Biological Anthropology of the Human Skeleton (2nd edition)

M. Anne Katzenberg and Shelley R. Saunders (eds.)
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Reviewed by RYAN HARROD
Department of Sociology, Anthropology & Justice Studies, Phinney Hall Room 101, University of Idaho, Moscow, ID 83844, USA;
ryanharrod@vandals.uidaho.edu

The background to *Biological Anthropology of the Human Skeleton* is found in the history of the study of skeletal anatomy of fossils and animals. Coming out of the Age of Exploration, natural historians, including Linnaeus, Cuvier, Lamarck, and Darwin, began to analyze skeletal morphology, which was the catalyst for the development of theories of human evolution and variation that are the foundation for the discipline of physical anthropology. As science progressed, technological methods and the questions researchers could ask expanded, and a focus on skeletal morphology as a means of understanding human populations grew. This is demonstrated in *Biological Anthropology of the Human Skeleton*, a collaborative work by top researchers in the field of physical anthropology. The book consists of five sections or parts, each of which introduces the reader to a different research focus within the discipline. Beginning with a comprehensive introduction to the general theoretical and methodological approaches utilized in the analysis of skeletal anatomy, the subsequent parts of the book each focus on specialized types of skeletal analysis that provide the theoretical framework to address different questions about growth and development, the effects of disease, and variation between populations.

In Part I, the first chapter (*Bioarchaeological Ethics: A Historical Perspective on the Value of Human Remains*) is one of the most refreshing aspects of the entire book, because it presents a candid discussion of the ethical dilemmas that are associated with conducting research on human remains. The benefit of the focus on bioarchaeological ethics is that it establishes the sensitivity of skeletal research and provides the reader with an understanding of why methodology has to be continually reassessed and revised. The second chapter of the book introduces the field of forensic anthropology, which focuses on the identification of unidentified human remains in a legal setting. A discussion of forensic anthropology is important because this type of research utilizes the most fundamental methods associated with the analysis of human remains. The final chapter in Part I, on mortuary taphonomy, discusses the various factors that can affect the condition of the remains prior to and following burial.

The second section of the book deals with morphological variation and biological development, both in terms of gross anatomy and at the microscopic level. In a broad sense, there are two basic emphases of this second part. First, there is a focus on trying to understand the processes at work on human skeletal anatomy during maturation through the analysis of dental and skeletal development. The other focus of Part II is the analysis, utilizing biomechanics and bone histology, of the morphological changes that occur in adult skeletons as a result of various environmental factors.

Part III discusses pathologies and traumas that affect dental and skeletal morphology. The evaluation of pathologies is important because it provides a means of identifying genetic relationships through the inheritance of specific diseases, population changes due to epidemics, stress caused by dietary distress, and robusticity changes associated with activity. Analysis of trauma is also a crucial element as it provides a means of understanding the lifeways of past populations through evidence of conflict between or within groups or due to socio-political inequalities.

The methods discussed in Part IV covers some of the most advanced analysis techniques that researchers can conduct in skeletal anatomy, such as stable isotope and genetic analyses. Stable isotope analysis has allowed researchers to more accurately identify the diet of past populations, as well as determine environmental factors that altered bone. The genetic analysis associated with molecular anthropology has improved the understanding of how populations are related, caused researchers to question the validity of concepts such as race, and even more precisely defined the timeline of human evolution. The primary limitations of these methods are that they require the destruction of portions of the skeletal anatomy, which is problematic when the remains are associated with certain orthodox religions or indigenous groups whose beliefs abhor the desecration of the body or the disruption of a purposeful interment.

The fifth and final section of the book focuses on the field of paleodemography, which draws on many of the same methods utilized in forensic anthropology to understand the history of entire past populations through the analysis of a collection of remains. The focus of these chapters is the quantitative analysis of metric and non-metric characteristics of the human skeleton, and their advantages and the limitations.

While each of the parts or sections of the book can stand alone as a guide to conducting research on the human skeleton, it is important for the reader to note that in order to comprehend the story that skeletal morphology can tell about human existence, a researcher often must incorporate several of these methods simultaneously. While powerful tools for understanding the human skeleton, each of the methods is associated with some degree of limitation

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in terms of the questions they can answer. For example, in regards to the use of metric traits, El-Najjar and McWilliams (1978, p. 112) state that analysis using metric traits has some restrictions due to a number of factors, which includes "low phenotypic specificity, plasticity, unknown mode of inheritance, age progressive and age regressive tendencies, and other environmental determinants which influence them during the lifetime of the individual." Similarly, non-metric traits can prove questionable as White and Folkens (2005) cite several studies that have shown how these measures lack a clear and concise standard for determination, are often not discontinuous and discrete, and their precise genetic basis is not well known. However, when metric and non-metric traits both are evaluated, they compensate for many of these limitations, and as such, it is important that one understands that the various methods complement one another. For example, in a recent study by Harrod (2008) on the paleodemography of a portion of the Plateau cultural area (that covers portions of Idaho, Oregon, and Washington), variations found using quantitative metric analysis were determined to have an environmental cause through the identification of skeletal and dental pathology distributions among the populations.

Biological Anthropology of the Human Skeleton is a comprehensive guide to the ever-changing discipline of physical anthropology and provides an in depth introduction to human skeletal biology. The structure of the book makes it easy for the reader to follow the progression of the field of human skeletal biology. However, one important note is that the topics covered in this book are advanced and, as such, would be better suited for an upper division course in physical anthropology (e.g., human osteology, forensic anthropology, or bioarchaeology) where a sufficient amount of time and resources can be spent on developing an understanding of human skeletal anatomy. Finally, a good supplement for *Biological Anthropology of the Human Skeleton* would be the inclusion of a section more specifically focused on providing a description and photographic representation of each element of the human skeleton (e.g., Bass 2005; Ubelaker 2008; White 2005; Whitehead et al. 2005). With such additional material, this book would provide a solid text for the lecture portion of an osteology course, while a descriptive section would aid student comprehension in a laboratory setting.

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