The skeletal remains

The immature individual, designated Melkbosstrand 1, is represented by a complete skeleton. The dentition and long bone development is consistent with an age at death of more than 13 and fewer than 16 years. At this age, with such growth still to be completed and with the influence of sex hormones barely begun, it would be inappropriate to assess sex with confidence. However, the pelvis shows female characteristics. Schutkowski asserts that certain pelvic traits, specifically the greater sciatic notch angle and the degree of sigmoid curvature, are dimorphic from infancy. Therefore, perhaps Melkbosstrand 1 is a girl. The length of the right femur, including unfused distal epiphysis, is 379 mm, which yields an estimated stature of 141.9 ± 0.78 cm using the equation of Lundy and Feldesman.5 The dental health is excellent, with no evidence of caries, abscessing or enamel hypoplasia. One orbit shows very slight porosity consistent with cribra orbitalia, an indication of anemia. The vertebral, ribs and long bones show no evidence of healed fractures, infectious processes or respiratory problems.

The adult, Melkbosstrand 2, is complete except for the head of the left humerus, which we believe was lost during excavation with the back hoe when the burials were discovered. All pelvic and cranial indications suggest a female. The pubic bones show clear "parturition scars". Although these depressions on the dorsal surface of the pubis can occur without birth,3 in this case they appear to have been caused by one or more births. There is evidence of bony spurring to the auricular surface, which is greater than would be expected from age changes alone. Also, the pubic symphyses are asymmetrical, possibly showing remodelling due to trauma. Femoral lengths are 395 mm (left) and 399 mm (right). Using the Feldesman and Lundy equation, stature is estimated to be about 148 cm.

An age estimate based on the pubic symphyses is likely to be unreliable because of the effects of apparent birth trauma. At several locations on the long bones there remain the vestiges of epiphyseal lines. The vertebral body rings are clear, suggesting recent fusion. There is slight osteoarthritic lipping at most joint surfaces. Dental wear is even in pattern and moderate-to-heavy in extent. If she was following a hunting-gathering lifestyle, the dental wear is consistent with someone in their late 20s or early 30s. There are a number of extant mid-thoracic ribs. Applying the criteria of Iscan and Loth,6 the sternal rib ends yield ages of 24 to 46 years. Therefore, an age somewhere in the thirties is most likely.

This woman had a number of distinguishing characteristics, aside from the cranial trauma. First, her orbits show mild cribra orbitalia. Second, the woman's lower lumbar vertebrae show evidence of at least one herniated and one slipped disk. She would likely have had lower back pain and limited flexibility. Third, she has an anomalously asymmetrical cranial base, cervical spine and upper torso. The foramen magnum and basiocciput are distorted and the left mastoid process is very small. All cervical vertebrae show asymmetry in the development of the transverse foramina and processes. The left scapula is 30 % smaller than the right, with slight asymmetries extending into the clavicle, arms and hands. This pattern could have occurred through perinatal trauma to the cranial base and a resulting reduction of blood flow to the developing left limb. Although the asymmetry is pervasive, there is no clear evidence of disability. The synovial joint capsules show balanced development and age changes. There is no evidence of disuse atrophy. Therefore, although the asymmetry is anomalous, it was not necessarily a disability.

Table 1. Radioactive and stable isotope values (%) for the two Melkbosstrand individuals.

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Juvenile</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS 14C age</td>
<td>2460 ± 50 BP</td>
<td>2490 ± 50 BP</td>
</tr>
<tr>
<td>Geochron/Livermore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geochron/Oxford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13C gelatin*(Geochron)</td>
<td>-14.1</td>
<td>-13.7</td>
</tr>
<tr>
<td>13C collagen*(UCT)</td>
<td>14.2</td>
<td>12.7</td>
</tr>
<tr>
<td>13C enamel carbonate (UCT)</td>
<td>-11.2</td>
<td>-10.2</td>
</tr>
<tr>
<td>13N gelatin (Geochron)</td>
<td>10.5</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

*Products of different bone protein preparation methods.
N.A., not available.

Fig. 1. The younger individual to the left, the two crania from Melkbosstrand show the rounded profiles and frontal bossing associated with the skulls of Khoisan people.
The cranial trauma

The vault of the juvenile's skull (Melkbosstrand 1) shows two roughly circular breaks which occurred when the bone was still fresh. This assertion is based on the absence of the increased vascularity which would be associated with healing, plus the inwardly-orientated bevelling of fresh bone exposed to high-impact trauma, sometimes called internal vault release, and the tendency to bend seen in fresh bone when it is exposed to less powerful force. Both lesions are on the posterior aspect of the parietals, a more circular break on the left side, a more linear break on the right side (Fig. 2). The former retains a fragment of outer table that has been partially compressed inward and it shows inner beveling. The latter has a depression or gash mark extending posteriorly from it which has depressed the outer table but not broken through it. This gash extends about 45 mm. A crack projects from the linear broken portion towards the lambdoidal suture line and another crack connects the two holes. The morphology of the gash is more consistent with a percussion blow than cutting striae. When magnified (Fig. 3), the gash appears to have been made by a rather uneven-edged implement. The cleft appears to have at least two depressions within it, and there is a scratch mark very close and parallel to the gash. These characteristics, we believe, are consistent with use of a flaked stone tool. Stone tools, particularly ones that are retouched, do not have straight or single-plane cutting edges.

The more evenly depressed, inferior edge of the cleft may represent the smoother side of the blade or flake, with the irregular superior edge showing the results of impact of the more heavily worked or retouched edge.

The vault of the woman's skull (Melkbosstrand 2), while complete, was fragmented by cracks extending from wounds. The pattern of the radial cracks is consistent with their origins around two major slash-shaped blows to the right side of the head (Fig. 4). Along the posterior half of the right parietal is a long and wide (c. 20 x 80 mm) slash extending through the skull from mid-parietal to c. 40 mm superior to the mastoid process. Around this slash, the excavators noted some loose skull fragments in normal anatomical position, while other, smaller pieces were retrieved from the sand within the cranium during subsequent laboratory work. Coloration of the bone fragments and internally-orientated bevelling around this slash confirm that this breakage is not recent. About 35 mm posterior to this slash but parallel to it is another smaller slash extending about 30 mm, going through the skull bone. Both of these cuts are anterior to the lambdoid suture. Below the smaller penetrating slash, connected to it by a crack, there is a small puncture wound. The oval hole is c. 7 x 13 mm in diameter. The manner in which the break expands internally is consistent with a small pointed projectile hitting fresh bone (Fig. 5). Besides these three lesions, there is also damage to the right supraorbital border, which may reflect a pre-mortem cut to the bone, and a focus of depression on the right parietal, just below the temporal line. This wound has compressed the outer diploe over an area of c. 12 x 20 mm. On the left side of the skull, just behind the temporal bone at asterion, the inner table of the skull has cracked and bent inward. The bone is thick at this location, so these changes reflect substantial force applied on the opposite side.

Discussion

The skulls of this Later Stone Age woman and juvenile show multiple loci of damage. The damage was incurred at around the
time of death. Careful excavation failed to identify any feature of the burial environment that could have caused the damage. No grave goods were offered. The simplest explanation for the cranial damage is that these two individuals were purposefully killed by other people. The absence of any defense wounds on the arms and shoulders of the victims suggests that either they were unaware of the attack (asleep or unconscious) or they were restrained in some way. The powerful blow made by a dull object to the right temple of the woman's skull may indicate an unconsciousness. The indentation to the left side of the skull is consistent with the blows to the right side of the skull being administered while the left side of the woman's head was resting against a stationary surface. Both the juvenile and the woman sustained circular damage blows (consistent with an arrow) and linear damage blows (consistent with any heavy, linear object). The juvenile's skull preserves one gash to the outer diploe that appears to have the profile of a flaked stone tool.

Neither the complexity of a social system nor its reliance on technology can be used to predict its level of interpersonal violence. Modern urban societies can have relatively low homicide rates. For example, Britain and Japan during the 1950s had homicide rates of 0.5 and 2.2 (per 100,000), respectively. South Africa has a much higher reported rate, with 1997 values of 80 for the Western Cape and 72 for Gauteng. Some societies have exceptionally high reported homicide rates (e.g. Australia, New Guinea).

Fig. 5. A view of the inner table of the adult female's skull bone, showing internal vault release around the circular break and the smaller of the two gashes.

Of particular relevance to the case reported here is the homicide rate of 41.9, which has been estimated for the !Kung in the Kalahari from 1920 to 1955, a time when their existence was relatively undisturbed by outsiders. Contrary to the impression given by the title of the popular book, The Harmless People, ethnographic and historical accounts of !Khoisan peoples note the presence of conflict and the difficulty of dispute resolution in a system with no overriding authority. While earlier commentary tended to de-emphasize the role of interpersonal conflict among !Khoisan groups, more recent work acknowledges its pervasive nature. Most of the violent acts recounted in the ethnographic literature have their basis in sexual jealousy, and occur among men. 'Executions' have been described in which men who have slain other men have been killed (with arrows) by the group or with the collusion of the group. It is not clear what insights this literature may contribute to the interpretation of the archaeological case presented here.

While this case of western Cape prehistoric homicide is not as obvious as the bone projectile point embedded in a woman's vertebra reported by Morris and Parkinson, it is compelling nonetheless. It would be inappropriate for us to create a detailed scenario describing how these acts of cranial trauma occurred. We do not know. It may be possible, through further research into the population dynamics of this region, for us to make an educated guess regarding whether such acts likely occurred within the group or were the acts of outsiders. It is clear from the study of small-scale human societies that hunter-gatherer groups have a limited range of dispute resolution mechanisms. Instances like the one reported here provide evidence towards the deconstruction of the 'harmless people' model, even in pre-colonial times. There could have been various reasons for why these two people were killed. All we can say is that 2500 years ago it happened. Such events are not simply a function of modern times.

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