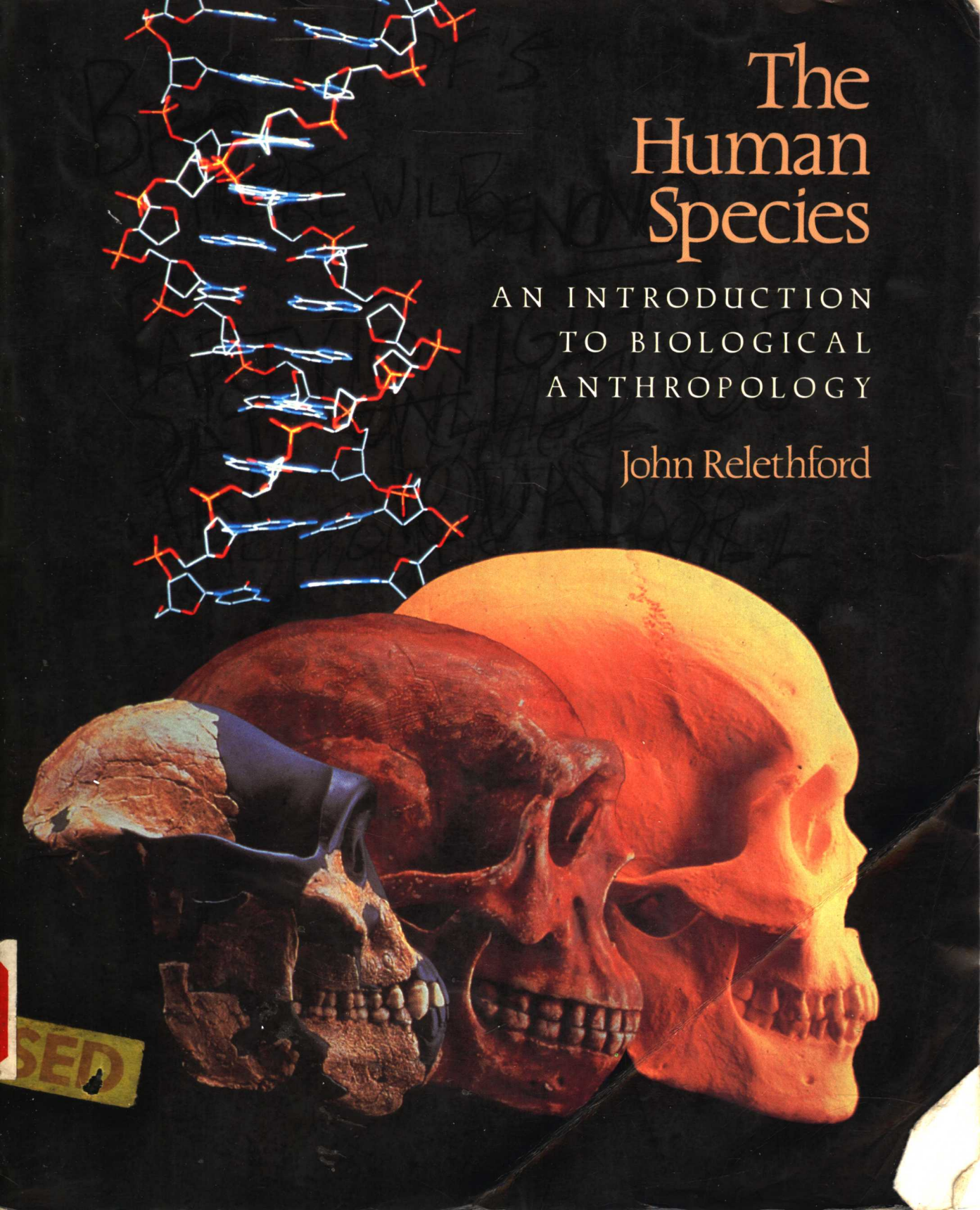
The Human Species
AN INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY
John Relethford
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AN INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY

John Relethford

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Preface

In biological (or physical) anthropology, we seek answers to who we are as a species and where we came from. To address these issues in an introductory text, I used questions as the organizational framework.

Organization

This text provides an introduction to the field of biological (also called physical) anthropology. The book is divided into five parts, each focusing on a specific question. Part 1 addresses the questions "What is evolution, and how does it operate?" Chapter 1 provides an introduction to the field of anthropology, followed by a consideration of the nature of evolutionary science. Chapter 2 treats human genetics from molecular and Mendelian perspectives, and Chapter 3 provides an in-depth examination of the evolutionary forces.

Part 2 focuses on the question "How do humans vary, and why?" Human beings show a great deal of biological variation. Why? What does it mean? How can this variation be interpreted in terms of evolutionary theory? Chapter 4 offers case studies of genetic drift and gene flow in human populations; Chapter 5 reviews case studies of natural selection in living human populations. Chapter 6 contrasts the microevolutionary approach discussed in earlier chapters with the older, and outdated, "racial" approach to human variation.

Part 3 asks "What are humans?" and "How are we related to other living creatures?" Three chapters examine human biology and behavior from a comparative perspective. Chapter 7 focuses on general trends of mammals; Chapter 8 examines general trends in primates; and Chapter 9 contrasts humans with our closest living relatives, the apes.

Part 4 treats the questions "What are our origins?" and "How did humans evolve?" Chapter 10 reviews the models and the methods of macroevolution. Chapter 11 summarizes major evolutionary trends in

earth's history from the origin of our planet through the evolution of our ape ancestors. Chapter 12 focuses on the biology and behavior of our first human ancestors, and Chapter 13 chronicles the evolution of the genus *Homo* during the past 1.5 million years.

Part 5 addresses the question "How does human culture affect human biology?" These chapters look at how changes in cultural behavior have led to rapid changes in biological variation. Separate chapters focus on growth and development (Chapter 14), human health and disease (Chapter 15), and demography (Chapter 16). The final chapter of the book (Chapter 17) poses some questions regarding our further evolution, both biological and cultural. In contrast with the often pessimistic portrayals in other textbooks, I suggest some more optimistic possibilities for our species' future.

Features

Throughout the text, I have attempted to provide both new material relevant to the field and fresh treatments of traditional material:

• *All areas of contemporary biological anthropology are covered.* Many traditional texts in this field cover the basics of evolution and genetics, primate studies, the fossil record for human evolution, and selected studies of human variation. This text provides a more balanced treatment of the field of biological anthropology, including chapters on subjects often largely neglected. This text has separate chapters on human population structure (genetic drift and gene flow), human growth and development, human health and disease (biomedical anthropology), and the demography of human populations. No other introductory biological anthropology textbook has chapters on *all* these areas. Indeed, no other current text has a separate chapter on biomedical anthropology, a major area of current investigation in biological anthropology today.

• *The relationship between biology and culture is a major focus.* The biocultural framework is introduced in the first chapter and integrated throughout the text. All the chapters in Part 5 ("Human Biology and Culture") specifically address the biocultural approach in our modern world, providing many contemporary examples relevant to student interest.

• *Behavior is discussed in an evolutionary context.* I have not devoted separate chapters to primate behavior or the archaeology of early humans because I believe that such material must be covered along with biological evolution. Thus, in the chapters on microevolution I include discussions of behavior genetics (Chapter 2), marriage patterns and genetic drift (Chapter 4), the study of sociobiology as it relates to natural selection (Chapter 5), and consideration of the topic of race and intelligence from a microevolutionary perspective (Chapter 6). The chapters on mammals and primates (Chapters 7–9) integrate aspects of taxonomy, biology, and be-

havior that are often covered separately. The chapters on primate and human evolution (Chapters 11–13) all consider trends in behavioral evolution as part of the overall evolutionary process. Finally, a separate section focuses entirely on the relationship between biology and culture in today's world (Chapters 14–17).

• *The emphasis is on the human species.* Understanding ourselves requires consideration of our nonhuman primate relatives. Many texts, however, focus on the nonhuman primates to the exclusion of the human species. Here, nonhuman primates are not treated in isolation, but rather in terms of what they can tell us about the human condition. I emphasize the biology and behavior of the human species throughout the text, which includes a detailed comparison with apes in Chapter 9.

• *Hypothesis testing is emphasized.* From the first chapter, where students are introduced to the scientific method, I emphasize *how* various hypotheses are tested. Rather than provide a dogmatic approach with all the "right" answers, this text examines evidence about human variation and evolution in the context of hypothesis testing. An example of this approach can be seen in the chapters on human evolution, where the data are discussed first and then followed by extensive consideration of alternative models and explanations of evolutionary trends. The history of various controversies is also examined, so that students can see how new data lead to changes in basic models.

• *There is a separate appendix on mathematical population genetics.* Some instructors cover population genetics with a minimum of mathematics, while others include a great deal of mathematics. Since it is difficult to write a chapter on microevolutionary forces that can be used in both manners, I have moved most of the mathematical treatment to a separate appendix. The basic concepts of the evolutionary forces are covered in Chapter 3 more from an intuitive approach, while a detailed mathematical treatment is given in the appendix. In this way, instructors can tailor their reading assignments to fit their preferred method.

Study Helps

To make this text more accessible and interesting, I have included frequent examples and illustrations of basic ideas in the hope that students will gain familiarity with the fundamental concepts of biological anthropology. I have kept technical jargon to a minimum; yet every introductory text contains a number of specialized terms that students must learn. The first mention of these terms appears in **boldface** type, and accompanying short definitions appear in the text margins. A glossary is provided at the end of the book.

Each chapter ends with a summary and a list of supplemental readings. The summaries put each chapter's material in more general terms

and help students relate the content to other chapters. The supplemental readings are included for those who wish to look further into a given topic, either for clarification or to satisfy an awakened curiosity.

Ancillaries

An instructor's manual and computerized test bank are available free of charge to instructors.

Acknowledgments

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Last, but not least, I dedicate this book to my family: To my wife, Hollie Jaffe, for encouragement, patience, assistance, and love. To my sons, David Jaffe Relethford and Benjamin Edward Relethford, who were born in the time between the start and finish of this book. You all gave me the strength to continue. Your smiles and love kept me going.

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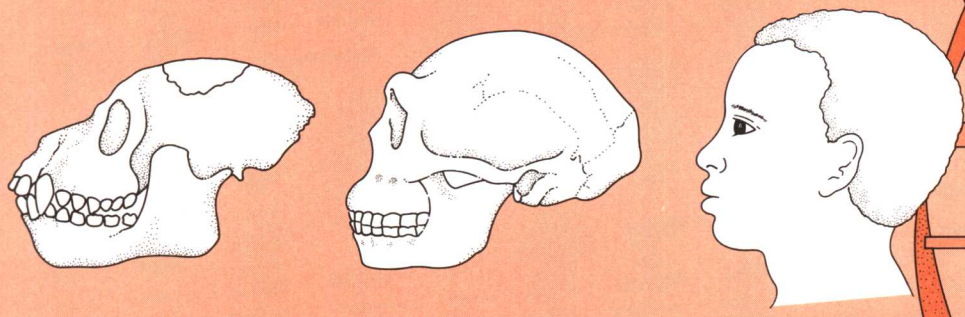
PART One



Evolutionary Background