. In square B there were two such layers, the top one also sloping downwards and in square C two layers sloping downwards from West to East. Unfortunately, it is not possible to relate cultural materials recovered in Square A to either of these layers and in fact it is unclear whether each represents a small localized patch or if in fact the two layers continue across the two squares. The South wall of square A is shown in Fig 3. The matrix of square D, situated 10’ back towards the rear of the cavern consisted solely of Kalahari sand.

Archaeological materials

Cultural materials and charcoal were recovered concentrated in the southern half of square A at a depth of between ca. 28” and 40” BD. In Square D, two layers of charcoal, separated by an earth layer were present; the first was located between 40” and 48” BD, the second between 50” and 52” BD. Both were unassociated with cultural remains. Materials are analyzed as a single assemblage and include ostrich egg shell, lithic and faunal remains.

A total of 193 fragments of ostrich egg shell, the largest 44 mm in maximum length, were recovered. None showed evidence of working and one piece was charred. Lithic remains consisted of 61 pieces of which 57 were classed as debitage. The material appears to be a silcrete which is locally available. Flakes range from 12 mm to 45 mm in length and while in some length exceeds width by a factor of two, none are the product of a true blade technology. (see Fig 4) Materials include two cores. The first is small with a maximum diameter of 46 mm and has removals on two faces; the other is worked in multiple directions and has a maximum diameter of 27 mm. One triangular flake which measures 36 mm x 25 mm x 9 mm exhibits fine retouch which extends onto the dorsal face over the entire length of the left side and similar retouch on the ventral face on the right side. The butt is unretouched. A final flake measures 31 mm x 17 mm x 4 mm and displays fine retouch which extends onto the dorsal face on the proximal half of the left side.

A total of 848 faunal fragments were recovered of which 202 were assignable at least to size category of animal. Teeth were sent to R.C. Welbourne of the University of the Witwatersrand. The remainder were identified in the field by Yellen with local !Kung assistants. The results of this analysis are presented in Table 1. With the exception of blesbok, all species are present in the region today and all are eaten by !Kung. (This conclusion however must be tempered by the fact that in some instances identification is not possible to the species level.) Historical reports indicate a range for blesbok which included portions of the Cape Province, Orange Free State, Transvaal and Natal. It does not appear to have extended into Botswana. Restricted to grassland it requires sweet grasses and water. (Smithers 1983) Under present conditions blesbok could not survive in the Drotkys’s Cave region other than as a seasonal migrant. Analysis of faunal remains from a series of modern !Kung camps from the Dobe region, ca. 75 km to the northwest, indicate a balanced utilization of a wide range of species. In the face of extremely variable and unpredictable rainfall, modern hunter-gatherers appear to follow a generalist strategy.

This generalist strategy is reflected in faunal diversity at !Kung camps, and can be measured by
Simpson’s D statistic. Simpson’s D ranges from 0 to 1, and increases with the number of species present in an assemblage. For assemblages with the same number of species, those in which individuals are more evenly distributed across species will approach more closely to a D of 1. The Simpson’s D for a grouped subseries of San rainy season camps (Yellen 1977) is .7185. For a series of dry season camps occupied by the same San group, D is .7229. The Drotsky’s cave fauna gives a D of .7509. This implies the same generalist strategy.

Two scatters of charcoal were exposed in square A at a depth of 31” below datum. These did not form a clearly defined hearth. A combined sample dated by the Smithsonian Institution Radiocarbon Laboratory has yielded an age of 12,200 ± 150 BP.

**Discussion**

In the sandveld area between the Okavango swamps and the Namibian highlands to the West, a widespread mantle impedes archaeological research. Sites are difficult to locate and materials found in such sand are subject to considerable vertical displacement. The site of +gi, located approximately 55km northwest of Drotsky’s cave (c. 37° S; 21 01'E) in Botswana and approximately 700 m East of the Botswana-Namibia border provides the only regional sequence (albeit a discontinuous one). A team headed by Brooks has excavated at this site over a 14 year period (see Brooks and Yellen 1979; Brooks, Crowell and Yellen 1980; Helgren and Brooks 1983; Yellen 1971). Located on the edge of a seasonal pan, interspersed lacustrine calcite horizons indicate several periods of prolonged inundation. Excavation revealed three industries. A Middle Stone Age (MSA) industry is characterized by bifacially and unifacially retouched, small to medium-sized pointed forms which constitute about 25% of the retouched sample (Kuman 1984). There are also numerous side- and end-scrapers, notched scrapers and denticulates. The closest counterpart is Redcliff in Zimbabwe included by Sampson (1974) within the Bambata complex. These materials are accompanied by an abundant mammalian fauna and capped by calcrites of infinite age. Worked bone and ostrich egg shells as well as fauna are also present. Three radiocarbon dates from the uppermost part of the LSA unit range between 110 BP and 810 BP. Undated material extends to a depth of 80 cm below this point. Similar artifacts occur in poor stratigraphic context in the sandy areas at least .5 km from several pans in the region where !Kung aggregate today. At Xi-Xai Wilmsen (Denbow 1984) obtained dates on charcoal scatters of 1150 and 1230 BP. In this context the Drotsky cave materials are unique in both typology (although it is difficult to draw firm conclusions from such a small sample) and age. They fill a blank in the western sandveld archaeological sequence.

In the broader southern African context, Deacon (1984) defines a terminal Pleistocene/early Holocene industry which dates from between ca 12,000 and 8,000 BP and is characterized by non-microlithic assemblages with few formal tools. This includes Goodwin and Van Riet Lowe’s original Smithfield A as well as a number of other assemblages. The southern Namibian sites of Apollo 11 and Pockenbank (Wendt 1972, 1976) have produced the earliest dates of between 20,000 and 12,000 BP. The industry from Drotsky’s Cave appears to be part of this general tradition.

**Conclusion**

When measured against modern standards, the 1969 excavations at Drotsky’s Cave are clearly inadequate. Sediments were not screened, flotation for organic remains not attempted, and the sample of retouched lithic artifacts extremely small. However this brief six day exploratory project has provided the first indication of a terminal Pleistocene/early Holocene non-microlithic industry within the sandveld region of the Kalahari. The earliest evidence for this tradition comes from Apollo 11 and Pockenbank. In this context, the 12,500 BP radiocarbon date from Drotsky’s Cave is also early and it is interesting that all three sites are relatively far North and situated in the interior of the region. While the lithic sample is extremely small, the faunal remains permit more extensive analysis and these show that the historic San faunal procurement strategy which continues to the present day was established by at least 12,500 years ago. Although large rockfalls make Drotsky’s cave a difficult site to excavate, the confirmed presence of archaeological materials, including well preserved faunal remains suggest this site merits further attention.
TABLE I
Faunal Remains: Drotsky's Cave

<table>
<thead>
<tr>
<th>Number Fragments</th>
<th>&quot;Tortoise&quot;*</th>
<th>&quot;Springhare&quot;</th>
<th>&quot;Frog&quot;</th>
<th>&quot;Guinea fowl&quot;</th>
<th>&quot;Hornbill&quot;</th>
<th>&quot;Porcupine&quot;</th>
<th>&quot;Duiker/steenbok sized animal&quot;</th>
<th>Buffalo (Syncerus caffer)</th>
<th>Blesbok (Damaliscus dorcas albinfrons)</th>
<th>Hare (Syncerus caffer)</th>
<th>Unidentified bone fragments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>34</td>
<td>64</td>
<td>16</td>
<td>4</td>
<td>1</td>
<td>12</td>
<td>67</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>646</td>
</tr>
</tbody>
</table>

*Species in parentheses indicate San identifications based on modern counterparts.

ACKNOWLEDGEMENTS
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BIBLIOGRAPHY


FIGURE 1  Location of archaeological sites, Western Ngamiland, Botswana

FIGURE 2  Northeast entrance to Drotsky's Cave: Schematic plan
FIGURE 3 Drotsky’s Cave: Stratigraphic sections

SQUARE A: SOUTH WALL

- KALAHARI SAND
- STALAGMITE LAYER
- CHARCOAL
- ROCK

SQUARE D: EAST WALL

FIGURE 4 Drotsky’s Cave: Lithic artifacts