

AUTHOR'S PREFACE

My theme in this book is “Where did we come from? How did we become the way we are today?” I will present evidence showing that we came from a family of tree-dwelling apes who exploited an innovative behavior that allowed them to proliferate more successfully than their fellow apes. They reproduced, natural selection acted, and we evolved. At first there were very few of us, but now our single, interbreeding species includes more than 7 billion members and is still expanding. In contrast, the dwindling populations of our nearest relatives, the apes, are headed down a path that could lead to extinction. I shall explore how we diverged from a 50-million-year history of adaptation to life in the trees and were transformed into a new kind of creature with new behaviors which enhanced our reproductive success and led to our becoming the greatest former ape the world has ever known. Something very remarkable is involved here!

The title for this book announces that its subject is human origins and evolution, and discloses my dual intention to present the evidence for these events *and* to explain them. These two categories of science – evidence and explanation – are classically separated for good reason: Evidence is the essential ingredient of science, but without an explanation of its significance, it is simply a body of accumulated facts. Alone, they fail to enhance our understanding. We want to know what the evidence *means*.

The facts to be described are in the public record, published in scientific books and articles. My primary contribution, as I see it, is in the *explanation* I provide – an explanation of what the evidence *signifies* – an explanation that aids understanding by revealing how a wide array of information related to human evolution can be made readily comprehensible in a simple manner: a new way of thinking about it. Previous explanations will be surveyed, summarized and cited so they can be compared with this new perspective.

The book is organized as a series of discussions about current issues in the study of human evolution. Because each chapter can be read as a separate essay, readers with special interests can jump right into their favorite topic. For those who wish to examine the original source of the evidence, it is fully documented so that it can be located and examined first-hand. I hope scientists whose specialty area is represented among these chapters will find that I have addressed the salient features of their topic. If they have published research in this field I trust they will find their name in the References Cited section.

I did not start out as an expert on all the issues listed in the Table of Contents – far from it. In most cases I was a novice, but over many years I did my homework. When I reached the stage at which I thought I had clarified my ideas and expressed them adequately, I sent excerpts from the book to established authorities on a particular issue, asking if they would help me improve the presentation of material in their area of expertise. Many responded and took time out from their own work to help me with mine. I gratefully identify these

generous scientists in the acknowledgments a few paragraphs below. With this sort of support, and the long years I spent examining and studying these matters, I feel I am on solid, scientific ground, confident the evidence has been fairly stated and my explanations are ready to be evaluated.

The topics I have chosen vary in significance, but all concern evidence that has yet to be satisfactorily explained. Why did I pick these particular subjects? I followed my eureka idea, which took place years ago. I was reading a stirring critique of current explanations for human upright walking which revealed that no proposed benefit of such an unstable mode of travel seemed to exceed its inherent disadvantages. Suddenly, the thought came to mind, “*what about throwing?*” (It turned out that my mind had retrieved a notion I had once read in Darwin’s great book on human evolution [1871, p. 142], but at the time it felt new).

Next, I thought, if throwing was an ancient source of bipedalism (two-legged behavior), then the human hand should be adapted for throwing. It was! Two grips, one for throwing, one for clubbing! Now I definitely had the sensation of having hit upon something worth pursuing. I began to search for other features of human evolution that might yield to this simple throwing-and-clubbing explanation. There proved to be several. Some turned out to be huge (Human origins! The transition from *Australopithecus* to *Homo*! The genetic basis of throwing behavior! Its manifestation in the brain!) Some were topics in which evolutionary aspects had yet to be explored (the ontogeny, biomechanics and neurophysiology of throwing). All were satisfying insofar as they showed the utility of this new point of view to promote understanding. Many important evolutionary issues, such as modern human creativity and spoken language were not elucidated, but the breadth of its explanatory scope seems noteworthy.

Although the chapters on different topics can stand alone and be read independently, the essay format requires repetition of a few elements that are crucial to my explanation of the evidence, which is explicitly Darwinian. It is also based on *the bipedal use of hand-held weapons*. This behavior is identified as the source of the reproductive advantages that drove natural selection in a manner which accounts for hominin origins and major events in the subsequent evolution of our lineage until the emergence of *Homo*. Natural selection creates evolutionary change through differential reproduction. (I believe all evolutionary biologists accept this concept). Consequently, the question, “*what were the reproductive advantages?*” of a particular evolutionary change is repeatedly raised and examined.

Towards the end of the book, I cautiously admit that I think I have crafted a theory. Some long-time scholars in the field of paleoanthropology may find this outrageous and may even think that to mention such a thing is in bad taste. There has never been a theory of human evolution. (There is certainly a grand *general theory of evolution*, but none specifically designed for the uniquely human odyssey). This specialized field of science also is devoid of a discussion of

what the structure of such a theory should be. This, in turn, could be linked to the absence of prior examination of the nature of *explanation* in the study of human evolution. I investigate this issue in Chapter 16, then formalize my “bipedal use of weapons” theory in what may be called the “classical” format of a scientific theory, which emphasizes simplicity of the explanation and the magnitude of the evidence it explains.

One element philosophers of science expect from a proper theory is that it should serve as a platform from which predictions can be launched. Without a theory of human evolution, predictions seem unattainable. However, with a theory in hand, predictions can be made to test it. Accordingly, after Chapter 17 (a condensed summary of the book’s contents), an appendix is provided containing twenty predictions suitable for testing the theory.

The book is admittedly not an “easy read” because the flow of the prose is interrupted by nearly 900 references to scientific publications. This format is designed for scientists who want to look at the original sources I am citing. Apart from these interjected names and dates, I have tried to write in a simple style with clarity as my goal, avoiding jargon where possible, defining terms when it seemed necessary, and providing a glossary which includes abbreviations (the first entry) and definitions of terms so it will be clear what I mean when I use them.