Introduction

The aims of the centre are to:
(a). produce research of international standard on all aspects regarding the recovery and study of human skeletal remains
(b). provide professional anthropological and archaeological services
(c). contribute to the education and training of the private and formal sectors, graduate students, and professionals in the fields of anthropology, archaeology and law enforcement.

During 2009 the members of the Centre have been involved in all of these aspects, resulting in a very full and busy year.

A. Research

Highlights

Research projects that have been completed / nearly completed in the past year include
a. The completion of projects relating to the visit of M Steyn to a skeletal collection in Crete. Following this, a paper has been accepted with regards to the presence and frequency of ante-mortem trauma in several modern populations, also comparing these prevalence. Using the data from this collection, another paper was published that questions the necessity of using population-specific data when using measurements of the pelvis to determine sex.

b. Projects involving the assessment inaccuracy when determining ancestry, including a MSc project which indicated that traditional morphological characteristics were shown to demonstrate high amounts of within group variation and thus should not be used in forensic anthropological assessment of unknown remains. Another
paper (under review) deals with accuracy of using Fordisc to assign sex and ancestry to black, white and coloured South Africans.
c. An MSc project dealing with the histological and chemical differences between various species of animal bones and human bones. The chemical composition differed very little, but the morphology showed considerable variability between species.
d. A project relating to human skeletal remains found at Chloorkop, as part of development. The remains probably belonged to migrant labourers, and some interesting pathology was found.
e. MSc research done on tissue depths of South African black females, for use in facial reconstruction. In addition, reconstructions were done using the newly developed tissue thicknesses for South Africans as well as other published tissue thicknesses for non-South African populations. The effect of this was then tested with an identification parade.
f. PhD research on the use of the bones of the human hand in forensic applications. Formulae for the determination of sex and stature were developed, in addition to detailed techniques to identify the various smaller bones of the hand.
g. MSc research on the mandibular and maxillary canines, specifically dealing with their use in determination of sex and ancestry.
h. Pilot projects into the fracture patterns of dry vs wet bone (in collaboration with Prof J Kieser from Otago, New Zealand).
i. Projects stemming from previous research on the human remains from Gladstone, Kimberley, in collaboration with Me AE vd Merwe and Prof GJR Maat from Leiden University. These include assessment of dentition and origin of the migrant labourers.

Conferences attended and invited lectures
- The IFAA (International Federation of Anatomical Associations) meeting in Cape Town, August 2009. (M Steyn, EN L’Abbé, J Myburgh, N Keough, N Briers, A Oettle, G Stafne). We have also organized a symposium at this conference, with Profs H Schutowski, N Lynnerup, GJR Maat and AG Morris as invited speakers
- Faculty Day (A Meyer)
- Invited lecture M Steyn at the Transvaal Museum on 14 October: Current issues in Forensic Anthropology
- M Steyn presented invited lectures at the Forensics Summer School, University of Otago, New Zealand 12 – 16 January 2009 as guest of Prof J Kieser.
- M Steyn was invited as key note speaker at the EVAN workshop 25 – 26 Feb 2009 in Toulouse, France. This workshop was also attended by ML Patriquin and AC Oettlé.
- WC Nienaber attended the 500 Year Initiative Seminar 22 – 26 July 2009.
- WC Nienaber participated in the National Heritage Council Policy on Repatriation Workshop 17 July 2009

Papers published 2009

1. Geometric morphometric analysis of the use of mandibular gonial eversion in sex determination
AC Oettlé, R Pretorius, M Steyn
Homo 2009 60(1) 29-43
2. In sickness or in health? Assessment of Early Iron Age human skeletons from Toutswe sites, east central Botswana.
   MN Mosothwane, M Steyn.

3. Supernumerary teeth in skeletal remains from a 19th century mining community from Kimberley, South Africa
   AE van der Merwe, M Steyn
   Dental Journal of South Africa 2009 64:162-166.

4. The influence of age, sex, population group and dentition on the mandibular angle as measured on a South African sample.
   A. C. Oettlé, P.J Becker, E. de Villiers, M. Steyn

5. The evaluation of age-related histomorphometric variables in a cadaver sample of lower socio-economic status: implications for estimating age at death.
   N Keough, EN L’Abbé, M Steyn
   Forensic Science International 2009 191:114.e1-114.e6

6. Osteometric sex determination from the pelvis – does population specificity matter?
   M Steyn, ML Patriquin

7. From uterus to jar: an infant pot burial from Melora Saddle, an early nineteenth-century African farmer site on the Waterberg Plateau
   J. Boeyens, M van der Ryst, F Coetzee, M Steyn, M Loots

8. The skeletal remains of Du Preezhoek, Pretoria, South Africa.
   A. Meyer

Papers in print

1. Dental health of 19th century migrant mine workers from Kimberley, South Africa
   A.E. van der Merwe, M Steyn, GJR Maat
   International Journal of Osteoarchaeology (accepted)

   National Cultural History Museum Research Journal

3. Ossified Haematomas and Infectious Bone Changes on the Anterior Tibia: Histomorphological Features as an Aid for Accurate Diagnosis
   A.E. Van der Merwe, G.J.R. Maat, M. Steyn
   International Journal of Osteoarchaeology

4. Trauma and amputations in 19th century miners from Kimberley, South Africa
   AE van der Merwe, M Steyn
   International Journal of Osteoarchaeology

5. Adult scurvy in skeletal remains from late 19th century mineworkers from Kimberley, South Africa
   AE van der Merwe, M Steyn, GJR Maat
   International Journal of Osteoarchaeology

6. Analysis of ante mortem trauma in three modern skeletal populations
Papers under review

1. A cross-sectional analysis of age related changes in the osteometric dimensions of long bones among modern South Africans of European and African descent
   VL Vance, M Steyn, EN L’Abbé, PJ Becker
   Forensic Science International
2. A geometric morphometric study into the sexual dimorphism of the human scapula
   Y Scholtz, M Steyn, E Pretorius
   Homo
3. The usability of canine measurements and indices in determination of ancestry in a South African population.
   A Oosthuizen, M Steyn
   South African Dental Journal
4. Non-metric sex determination from the distal and posterior humerus in black and white South Africans
   VL Vance, M Steyn, EN L’Abbé
   Journal of Forensic Sciences
5. The application of FORDISC 3.0 to South African crania:
   EN L'abbe, SP Nawrocki, N Keough, BJ, Kemp.
   Journal of Forensic Sciences
6. The history and health of a nineteenth-century migrant mine-worker population from Kimberley, South Africa
   A.E. Van der Merwe, D. Morris, M. Steyn, G.J.R. Maat
   South African Archaeological Bulletin

Book chapters

1. Palaeopathological studies in South Africa: a history. AG Morris, M Steyn
   Book chapter submitted for volume on the History of Paleopathology
2. Biological Anthropology and Archaeology: South Africa.
   Book chapter submitted by WC Nienaber and M Steyn
3. The establishment and advancement of forensic anthropology in South Africa
   EN L’Abbé, M Steyn (in preparation)
   Book chapter in preparation for volume in a Companion to Forensic Anthropology (USA)
   WC Nienaber
   Mapungubwe Legacy 1933-2008: A University of Pretoria Centenary Publication.
5. Contested bones: Mapungubwe and K2 human skeletal remains through 75 years
   M Steyn
   Mapungubwe Legacy 1933-2008: A University of Pretoria Centenary Publication.
B. Professional anthropological and archaeological services

B.1 Anthropological

Confidential.

The SAPS and local pathologists are often requested to donate skeletal material, which consists of either closed or pending cases, to the University of Pretoria. The collection can be used for research and teaching purposes. In 2009, we received 22 donations to the collection and currently have 211 individuals within the collection. Several of these specimens were used in the week long course on the “Analysis of Bone Trauma and Pseudo-Trauma in Suspected Violent Deaths” given by Professor Steven A. Symes in August of this year.

B.2 Archaeological

Several rescue excavations and assistance to the SAPS, SAHRA and private sector archaeologists were conducted as part of the FARC Rapid Response Initiative. These investigations fall within the scope of community involvement but also include aspects of student training, research and the generation of third stream income. In all 43 graves and 22 human remains were investigated as part of 12 projects, and in addition another 22 analysis of human remains as part of a mitigation project were undertaken.

1. Chloorkop - Rescue excavation assisting SAPS. This led to a contract appointment by the developer involved and included the initial investigation and assessment of the affected cemetery and later on the Section 36 mitigation of 18 graves. This project also formed part of the Honours study of A Meyer and the results of this research was awarded at Faculty Day. The project is in the process of being written up for publication.

2. Kaapsehoop I - Assistance to SAPS in the investigation of 5 desecrated graves

3. Kaapsehoop II - Assistance to SAPS in the investigation of 3 desecrated graves

4. Mathibestat - Rescue excavation assisting SAPS in the recovery of 1 individual of archaeological origin. This case displayed interesting aspects of trauma pointing to interpersonal violence and have been submitted for C14 dating. Based on the results of the dating, once known, the project will be published.

5. Emfuleni - Rescue excavation of large extent (recovering 1 individual). This accidental discovery in the road alignment of a township pointed to the presence of several other graves among the houses of the residential area. Recommendations for the mitigation of these additional graves were drafted and a response is awaited.

6. De Hoop Dam - Rescue excavation of 1 individual of archaeological origin at Road C.

7. Onverwacht - Documentation and survey of 2 cemeteries and test excavation of 3 structures (not graves) and the mitigation of 7 graves of recent modern age together with PGS.

8. Goedgeluk - Assistance to SAPS in the investigation of 2

10. ONV 21 - Phase II mitigation of 1 grave with PGS
11. De Hoop Dam - Rescue excavation of 1 individual at Batch Plant II.
12. Sekuruwe/Blinkwater - Analysis of 22 individuals as part of re-mitigation of a grave relocation project.

C. Education and training

During 2009 we have presented two workshops:
1. Analysis of Bone Trauma and Pseudo-Trauma in Suspected Violent Deaths, by Professor Steven A. Symes 24 - 28 August. Course presented to anthropologists, police and forensic pathologists
2. Analysis of Bone Trauma and Pseudo-Trauma in Suspected Violent Deaths, by Professor Steven A. Symes 29 August. Course presented for CPD points for forensic pathologists.

Three more courses were planned and organized on request of the SAPS, but these were cancelled at short notice due to financial difficulties by the SAPS.

D. Other highlights

International visitors and collaborations
During 2009, we had received the following international visitors:
Prof S Ousley (Mercyhurst College, USA)
Prof SA Symes (Mercyhurst College, USA)
Prof GJR Maat (University of Leiden, the Netherlands)
Ms AE van der Merwe (University of Leiden, the Netherlands)
Prof H Schutkowski (University of Bradford, UK)
Prof N Lynnerup (University of Copenhagen, Denmark)

We have also continued our working relationships and research collaboration with Prof J Braga (Toulouse, France) and Prof J Kieser (University of Otago, New Zealand). One of our honours students, N Jooste, visited Prof Kieser for a month to complete her research project.

SANPAD grant
We have applied and were awarded a SANPAD (South Africa Netherlands Projects for Alternatives in Development) grant for a project entitled Skeletal identity of past populations: origins, sexual dimorphism and health. Collaborators on this project include Profs GJR Maat and AG Morris, Ms AE vd Merwe, and Dr D Morris. This project runs for 3 years and will kick off in 2010.

Equipment
We have acquired a microscribe, which is currently in use for two research projects.

Board exam: ABFA
Dr EN L’Abbé has been granted permission to enter the ABFA (American Board of Forensic Anthropologists) examination, and hopes to become one of the few board certified members of this group. This examination is to take place on 22 February 2010, and Dr L’Abbé will be on study and vacation leave from 1 Nov 2009 to the 8 March, 2010.