

THE HUMAN SKELETON IN FORENSIC MEDICINE

Third Edition

**THE HUMAN SKELETON
IN FORENSIC MEDICINE**

By

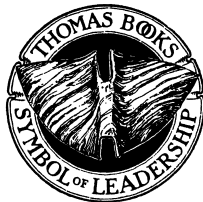
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PREFACE

The third edition of this book follows more than 25 years after the second edition. During this time, considerable changes occurred in the field and Forensic Anthropology became a distinct speciality in its own right. Although we had to update all sections of the book significantly, we have attempted to retain some sense of history, giving recognition to the many pioneers that have shaped our discipline.

In the last few years several excellent text books and edited volumes have seen the light. We hope that this volume will still make a contribution to the field. It is aimed to be a reference text that will assist forensic anthropologists and forensic pathologists who have to analyze skeletons found in forensic contexts. Keeping up with recent changes, we have also added a chapter on Forensic Anthropology of the living.

We have aimed to give the book a global perspective, to make it usable to practitioners across the world. However, because of the major developments in forensic anthropology and the vast number of publications available, it is impossible to give credit to all contributions and use all published literature. If we have left out some major publications, we apologize.

Where possible, short case studies have been added to illustrate the diverse aspects of the work. Various people contributed to these case studies, and they are acknowledged in the individual case studies. In some instances, some of the details were slightly changed (or omitted) to, for example, protect the identity of people involved in these cases.

Many people contributed in various ways to this book, some through helping out with normal teaching activities to allow the authors time to write this book. We are grateful to Prof Wilton Marion Krogman for his contributions to the earlier editions of this book. M Steyn would particularly like to thank the Department of Anatomy (University of Pretoria) for sabbatical leave. During this time, Prof. Ericka L'Abbé, Yvette Scholtz, Jolandie Myburgh and several others had to bear the additional burden. This book would not have been possible without the assistance of Deona Botha, who helped with all aspects of the research and administration. Other people who have contributed in different ways include Megan Bester, Coen Nienaber, Kyra Stull, Theunis Briers, Christine Blignaut, Suzanne Blignaut, Mubarak Bidmos, Lida van der Merwe, Samantha Pretorius, Herman Bernitz, Natalie Keough and Marius Loots. MY İscan would like to thank Bahar Mergen for help with literature searches.

Unless otherwise mentioned, all line drawings in this book were made by Marinda Pretorius. This was no small task! She also assisted with many other tasks, for which we are grateful.

M Steyn would also like to acknowledge various colleagues from the South African Police Service for their diligent work under difficult circumstances, and the years of collaboration. We are also grateful to our publishers, in particular Mr Michael Thomas, for entrusting us with this work.

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THE HUMAN SKELETON IN FORENSIC MEDICINE

INTRODUCTION

In the last few years there has been considerable introspection as far as the exact role of the forensic anthropologist is concerned, and many papers and book chapters have been written on this topic (e.g., İşcan & Solla Olivera 2000; İşcan 2001; Cunha & Cattaneo 2006; Cattaneo 2007; Dirkmaat et al. 2008; Blau & Ubelaker 2009; Dirkmaat & Cabo 2012). These publications critically review the contributions of forensic anthropologists in solving crimes and identifying unknown bodies, and attempt to outline future directions for the discipline. These self-assessments are essential to take stock of where the discipline stands and where it needs to go (İşcan 1988). Dirkmaat and Cabo (2012) even state that forensic anthropology is currently undergoing a critical revitalization due to, on the one hand, continuing critical self-evaluation and, on the other hand, the appearance of external influences such as the development of DNA technologies and changes in legal systems and jurisprudence. İşcan, already in 1988, warned that the discipline could stagnate or perish if future research and directions are not considered and managed carefully.

In recent years much effort went into attempting to formalize the activities of forensic anthropologists and to aid in incorporating the discipline into the mainstream of forensic sciences. In this regard, the United States leads the way, with the formation of the American Board of Forensic Anthropology (ABFA) as a formal section within the American Academy of Forensic Sciences (AAFS).

The need for forensic anthropological expertise has changed considerably in the modern era and with it the field has undergone some significant changes. However, if one looks at the many areas where forensic anthropologists have expertise and can make significant contributions, it is clear that the need for this science exists. More recent examples of these areas of expertise range from aiding in victim identification in mass disasters to estimation of age in cases of child pornography. With the changing environment, it is now necessary to achieve worldwide coordination between practitioners and clarification on what it is that forensic anthropologists can and should do and who exactly qualifies to call himself or herself a forensic anthropologist. Along with this comes the need for some clear guidelines with regard to minimum standards of practice and standard operating procedures.

A. WHAT IS FORENSIC ANTHROPOLOGY AND WHO IS THE FORENSIC ANTHROPOLOGIST?

Through the years several definitions for forensic anthropology have been proposed. Amongst the earliest of these is the definition given by Stewart (1979, ix), who described it as “the branch of physical anthropology, which for forensic purposes, deals with the identification of more-or-less skeletonised remains known to be, or suspected of being human.”

This definition is clearly too narrow for today's professional forensic anthropologist. The classical goal of the discipline was to identify unknown individuals, usually from their decomposed or skeletonized remains. This aspect is still very important today, but in many areas of the world the need for this expertise is very limited, and therefore forensic anthropologists had to expand their field of influence or become obsolete.

İşcan (1988) described forensic anthropology as “a multidisciplinary field combining physical anthropology, archaeology and other fields, including forensic dentistry, pathology and criminalistics.” This view introduced the idea that there is a wider scope that we need to see, and also hinted on inter-disciplinarity—that is, the need to be a well-rounded forensic anthropologist. There are also more elaborate definitions such as “the scientific discipline that focuses on the life, the death, and the postlife history of a specific individual, as reflected primarily in their skeletal remains and the physical and forensic context in which they are emplaced” (Dirkmaat et al. 2008, p. 47). Although this is an excellent definition, it still mainly focuses on the dead. Many modern forensic anthropologists now deal with living humans, particularly age estimations (e.g., asylum seekers or in cases of child pornography) and facial identifications (Cattaneo 2007; Indriati 2009). Dirkmaat and Cabo (2012) also acknowledge the fact that there are now many fields of expertise included under forensic anthropology that no one would have dreamed about a few decades before. Cattaneo (2007, p. 185) attempted to reflect this in her definition as “the application of physical anthropology to the forensic context,” but this is again rather vague and does not really tell us what it actually is that a forensic anthropologist can do. Indriati (2009) suggested that a definition should include human identification and individuation in medicolegal situations, utilizing biological traits that are not restricted only to skeletonized or other remains. Such a field may be called forensic anthropology. This new consideration of contemporary anthropology should include all aspects of physical anthropology such as human variation, adaptability, growth and development, as well as molecular genetics. An example of this diversity is estimation of age from photographs, radiographs, disturbed burials, and from bodily characteristics.

This rather chaotic situation with the lack of a proper definition is reflected in the wide discrepancy in people practicing forensic anthropology (Cunha & Cattaneo 2006). In North America, forensic anthropologists mostly come from a combined archaeology and anthropology background. On the European continent, on the other hand, many are medically qualified. This often includes forensic pathologists or other medical specialists who are experienced at skeletal analyses and practice forensic anthropology as an aspect of their work (Cattaneo 2007; Baccino 2009). According to Prieto (2009), for example, forensic anthropology is mostly practiced as a subdiscipline of forensic medicine in Spain. In the United Kingdom, in contrast, it is often associated with archaeology (Cox 2009).

In other regions, for example, Australia, most personnel dealing with forensic anthropological casework are based in anatomy departments (Donlon 2009). This is also true in South Africa, where most dedicated forensic anthropological consultations are done through anatomy departments—at the University of Pretoria where the co-author of this book is based, one forensic anthropologist is medically qualified, one is ABFA-certified, and some in-house-trained students come from a sciences background. So there are really no clear guidelines as to who the qualified forensic anthropologist is. This begs the question: What about training and what is the minimum entry level? And who will make sure that acceptable standards are

kept? The U.S. is the only country with an official system of examination and, following that, accreditation of forensic anthropologists. ABFA board certification requires diplomats to regularly submit case reports to show that they are up to date and their reports of acceptable standard. The rest of world lags far behind in this regard, but more and more forensic anthropologists are becoming aware of this need and are starting to align and organize themselves to become more professional and formally accredited.

In Europe, it is experience and training rather than a specific academic qualification that defines a forensic anthropologist (Cunha & Cattaneo 2006). In Latin America, practitioners have vast experience but not necessarily high levels of academic training (Fondebrider 2009). Training is not homogeneous and mostly happens through series of workshops. The Forensic Anthropology Society recently formed for Europe aims to address some of these questions through more standardized education, harmonization, certification, and promotion of research. In other parts of the world this probably varies from country to country, and it is most probably up to specific laboratories to set up quality control measures. In general, though, the entry level to be a practicing forensic anthropologist is probably either a doctoral degree when coming from a sciences background or a medical education (medical practitioner) with some specific training in forensic anthropology. A general review of forensic anthropology for France (İşcan & Quatrehomme 1999) and Latin America (İşcan & Solla Olivera 2000) can be seen in the work by İşcan and associates.

B. THE HISTORY AND USE OF FORENSIC ANTHROPOLOGY

The history of forensic anthropology is as long as that of physical anthropology, which is going back to the late nineteenth century. Only recently has it gained its own identity when all forensic fields were united in many parts of the world, particularly under the American Academy of Forensic Sciences in the U.S. Probably the most senior American anthropologists who spread the discipline in the U.S. were Krogman (1939, 1955) and Stewart who not only wrote important contributions but served both the state and the Federal Bureau of Investigation. They also evaluated the fields historically (Kerley 1978; Stewart 1979). İşcan also contributed significantly to the development of the field (İşcan 1989; İşcan & Kennedy 1989; İşcan & Helmer 1993). İşcan and Helmer formed the International Association of Craniofacial Identification in 1989 in Kiel, Germany, and the meeting has since been assembled regularly in many countries.

In research, writing and practice, the late Wilton Marion Krogman (1939, 1955) was probably the most outstanding person in forensic anthropology. Yet the late J. Lawrence Angel (employed at the National Museum of Natural History, Washington, D.C.) practiced physical anthropology and organized meetings all around the world and defined forensic anthropology as a unique forensic anthropological discipline. In the 1980s, through numerous anthropological organizations such as the International Union of Anthropological and Ethnological Sciences meeting in Vancouver, Canada, the field has expanded to include members from different anthropological and forensic fields. Accounts of the history of the discipline in several regions of the world can be found in, for example, Blau and Ubelaker (2009) and Dirkmaat (2012).