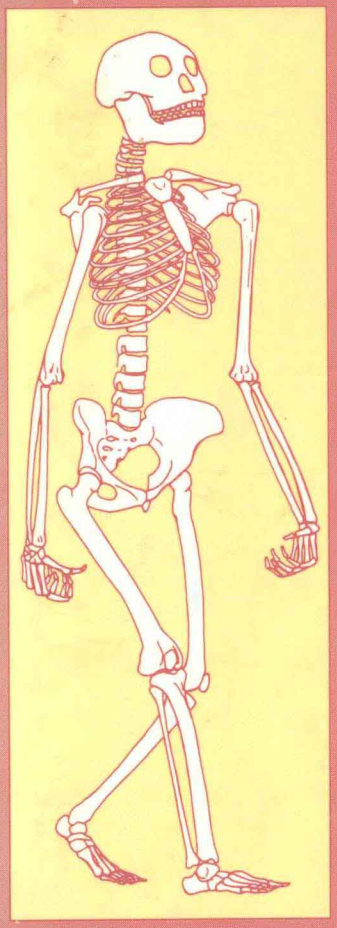
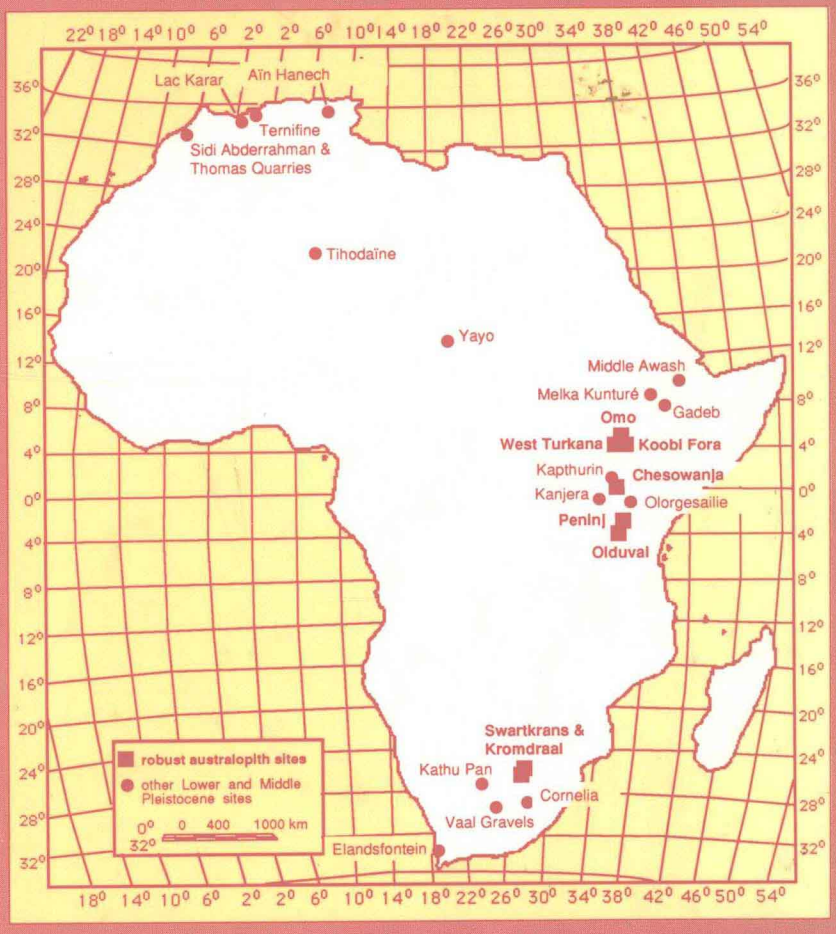
THE

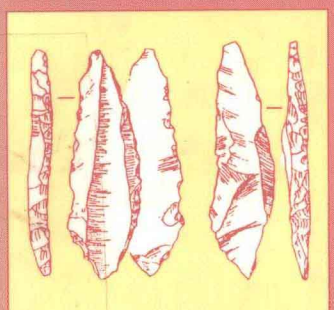
HUMAN CAREER

Human Biological and Cultural Origins

Richard G. Klein







THE

HUMAN CAREER

Human Biological and Cultural Origins

Richard G. Klein

The University of Chicago Press • Chicago and London

The University of Chicago Press, Chicago 60637
The University of Chicago Press, Ltd., London
 Published 1989
Printed in the United States of America

98 97 96 95 94 93 92 54

Library of Congress in Publication Data

Klein, Richard G.
The human career.

Bibliography: p.
Includes index.
1. Man—Origin. 2. Fossil man. 3. Human evolution.
I. Title.
GN281.K55 1989 573.2 88–36259
ISBN 0–226–43962–3

♾The paper used in this publication meets the minimum requirements of the American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48–1984.

THE HUMAN CAREER

PREFACE

Superficially, the study of human evolution seems remarkably abstruse and impractical. Yet, each year the popular press covers major finds, large prime-time audiences watch televised documentaries, and thousands of students enroll in pertinent university courses. *Australopithecus* and Olduvai Gorge feature in nationally syndicated cartoons, and some discoverers of important fossils are better known than their counterparts in more practical fields such as physics and medicine. Clearly, in spite of its apparent irrelevance to everyday affairs, the origin of the human species is intensely interesting to most modern humans, who are fascinated by the growing number of fossils, artifacts, and related facts that scientists have amassed. They want to know what these data tell us about the appearance and behavior of our remote ancestors. This book is a summary of what I think the data say.

There are many perspectives on how the data should be interpreted, and this book, of necessity, reflects just one. In writing it, I have tried to steer a middle course between what I see as two extreme approaches—one in which the data are simply a springboard for stimulating speculation about what might have happened in the past and another in which they are meaningless except to test and eliminate all but one competing explanation of what really happened. The difficulty with the first perspective is that it emphasizes imagination over validity. The difficulty with the second, whose roots lie in a perception of how the physical sciences have advanced, is that it assumes an unrealistic degree of control over data quantity and quality. In fact, substantial control is unusual in human evolutionary studies, where carefully planned experiments are rare and most data are obtained through excavations and field surveys whose success often depends more on chance than on design. Under these circumstances, I think that the physical sciences provide a less suitable role model than the judicial system, in which often limited evidence is weighed to deter-

mine which of two or more competing explanations or interpretations seems most reasonable. In most instances, the possible alternatives are not pared unequivocally to one, but one is selected because it seems more justifiable, given the evidence on hand.

Of course, in human evolutionary studies, as in the judicial system, both lay people and specialists may disagree about what is reasonable or justifiable and also about the soundness of the supporting evidence. All too often, the evidence is incomplete, ambiguous, or even contradictory, and it cannot be used to bolster any particular theory or explanation very strongly. In this book, I have tried hard to present the major competing opinions on prominent unresolved issues, and, whenever possible, I have explained why I think one view is more reasonable than others. More often than I would like, I have had to say that a firmer choice will require more data. I know that not everyone will agree with the positions I have taken or even with my decision to abstain on some matters. However, I think that such differences of opinion are unavoidable, given the imperfect nature of the evidence; and the point is that this book is inevitably just one of many possible summaries of what we know about human evolution. Its success will depend on the extent to which the readers, experts and lay people alike, think that the presentation and argumentation are sensible.

Philosophical approaches aside, there are several possible ways to organize the evidence for human evolution. The way I have chosen is perhaps the most conventional, focusing on a series of chronologically successive stages—beginning with the earliest Primates, dating from perhaps 80 million years ago, and ending with the emergence of anatomically modern people, within the past 200,000 years. The presentation does depart from the norm, however, in that I have given roughly equal weight to the fossil record and to the accompanying archeological evidence over the 2.5-million-year interval for which this is available. Most summaries focus largely on the fossils or on the archeology, thereby forgoing one of the major points that I have sought to make, namely, that the human form and human behavior have evolved together and that neither can be fully understood or appreciated without a full understanding of the other. At the same time, however, it remains true that the fossils are far easier to arrange into a set of chronologically successive, interrelatable units; and, since the fossil record is also far longer than the archeological one, I have relied on the fossils to define the chronologically succes-

sive stages that structure the text. This is not to say that there are no problems in defining the fossil units, but these pale beside the difficulties in defining and interrelating corresponding archeological categories. The difference stems from our much weaker understanding of the mechanisms underlying artifactual (cultural) change and differentiation.

A second way in which this survey differs from many others is that it includes more information on specific sites, fossils, artifacts, etc.—in short, it is more detailed, with more concern for the factual evidence that underlies our understanding of human origins. It is a formal rendering of the lectures I give in an upper-level undergraduate course at the University of Chicago, and it has been written with upper-level undergraduates, graduate students, and professionals in mind. In my experience, the audience for whom it is primarily intended will already have a basic understanding of how evolution occurs (through natural selection, mutation, gene flow, and gene drift), and therefore this latter topic is not explicitly addressed. However, at least some members of the audience will lack essential background information on skeletal anatomy, zoological classification and nomenclature, stone-tool typology and technology, and, especially, the geologic time frame for human evolution; and these subjects therefore are covered. In general, I think the book is too detailed to be a central text in lower-level courses, especially ones that also deal with modern human variation, genetics, and the like; but I hope it will find use there as one of the sources the instructor consults or recommends to those students who are especially curious about the fossil and archeological records.

In keeping with the comparatively technical orientation of the book, I have employed an in-text citation system that is common in professional scientific publications. I rejected the usual textbook system of grouping sources at the end of each major section or chapter because I felt the target audience for the book would prefer to know precisely where to look for further information on a particular topic. I also wanted to give credit directly where it was due. I rejected a system of linking references to numbers because I thought the risk of serious error would be too great when so many references are involved. The large number of references was unavoidable, given the broad theme, but I have tried to keep the list manageable by stressing recent sources that can serve as guides to older ones, and I have also excluded many non-English primary sources in favor of secondary English ones with their own extensive bibliographies of important non-English publications.

No synthesis of human evolution would be successful without good illustrations, but these can be very expensive and time-consuming to produce. As a result, even many commercially produced texts are underillustrated. I have attempted to compensate for the limitations of time and expense that were important here by adapting many illustrations from published sources, which are gratefully acknowledged. Thanks mainly to the efforts of Kathryn Cruz-Uribe, most of the illustrations have been substantially modified to support pertinent points in the text and to provide stylistic consistency. In addition, whenever possible, I have labeled important features directly on fossils, artifacts, site plans, and so forth, and I have attempted to make the captions freestanding supplements to the text, to emulate the useful sidebars that are common in commercially produced texts. My goal was to make the illustrations especially helpful to those with little or no prior knowledge of skeletal anatomy, stone artifacts, stratigraphies, etc.

It was not easy to choose a title for the book, because the most obvious ones, such as "Human Origins" and "Human Evolution," have been used many times before. The final choice—*The Human Career*—is the name of a graduate course I took at the University of Chicago in 1962, in which F. Clark Howell introduced me to the concept of human evolutionary studies as an amalgam of human paleontology and paleolithic archeology. Howell's alternative name for the subject matter, "paleoanthropology," would do equally well—though it too has been used before and has often been applied to human paleontology alone rather than to the broader paleontological/archeological field that Howell had in mind. In both the title and the text, I intend the vernacular term *human* (and its complement, *people*) to refer to all members of the zoological family Hominidae, as conventionally defined, and not simply to living humans.

My own research on human evolution has focused mostly on behavioral (archeological) evidence from middle- and late-Quaternary sites in southern Africa and parts of Europe, and my acquaintance with the remainder of the record comes mainly from published sources. In synthesizing these, I have tried hard to make the text as accurate, comprehensive, and up-to-date as possible, and I have been greatly helped by comments and criticisms from Peter Andrews, Kathryn Cruz-Uribe, Janette Deacon, Leslie Freeman, Fred Grine, Clark Howell, Philip Rightmire, Chris Stringer, Russell Tuttle, and Tom Volman. I hope they find that I have employed their suggestions productively and that I have not introduced any

new errors in the process. Inevitably, however, some defects remain, and I would be grateful to hear from anyone who finds a specific problem or who has suggestions on how the interpretations or overall organization can be improved.

Richard G. Klein
Chicago, Illinois
July, 1988

CONTENTS

ILLUSTRATIONS