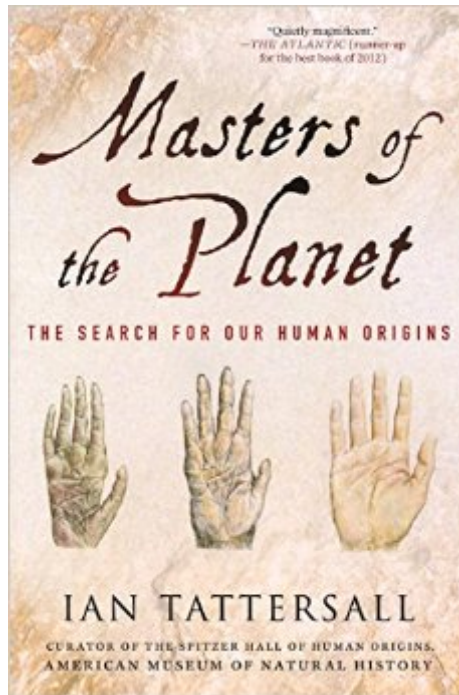


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Masters Of The Planet: The Search For Our Human Origins (MacSci)



Synopsis

Fifty thousand years ago—merely a blip in evolutionary time—our *Homo sapiens* ancestors were competing for existence with several other human species, just as their precursors had done for millions of years. Yet something about our species distinguished it from the pack, and ultimately led to its survival while the rest became extinct. Just what was it that allowed *Homo sapiens* to become masters of the planet? Ian Tattersall, curator emeritus at the American Museum of Natural History, takes us deep into the fossil record to uncover what made humans so special. Surveying a vast field from initial bipedality to language and intelligence, Tattersall argues that *Homo sapiens* acquired a winning combination of traits that was not the result of long-term evolutionary refinement. Instead, the final result emerged quickly, shocking our world and changing it forever.

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Customer Reviews

"Our narrative-loving species," as Ian Tattersall characterizes *Homo sapiens*, has long searched for the quintessentially human feature - that which unambiguously denotes our kind. Throughout history several unsatisfying candidates for that keystone feature have been offered up, including, inter alia, bipedalism, brain size, tool use, and language. For Tattersall, who has spent a career devoted to the question, that quintessential element is *H. sapiens*' use of symbolism. In the early chapters of *Masters of the Planet* Tattersall introduces the reader to the practice of paleoanthropology, its essential vocabulary, and the state of the science. The reader gets just enough information about

early hominid cranial shapes, dental wear patterns, skeletal variations, tool use, and geochronology as is absolutely necessary. We visit Ethiopia, Kenya, and South Africa as fossils and their strata are carefully unearthed, dated, and interpreted. We learn about early hominids' toolkits, their social lives, and survival mechanisms. We also get a refresher on genetics and geology. It is only in the last thirty thousand years of the two and a half million year panorama of successive hominid speciation and extinction that our use of symbolism is unequivocally documented. It is only when cave art appears at Chauvet, Lascaux, and Altamira that we are entirely satisfied that our ancestors have become as cognitive as we. This transition, Tattersall points out, would be utterly unbelievable if it had not actually happened. For the first hundred thousand years of our species' existence we were unaware of our brain's latent capacity for symbolism. When such new applications for already evolved anatomical features are introduced they are called "exaptations." Tattersall suggests that human exceptionalism is the result of one particular exaptation, the use of our brains (specifically the angular gyrus) for symbolic thought. That symbolism leveraged our tool kit, empowered us with language, and made us Masters of the Planet. Tattersall's thoughtful "Coda" entreats responsibility in our custodianship of that planet, now that we are its masters.

"Masters of the Planet" provides an excellent overview of the current state of our knowledge of the evolution of humans and other hominids. Back in the 1960s, hominid evolution could still be viewed as unilinear and progressive, leading towards "Homo sapiens" along a single axis of evolutionary change. As outlined in this book, an impressive array of fossil finds and sophisticated technical analyses have yielded a very different picture, one in which diverse lineages of hominids existed simultaneously and interacted. The profusion of paleontological discoveries has buried the traditional creationist myth of "missing links." Indeed, the sheer number of fossils and structurally intermediate forms has sometimes made it difficult to determine which of the many candidates is closely-related to which. Ian Tattersall, author of "Masters of the Planet", is curator emeritus at the American Museum of Natural History in New York. He brings to the issues a lifetime of expertise in hominid evolution, as well as abundant experience in writing books and articles for fellow scientists and general audiences. The book is organized historically, and traces the diverse and complicated history of hominids over the past 7-8 million years. Beginning with the ancient origins of the hominid lineage, it outlines the rise of bipedal apes, the variety of australopiths (including "Lucy"), life on the savannah, emergence from Africa (an event that occurred multiple times), the spread of early "Homo" throughout the Old World continents, the enigmatic Neandertals (distant cousins to ourselves, not ancestors - except to the degree in which we interbred), and ultimately, the arrival of

modern "H. sapiens. " The book does not focus entirely on skeletal features. Rather, such aspects as development of social behavior, running ability, loss of body hair, diet, use of fire, and cooking all get their due. Tattersall's account leads towards recognition of the distinctiveness of our species, as manifested by language as well as symbolic behavior, features that he considers to be responsible for our species' success. In tracing hominid diversity and evolutionary history, Tattersall draws on contemporary technological analyses to reveal details that would have been unimaginable a decade or so ago. Thus, readers may be surprised to find what isotope analyses have revealed about diets of early hominids, and what genetic analyses have shown about skin and hair color in Neandertals. Tattersall does not shy from recognizing unresolved issues and persistent controversies. He fairly presents alternative viewpoints, and freely acknowledges areas where a scarcity of evidence has rendered divergent interpretations viable. As one who has read many books on hominid evolution, I found Tattersall's work to be interesting and informative. My copy is now replete with penciled comments and bent-down page corners to mark fascinating issues and controversial matters. While the book's dealings with uniqueness of our own species' overlaps that of Brian Fagan's recent "Cro-Magnon," I found Tattersall's account preferable in some respects. The latter recognizes the emergence of artistic expression (starting at least 70,000 years ago) as a worldwide phenomenon rather than one local to Europe and Asia, in accord with its status as a species characteristic. Notwithstanding my high regard for this book, it is not free of error. The hyoid apparatus is not a "bony portion of the Adam's apple" (as stated on page 36). Rather, the hyoid consists of thin cartilages that support the tongue and its musculature, while the so-called Adam's apple is the larynx. (How the two could be confused by a paleo-anatomist is most puzzling). "Exaptation" is wrongly presented as a non-adaptationist mechanism (pages 44, 68, and 210), in which features arise by chance and only later evolve to take on a function. Evolutionary biologists will recognize this characterization as mistaken. In exaptation, features that are evolutionary adapted to serve one function are transformed through natural selection to serve some new function (as outlined in Gould and Vrba's original 1982 paper in *Paleobiology* and throughout the modern literature). As another example, the author suggests that "members of the genus "Homo" have been consistently predisposed in the same way towards brain size increase"(page 132) since brain enlargement occurred in three separate lineages. However, one need not infer any special mechanism or attribute unique to our genus. A trend towards brain enlargement has occurred independently in many mammalian lineages, as well as in numerous lineages of birds and cartilaginous fishes, and even among molluscs and arthropods. In this respect, hominids appear (with aquatic mammals) as an extreme example of a widespread evolutionary trend. Some

interpretations in the book are quite speculative, leading to weak inferences. For example, discovery of one toothless male skull (the Dmanisi specimen) is taken as evidence for long-term compassionate behavior among "Homo erectus" era hominids, on the grounds that the individual would not have been able to chew his own food. (Page 124: "...it seems entirely reasonable to conclude that the Dmanisi hominids had the cognitive reserves to express their fellow-feeling in the form of material support"). In view of the profusion of other interpretations, the inference is unnecessarily speculative. One might also question the book's central claim that emergence of artistic expression in our species paralleled the development of a unique form of psychology, as manifested in our capacity for symbolic thought. Fossils reveal little about psychology, and how early symbolic thought arose arguably is entirely a matter of speculation - cave art and jewelry notwithstanding. Such issues do not detract from a work that, on the whole, is one of the best modern accounts available; indeed, some of the above manifests the fascinating and thought-provoking nature of this book. Overall, I would strongly recommend "Masters of the Planet" as an interesting and informative account of the diversity and evolutionary history of the bipedal apes and we their descendants.

Paleoanthropologist Ian Tattersall's lifelong fascination with humanity's prehistoric past shines through every page of his new book, "Masters of the Planet." As curator emeritus at the American Museum of Natural History, his mature reflections on the long, winding road our species has traveled is full of surprises and state-of-the-science information. Tattersall is a seasoned and eminently reasonable guide, as well as a crystal-clear communicator in a field that can be technical and bewildering to the interested general reader and expert alike. He is above all a sifter - sorting out the significant from the trivial among thousands of clues from fossil apes and humans, their predators and prey, petrified footprints, hi-tech reconstructions of past climates and ecologies, relevant recent studies of primate behavior and cognition, origin of language studies, and much more. Eschewing a mere catalogue of stones and bones, Tattersall tackles head-on the questions about which we are most curious: Who performed the first known human burials? Where can we first see evidence of empathy and care for others, and its diametric opposite-- cannibalism? What were the similarities and differences in culture and behavior between Homo sapiens and Neanderthals? If several species of humans co-existed for thousands of years at the same times and places, how is it that only one now stands alone as "Masters of the Planet?"

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