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Primate and Human Evolution

Primate and Human Evolution provides a synthesis of the evolution and adaptive significance of human anatomical, physiological, and behavioral traits. Using paleontology and modern human variation and biology, it compares hominid traits to those of other catarrhine primates both living and extinct, presenting a new hominization model that does not depend solely on global climate change, but on predictable trends observed in catarrhines. Dealing with the origins of hominid tool use and tool manufacture, it compares tool behavior in other animals and incorporates information from the earliest archeological record. Examining the use of non-human primates and other mammals in modeling the origins of early human social behavior, Susan Cachel argues that human intelligence does not arise from complex social interactions, but from attentiveness to the natural world. This book will be a rich source of inspiration for all those interested in the evolution of all primates, including ourselves.

SUSAN CACHEL is Associate Professor of Physical Anthropology at Rutgers University. She is a member of the Rutgers Center for Human Evolutionary Studies, and is an instructor and researcher at the Koobi Fora Field School in Kenya.

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I dedicate this book to my parents, Henry Cachel and
Leokadia Piotrowska Cachel.

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Preface

This book is not intended to be an introductory textbook in physical anthropology, although it addresses most of the topics found in such texts. Many of the ideas developed here were originally presented to Rutgers University students in advanced undergraduate or graduate courses or in colloquia in the Rutgers Department of Anthropology or in the Rutgers graduate interdepartmental Quaternary Studies Seminar.

The focus of this book is the fundamental relationship between humans and other Old World higher primates. Many books have been written about primate behavioral ecology, and a mountain of books have been written about human evolution. However, fewer volumes deal with both human and non-human primates, and those that do so tend to emphasize the behavioral continuity between human and non-human. I will take a different approach here, because I will emphasize profound discontinuity between human and non-human primate cognition and sociality. I will also introduce evidence from Plio-Pleistocene archeology. Archeology is the description and interpretation of human behavior gleaned from the material residues of that behavior, and the spatial and temporal context of these residues. Thus, archeology contributes a line of evidence about the behavioral component of the human phenotype that is independent from inferences of behavior based on human paleontology and functional anatomy.

The strong evolutionary relationship that unites all Old World higher primates is reflected in the existence of the taxonomic category Catarrhini, which includes humans, Old World monkeys, lesser apes, and great apes. In this book I emphasize that an understanding of the strong evolutionary coherence of catarrhine primates can illuminate a number of problems in human evolutionary history, such as the advent of bipedalism, factors affected by body size or sexual dimorphism, speciation, species richness, and extinction. However, while emphasizing the anatomical and physiological coherence of catarrhine primates, I also emphasize the behavioral distinctiveness of living and fossil humans. In particular, I will argue that the behavioral ecology of living non-human primates yields no special insight into the origins of human intelligence, tool behavior, or sociality. In this sense, I am an apostate from primatology.

Yet, how can one study the origins of intelligence, tool behavior, or sociality without invoking the evidence of the behavior and ecology of living non-human primates? The earliest archeological record reveals important clues about human attentiveness to the natural world and human ability to manipulate the natural world. I introduce a new model of hominization, with a distinctive type of attentiveness to the natural world being a major trigger for hominization. Climatic change is usually invoked as an important or crucial factor in human evolution, but here I downplay environmental change as a major factor in hominization. Attentiveness to the natural world influences higher cognitive functions. Rudiments of this change in cognition already appear at the beginning of the hominization process, rather than being a late arrival that culminates with the appearance of modern humans. The origins of human sociality can be inferred from a broad comparative base of mammalian social organization, creating a “composite mammal” model, rather than one relying solely on the behavioral ecology of the living chimpanzee species. Studying the forces of natural selection that mold differences in sociality among mammals allows one to speculate about selection pressures that molded early hominid sociality.

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