

PREFACE

Contemporary biological anthropology is a dauntingly broad field. It studies humans in the same way that zoologists study their subject species—from a perspective that includes all aspects of the species' biology and that emphasizes the interrelationships among those aspects. In addition to encompassing the traditional topics of the human fossil record and human biological variation, biological anthropology includes primatology, modern technologies in molecular genetics, human demography, disease and medical issues, development of the individual, life histories, and such applications as forensic anthropology. Biological anthropology also appreciates that our cultural behavior is an integral part of our behavior as a species.

No wonder, then, that I (and others I have spoken to) have had difficulty in covering the entire field in a one-semester course. We have ended up leaving out important aspects (or paying them little more than lip service), or we have sacrificed the sense of biological anthropology as an integrated whole for a rushed and encyclopedic inventory of all the field's current topics.

As modern biological anthropology increased in breadth and complexity over the past several decades, so too did the size and detail of introductory texts. Several are now more than 600 pages long. Attempts to produce shorter introductory texts have consisted of simply cutting out parts of these tomes, resulting in rather uneven, sometimes oddly organized, presentations of the field.

I wrote this text in order to present a diverse scientific field to beginning students. Here are the major assumptions that guided my writing:

- Because this is a text for introductory courses, I have tried to reduce the field to its most basic information. No part of the discipline has been left out; instead, I have achieved brevity by managing the level of detail and including only the information necessary to clearly and

accurately convey the basic themes, theories, methods, and facts of bioanthropology.

- The text assumes that students have limited background knowledge of the material and little understanding of what science is and how it works. The text *explains* rather than simply itemizes facts and ideas, and it does so, as much as possible, in a narrative format. A lesson from the study of folklore is that a story is far more easily understood and retained than is a list of facts.
- I want students to feel that they are reading a text written by a real person who has participated in the field. I have tried to achieve a balance between informal and formal styles, and I have not shied away from the occasional colloquialism or personal comment.

FEATURES

I've included a number of features that I hope will make this text a more useful learning tool for students.

- *I use the scientific method as a theme throughout the book to demonstrate the integrity and nature of bioanthropology.* I describe the scientific method and then, because this is anthropology, compare science with knowledge garnered from belief systems, discussing the relationship of these two spheres of inquiry within cultures. I try to show specifically how scientific reasoning has provided us with knowledge about the topics of bioanthropology. For example, I present extended discussions of bipedalism and the issue of modern human origins by posing questions, suggesting answers, and then testing the logic of and evidence for those answers.
- *The text is organized to help students navigate their way through what is still a fairly hefty amount of information.* To help students feel a little less at sea in the midst of new facts and ideas, I regularly refer back to previous topics and ahead to topics that will be covered. The headings and subheadings I use as signposts are as descriptive as possible (for example, "Natural Selection: The Prime Mover of Evolution").
- *Within chapters, a consistent format helps students better understand material new to them.* Each chapter starts with an **introduction**, which sets the stage and context for what's to come, followed by a series of **questions** that the chapter will answer. Because science proceeds by asking and answering questions, this format is also used within the

body of the text. A **Contemporary Reflections** box examines a topical application of each chapter's themes and ideas. **Key terms** are boldfaced in the text and defined in the margins at their first appearance. Each chapter concludes with a list of key terms and a **summary** that not only recaps the important points of the chapter but also provides some new ideas and thoughts that help put the chapter into context within the whole discipline. Also concluding each chapter are **questions for further thought**, which are designed to help students explore the real-world ramifications of the chapter's topics. And a list of **suggested readings**, made up mostly of nontechnical works, tells interested students where to find more information on the material discussed.

- *Two appendixes and online learning exercises allow students to delve deeper into topics introduced in the text.* The appendixes discuss in detail the subjects of protein synthesis and population genetics. Through the exercises located in the Online Learning Center, students can apply the concepts of Mendelian genetics, taxonomy, skeletal identification, and population genetics.
- *Two glossaries, a reference list, and a comprehensive index make information more accessible.* A Glossary of Human and Nonhuman Primates, with pronunciations for each term, defines and describes the taxonomic groups discussed in the text. In addition to the running glossary within chapters, a comprehensive Glossary of Terms appears at the back of the book. The References section contains complete sources for the suggested readings and also lists technical works referred to within the text. The Index helps students access information quickly.
- *The text's visual appeal enhances its readability.* Detailed, colorful charts and drawings, as well as full-color photographs, underscore significant points in the text. Captions for the artwork add information rather than simply label the pictures.

WHAT'S NEW IN THIS EDITION?

- The biggest change to this edition is the streamlining of much of the text. No major subject has been deleted, and all traditional and vital concepts and facts are still covered. But I have tried to include only central ideas and the related concepts that lead to and follow from them. For example, I introduce only those ideas and facts in genetics

that are discussed later on in the text. I think this will make for much easier reading, note taking, and digesting of the material.

- I have increased the number of major headings in most of the chapters and added more subheadings. This is to help students navigate through the more complex concepts and, if they study this way, to provide them with a built-in outline of the chapter contents.
- There are fifty-four new references and suggested readings, forty-two of them from 2007 and 2008.
- Chapter 3, "Evolutionary Genetics," has been streamlined by moving the description and diagram of protein synthesis to an appendix. The alphabet analogy for the genetic code is better explained. The section on the human genome has been updated.
- Chapter 4, "The Processes of Evolution," contains a clearer explanation of genetic drift.
- Chapter 5, "The Origin of Species and the Shape of Evolution," now has a better explanation of the difference between gradualism and punctuated equilibrium. The discussion of scientific creationism and intelligent design is now the topic of the "Contemporary Reflections" box.
- Chapter 7, "The Primates," has a completely rewritten discussion of phenetic and cladistic taxonomies, a new diagram on brain versus body size, and a table showing the features of the human primate. The "Contemporary Reflections" box, on the status of the primates, has been updated.
- Chapter 8, "Primate Behavior and Human Evolution," has a new section on "Culture and Social Cognition," with results of some recent observations and experiments.
- Chapter 10 is now "Evolution of the Early Hominins." It has been thoroughly updated and reorganized, with bipedalism discussed first to set the stage, followed by a discussion of the fossils, and ending with a clearer explanation of ideas as to how the fossils fit together in a family tree.
- Chapter 11, "The Evolution of Genus *Homo*," has been updated (including the "Contemporary Reflections" box on *H. floresiensis*) and has been better organized with subheadings to help students understand the features of each fossil group.
- Chapter 12, "The Debate over Modern Human Origins," has been extensively rewritten to clarify the competing arguments and the evidence used to support them. Two new terms—*African Replacement*

model and *Primary African Origin model*—are now used to refer to two of the viewpoints concerning modern human origins.

- Chapter 13 is now titled “Evolution and Adaptation in Human Populations” and, as requested by several reviewers, focuses on adaptation and disease. Some new art augments the description of various adaptations involving altitude and climate. A discussion of lactase persistence has been added. The section on disease, especially concerning HIV/AIDS data, has been updated.
- Chapter 14, “Human Biological Diversity,” has updates in the genetics section. The issue of race and athletic ability has been moved to the body of the text, along with the race and IQ discussion, and the “Contemporary Reflections” box is now about genetic ancestry testing services.
- A new appendix that discusses protein synthesis, formerly found in Chapter 3, contains some new material on the code itself—which codons code for which amino acids.
- The exercises are now located in the Online Learning Center.

SUPPLEMENTARY MATERIAL

Visit our Online Learning Center Web site at www.mhhe.com/parkba6.

Resources for instructors include the Instructor's Manual, with chapter overviews, suggested activities, and key terms; a Computerized Testing Program with multiple-choice and short-answer/essay questions; and chapter-specific PowerPoint lecture slides. Resources for students include numerous self-quizzes and other interactive aids.

Physical anthropology is eminently visual. Available to students and instructors on the Online Learning Center Web site are fossil images that make the course more vivid and interactive, reinforcing concepts and content students learn in the course.

ACKNOWLEDGMENTS

Thirty-five years now since leaving Indiana University, I still feel a profound debt to my first teachers there in bioanthropology, Robert Meier, Paul Jamison, and Georg Neumann. This book, I trust, reflects some of the knowledge and inspiration I received from them.

It was Jan Beatty who first brought me to Mayfield Publishing Company over twenty years ago. She was the sponsoring editor of ten editions of my books before Mayfield joined forces with McGraw-Hill. It is an understatement to say that her knowledge of all aspects of publishing, combined with her understanding of anthropology and the needs (and quirks) of us academic types, has been a major influence on all my written work. Although I consider this book the result of a collaboration of many capable people over the years, it owes its heart (in every way) to Jan.

Thanks to the able staff at McGraw-Hill for once again transforming my ideas and words into an attractive and useful finished product. They are: Craig Leonard, developmental editor; Carey Eisner, project manager; Ashley Bedell, designer; Brian J. Pecko, photo researcher; Rich DeVitto, production supervisor; Pamela S. Cooper, marketing manager; and Jennifer Barrick, media project manager.

This is the seventh book I've worked on with Andrea McCarrick as manuscript editor. She has an understanding not only of the intended meaning of my sometimes awkward sentences (and how to fix them) but also an understanding of the subject matter and of the intended audience. I have learned a great deal about writing from our collaboration.

The manuscript was reviewed by the following people: Alice Kingsnorth, American River College; Rebecca Osborn, University of Illinois at Chicago; Denise Cucurny, California State University, Long Beach; Autumn K. Cahoon, California State University, Sacramento; Paul Mattson, Moorpark College; Ann Morton, Finger Lakes Community College; Mark Griffin, San Francisco State University; Gregory Mattson, Los Angeles Trade Technical College, Los Angeles Southwest College; Barbara A. Worley, University of Massachusetts, Boston; Leila M. Porter, Northern Illinois University. I thank them all for their helpful and insightful contributions. All final content, decisions, and errors are, of course, my own.

TO THE READER

The broad field of biological, or physical, anthropology deals with everything from evolutionary theory to the human fossil record to the identification of human skeletal remains from crime scenes and accidents. A detailed account of this whole field would result in an unwieldy text that would be a tough assignment for a one-semester introductory course, especially if it were assigned in its entirety.

This text is intended to truly be an *introduction* to biological anthropology. It will tell you about the many different kinds of studies bioanthropologists participate in and how they conduct them; you'll also learn about the scientific theories and data they use. All the important aspects of bioanthropology are covered here but with just the essential amount of detail. An understanding of the ideas presented in this book will provide you with the basis for delving more deeply into those areas of bioanthropology that interest you.

A major theme of this book is the scientific method. Biological anthropology is a science, so an understanding of how science works is essential. Because the field of anthropology studies the human species in its entirety, however, the text will examine science as a human endeavor, seeing where it fits in the realm of human knowledge.

HOW TO USE THIS BOOK

Each chapter starts with an **introduction** that sets the stage and context for what's to come, followed by a series of **questions** that the chapter will answer. Because science proceeds by asking and answering questions, this format is also used within the body of the text. **Key terms** are boldfaced and defined in the margins at their first appearance. Each chapter ends with a **summary** that not only recaps the important points of the chapter