Southern African Field Archaeology **9**:68-74. 2000.

A HUMAN GRAVE FROM THE FARM HAMILTON IN THE LIMPOPO RIVER VALLEY (SOUTH AFRICA)

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ABSTRACT

Human skeletal remains are valuable sources of information on past lifestyles and health. A human skeleton was recently discovered on the farm Hamilton, on a site which is linked with the Mapungubwe cultural landscape (AD 1216 (1244) 1267). Recent archaeological investigations have focussed on sites in the vicinity of Mapungubwe, in order to establish where these sites were situated, whether they were linked to Mapungubwe, and what their functions were. The skeleton (UP 138) was found in an ash midden, and was horizontally flexed on its right side with the hands under the skull. It is the remains of an adolescent individual who showed clear signs of *cribra orbitalia*.

INTRODUCTION

The Mapungubwe complex of sites continues to create interest amongst archaeologists and historians. These sites, situated close to the confluence of the Limpopo and Shashi rivers, include K2, Mapungubwe and several smaller sites on the farm Greefswald. Other sites which previously yielded dates and material relevant to the K2/Mapungubwe cultural complex were found on the farms Schroda (Hanisch 1980), Samaria, Pontdrif (Hanisch 1980), Stayt (Hutten & Steyn 1998), Skutwater (Van Ewyk 1987), Kromdraai 2 and 3, Ntanye (West Nicholson, Zimbabwe), Glennel (De Villiers 1980), and others (cf. Vogel 1998:298-299). In the quest for a better understanding of the context of K2/Mapungubwe and its inhabitants, the archaeological focus has shifted to sites in the vicinity of Greefswald.

Excavations were conducted by the University of Pretoria during 1999 at satellite sites in the region, as part of a project to identify, localise and date all archaeological sites within the borders of the planned Limpopo Valley National Park. This information will be used in the management plan of the new National Park which will include many and highly significant archaeological sites (SANP 1997). Moreover, the research is also aimed at a better understanding of the economical activities and physical layout of the interconnected sites which form part of the broad K2/Mapungubwe complex. As part of the investigation into the K2/Mapungubwe satellite sites, excavations were conducted on the farm Hamilton, which is situated about 6 Km south of K2/Mapungubwe (Fig. 1). During September 1999 a human grave was discovered in ash deposits on this site.

THE SITE

The Hamilton archaeological site comprises of ash middens related to cattle kraals. The site presumably represents a cattle post of the high status community of Mapungubwe. No surface indications of structures like stone walls or any other buildings were found, with the possible exception of a small area of exposed hut floor, in an area which was not excavated.

Numerous rodent tunnels occur in the deposits, exposing many items of archaeological interest. The surface survey yielded pottery, glass beads (including a broken garden roller), animal bones and fragments of tuyères. These finds are indicative of a possible connection with the K2/Mapungubwe culture. The potsherds found in the excavation show close relationships with the later Mapungubwe material.

Three test trenches were excavated in ash deposits on Hamilton. The ashy soil stretches over an area of approximately 800 metres long and 30 to 45 metres wide. The test excavations, designated Map 22, 23 and 24, were placed randomly across the ash deposits. Each of these

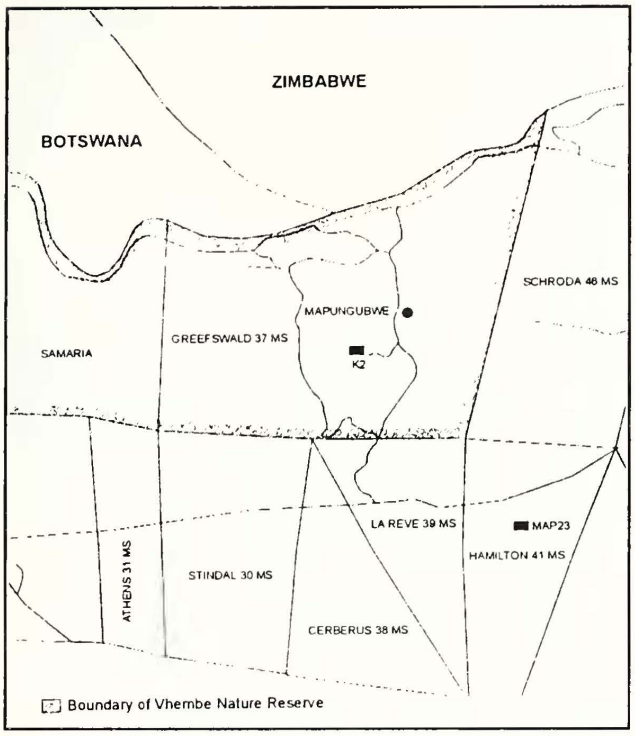

Fig. 1. Location of Hamilton (MAP 23). Modified from a map obtained from Department of Anthropology and Archaeology, in co-operation with Centre for Geo Information Science (University of Petoria).

trenches was 2 m x 2 m. The aim with these test excavations was to identify, localise and date the ash midden deposits. The excavations were not aimed at finding skeletal remains, but when a skeleton emerged during the excavation of Map 23, it was excavated.

The excavation area, designated Map 23, is situated at the southern edge of the ash deposits close to an area where rodent activity exposed potsherds which, based on decoration and typology, suggested a relationship with the pottery of Mapungubwe. Excavation through approximately 20-35 cm of ashy soil terminated in a layer of red gravel which was not excavated. A small test trench suggested that the red gravel (consisting of red shale of the karoo-system) was the natural soil surface on which the ash midden was situated. Almost in the centre of the excavation a human skeleton was found, buried in the ash midden and lying on the red gravel. There was no indication of a hut floor or any other structures in the close proximity of the grave.

The grave

No surface indication of a grave was observed. The body was buried in a flexed position on its right side, facing southwest with the right hand under its head and the left hand just in front of the face (Fig. 2). The skull was exposed at a depth of 17cm below the present surface. A small clay vessel, almost complete but broken into four pieces, was found in front of the skull (Fig. 3). This pot, however, was not typical of the Mapungubwe phase. It was a small bowl which resembled a child's work. The clay work and surface were both quite uneven,

Fig. 2. UP 138 *in situ*.

while the decorations were very shallow and unsophisticated. The clay vessel was broken and placed in front of the face. The only other cultural objects present were 26 glass beads (25 blue and one black), found near the cervical vertebrae, and a few large potsherds which seem to have demarcated the grave. This demarcation may resemble very closely the description of Gardner of the skeleton K.S. No. 10. He describes it as follows: "Child, 11-12. On right side facing south. Skull very badly crushed and position difficult to detect, but thought to be fully flexed. A true pot burial. Surrounded by five large sherds, two against the skull". (Gardner 1963:41). Gardner's true pot burial here refers to a burial where the body is surrounded by pots or potsherds, and not to a burial where the body was placed inside a pot.

Indications of a grave pit were only found in the area around the skull, where slight colour differences in the matrix were observed. The absence of clear indications of a grave pit may have been the result of the shallowness of the grave and the effect of roots and rodent activity, which disturbed the soil. The skeleton was almost complete, except for parts of the left lower limb which may have been lost due to postmortem scavenger activity.

THE SKELETON

The skeleton is very well preserved, and is complete with the exception of most of the left lower limb, a cervical vertebra and some missing hand and foot bones. Of the left lower limb only the proximal tibial epiphysis and the first metatarsal are present. The skull, although complete, had been crushed on its right side, precluding the possibility of a full set of cranial measurements (Fig. 4). The left side is intact and not distorted. Except for both lower central incisors which had been lost postmortem, all teeth are present. The skeleton is now housed in the Dept. of Anatomy, University of Pretoria under the accession number UP 138.

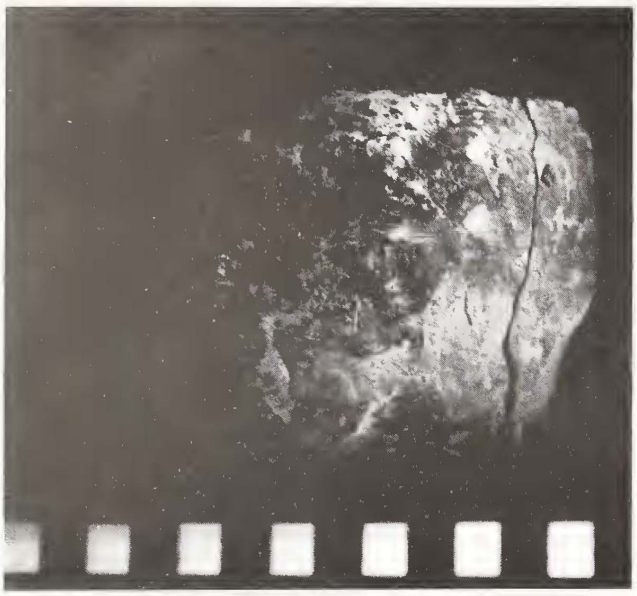

Fig. 3. The small pot found with the skeleton.

Fig. 4. Skull of UP 138 in lateral view.

Age and sex

The skeleton is clearly that of a sub-adult individual. The set of permanent teeth had fully erupted in the lower jaw, but the upper jaw lacks third molars. There is, however, very little room in the maxilla for these two teeth, and the possibility of non-development of the third molars must be considered. Wear facets are present on the lower third molars, indicating that they have been in use for a while. Most of the epiphyses are still open, and the three elements of the innominate are unfused. Of the major long bones, only the distal ends of both the humeri have united, but the epiphyseal lines are still clearly visible. The combination of unfused pelvic elements and presence of third molars is unusual, and it may be possible that skeletal maturation is delayed in relation to dental eruption. This is supported by the presence of indicators of stress/disease (see "health and lifestyle") in this individual, which may have contributed to retarded skeletal maturation. All these features indicate a young (adolescent) individual, probably around 14 - 17 years old (Ferembach *et al.* 1980, Krogman & İşcan 1986; Scheuer & Black 2000).

Sex determination is notoriously unreliable in subadults. The sciatic notch is very narrow, and the ilium, as seen from above, is curved. No firm diagnosis of sex could be made.

Population affinity

Determination of population affinity is also difficult in subadults, but it seems as though specific population-group related features may be discernible from about 5 - 6 years of age (Steyn & Henneberg 1997). The narrow skull and shape of the nose (nasal index 48) indicate a person of South African Negroid descent (De Villiers 1968). A list of the measurements that were possible is shown in Table 1. For this purpose the system as proposed by Buikstra & Ubelaker (1994) was used.

Long bone growth

Data on long bone growth of adolescent individuals are very scarce, as adolescents are poorly represented in all skeletal samples. The most obvious sample to compare this individual to would be the Mapungubwe/K2 collection. Even though this skeletal collection comprises of more than 110 individuals, only 13 skeletons are available in the 10 - 14 year category, and 4 in the 15 - 19 year old category. Depending on the type of long bone considered, only 2 - 4 individuals had bones intact enough to measure (Steyn & Henneberg 1996).

Long bone lengths of the Hamilton individual are comparable to those of other similarly aged individuals from K2, as well as individuals from Altenerding, Germany (Sundick 1978) and Libben (Lovejoy et al 1990). Comparison with these groups are shown in Figures 5 (humerus, as an example of an upper limb bone) and 6 (tibia, as an example of a lower limb bone). No obvious growth retardation in relation to these other groups could be seen. It should, of course, be kept in mind that all the individuals in these studies died early in life, and may thus not be representative of the normal, healthy, living population.

Dentition

The two lower central incisors were lost post-mortem. This individual had only one upper lateral incisor - the left one either did not develop or was lost very early in life, as there is no room in the maxilla for it. The right upper lateral incisor is very small and rounded/peg-shaped (Fig.7). Peg-shaped abnormality of a lateral incisor was also found in an individual from Mapungubwe Hill. This individual was about 12 - 13 years old, and had many enamel hypoplastic lesions on the teeth (Mapungubwe skeleton 622a). Unfortunately this skeleton is very poorly preserved, and no other data could be obtained from it. Variations in dental morphology, such as seen in the Hamilton individual, are often used in an attempt to trace genetic relationships between groups. Upper lateral incisors are more variable in size and shape than most

Table 1. Measurements of skull and mandible of UP 138 (Buikstra & Ubelaker 1994).

Dimension	mm
Max. cranial length	186*
Max. cranial breadth	-
Bizygomatic	-
Basion-bregma	136
Basion-nasion	113
Basion-prosthion	108
Maxillo-alv. breadth	51
Maxillo-alv. length	48
Biauricular breadth	114
Upper facial height	74
Min. frontal breadth	108
Upper facial breadth	-
Nasal height	54
Nasal breadth	26
Orbital breadth	42
Orbital height	39
Biorbital breadth	-
Interorbital breadth	22
Frontal chord	107
Parietal chord	123
Occipital chord	90
Foramen magnum length	39
Foramen magnum breadth	28
Mastoid length	27
Chin height	34
Height of the mandibular body	33
Breadth of the mandibular body	10
Bigonial width	88
Bicondylar breadth	105
Min. Ramus breadth	31
Max. Ramus breadth	41
Max. Ramus height	50
Mandibular length	77
Mandibular angle	144

*estimates

Table 2. Postcranial measurements of UP 138. All maximum lengths of long bones are diaphyseal lengths (Buikstra & Ubelaker 1994).

Dimension	mm
Clavicle, max. length	113
Clavicle, ant-post diameter, midshaft	9
Clavicle, sup-inf diameter, midshaft	6
Humerus, max length#	270
Humerus, epicondylar breadth*	52
Humerus, max. diameter, midshaft*	16
Humerus, min. diameter, midshaft*	12
Radius, max. length	209
Radius, ant-post diameter, midshaft	8
Radius, med-lat diameter, midshaft	13
Ulna, max. length	228
Ulna, min. circumference	27
Os coxae, iliac breadth	106
Femur, max. length	374
Femur, ant-post subtrochanteric diameter	16
Femur, med-lat subtrochanteric diameter	24
Femur, ant-post midshaft diameter	20
Femur, med-lat midshaft diameter	19
Femur, midshaft circumference	58
Tibia, length*	310
Tibia, max. diameter at nutrient foramen*	23
Tibia, med-lat diameter at nutrient foramen*	18
Tibia, circumference at nutrient foramen*	66
Fibula, max. diameter at midshaft*	10

#distal epiphysis fused, measurement taken to still clearly visible epiphyseal line
*measured on right side
med-lat = mediolateral; ant-post = anteroposterior; max. = maximum; min. = minimum; sup = superior

other teeth (Scott & Turner 1997). These upper lateral incisor abnormalities show patterns of geographic variation, and occur in 0 - 5 % of people in specific populations. Their frequencies in many populations, and their significance, still need to be further investigated.

As mentioned previously, the third upper molars are also not present An unusual wear pattern is present, since all anterior teeth (especially the uppers) are much more worn than the posterior ones. It does not seem as if considerable overbite was present, and it may be possible that this individual may have used his teeth for purposes other than masticating, *e.g.*, for some sort of craft or tool-making. One large carious lesion is present on the occlusal surface of the right lower first molar. No signs of enamel hypoplasia were found.

Health and lifestyle

Pronounced cribra orbitalia is present, so that the various foramina are coalescing (Fig. 8). Cribra orbitalia usually presents in the roof of the orbits as small pits. It is caused by anaemia, resulting in red blood cell formation in the bone marrow of the skull (Stuart-Macadam 1987a, 1987b, 1989). In severe cases, this anaemia may also present as small pits on the rest of the skull (porotic hyperostosis) which was not observed in this case. Anaemia is not necessarily diet-related, but may rather be an indication of the pathogen load an individual has to cope with. Hypoferraemia, resulting in anaemia, is an adaptation that serves as a defence mechanism and can be seen as an evolutionary reaction to invasion by micro-organisms (Stuart-Macadam 1992). The cribra orbitalia seen in this individual may thus have been the result of a number of factors, *e.g.*, an attempt to cope with an acute infection in the period preceding death, chronic low grade parasitic infections or a low iron diet. Although cribra orbitalia was found in 39.5% of K2/Mapungubwe individuals with intact orbits, none of them had it to the advanced degree that what was

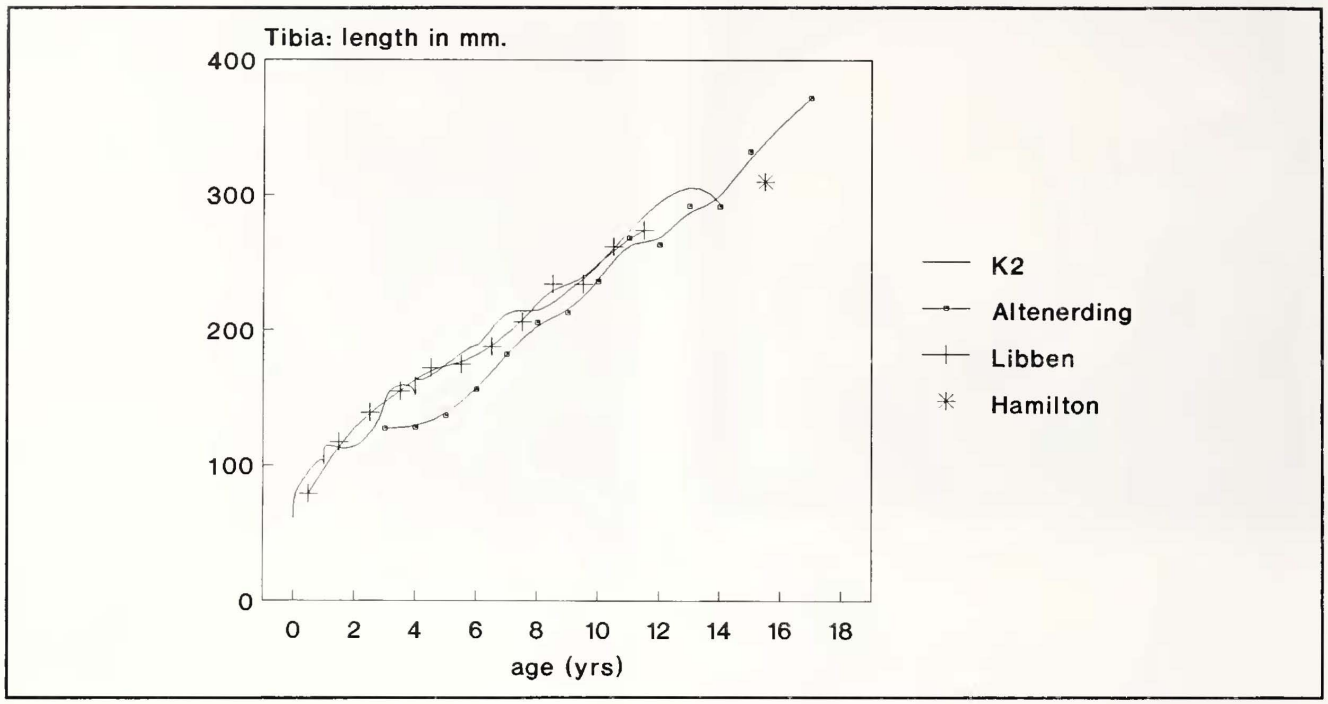

Fig. 5. Long bone growth of the humerus of UP 138, in comparison to other populations.

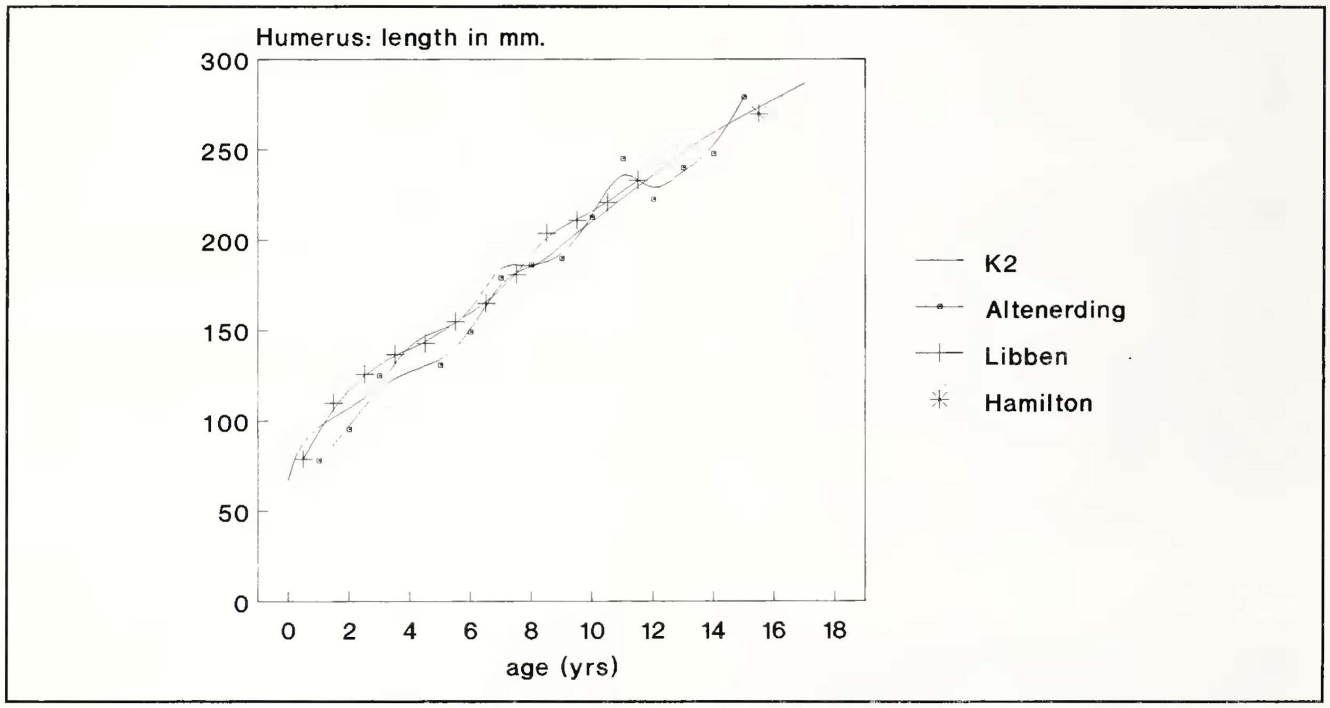

Fig. 6. Long bone growth of the tibia of UP 138, in comparison to other populations.

observed in UP 138 (Steyn & Henneberg 1995). There were no signs of subperiosteal bone growth on any of the long bones.

Another unusual feature on this individual is the fusion of the navicular and medial cuneiform bones of the right foot (left foot absent). This is not one of the abnormalities mentioned in the Bergman et al (1988) synopsis of human anatomic variation, and it is unclear whether it is of clinical significance.

RADIOCARBON DATING

A calibrated date on charcoal from layer 2 in the test excavation is AD 1223 (1239) 1265 (Pta 8023), while the date on bone from the skeleton is AD 1216 (1244) 1267 (Pta8016). These dates place the burial in one of the later phases (Phase III) of occupation at Mapungubwe, which is concentrated on the Southern Terrace (Meyer 1998:181, 298).

Fig. 7. The peg-shaped lateral incisor.

Fig. 8. Cribra orbitalia in UP 138.

DISCUSSION

The skeleton is probably that of an adolescent individual, who was between 14 and 17 years of age. Signs of chronic disease were present, but the exact nature thereof is not clear. Dental decay is present, and some tooth abnormalities were observed. Adolescent individuals are not commonly encountered in the skeletal record, as people are usually quite healthy during this age period. In modern societies one of the most common causes of death in this age groups is accidents/trauma, but the clear indications of disease in this case show otherwise.

There is no non-intrusive way to tell whether there are more graves in the Hamilton midden. However, further excavations in the vicinity may shed light on other basic questions like where these people lived, how many they were, and what their relationship with the high status community of Mapungubwe was. It will also be valuable to establish whether this community was a small subsistence farming community, or whether they were tending the cattle for the royals.

Little is known about the site where this individual came form, but it would be interesting to see whether the individuals from the Mapungubwe/K2 satellite sites enjoyed the same relative degree of affluence as those from the larger metropolis. Human remains are a valuable source of information on past life styles, adaptation and health. Quite a few skeletons from these satellite sites are available (Steyn & Nienaber 2000), although no real effort has been made to study these remains with the aim of obtaining information on general health status. In the case of one of the Schroda skeletons, though, it was noted that severe osteomyelitis was present. Should these remains be studied systematically, and more skeletons be uncovered, a relative comparison of life expectancy and general health status of people not living inside the larger K2/ Mapungubwe itself, could be made.

The placement of this skeleton in the ash midden is not unusual, as the midden was commonly used for burials. At K2, for example, most graves were found in the main midden (Gardner 1963). Many of these were graves of juveniles, but a few adult male and female burials were also discovered. The horizontally flexed position, on one of the sides, is the general pattern seen for burials in the Limpopo Valley (Steyn & Nienaber 2000). The way in which the hands were positioned under the head, reminds of the female individual from Thulamela who was buried in similar style (Steyn *et al* 1998). As far as the burial pattern for this individual is concerned, it can thus be assumed that he was most probably a member of the general population of the area, of relatively low status.

ACKNOWLEDGEMENTS

We would like to thank Prof. A. Meyer of the Department of Anthropology and Archaeology, University of Pretoria, for the opportunity to work on the site and examine the skeletal remains. Funding was through the NRF (M. Steyn) while W.S. Boshoff was on study leave from the University of South Africa. Mr. M. Loots, Ms Louisa Hutten, Mr. P Richards and Prof A Meyer assisted with the photographs. We want to thank Ms S. Eksteen, of the Centre of Geo Information Science, University of Pretoria, for the map of the Vhembe-Dongola area, as well as the 1999 Honours and other students in Archaeology at UP, who excavated and packaged the skeleton with meticulous care.

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