

The Fossil Record— Human and Nonhuman

The Primate Fossil Record

Edited by W.C. Hartwig (2002) Cambridge: Cambridge University Press. 530 pp. \$175 (cloth); ISBN 0-521-66315-6.

The Human Fossil Record, vol. 1. Terminology and Craniodental Morphology of Genus *Homo* (Europe)

By J.H. Schwartz and I. Tattersall (2002) New York: Wiley-Liss. 388 pp. \$125 (cloth); ISBN 0-471-31927-9.

Major reviews¹ of the entire record of primate paleontology are few and far between. In fact, ironically, the three that would most readily have come to mind before 2002 were authored or edited either by this journal's editor¹ or your humble reviewer.^{2,3} Two shorter texts^{4,5} are less detailed and not up to date. The situation is reversed for volumes concentrating on human paleontology: The entire allotted space of this review would be required to list the majority of such works. Despite their rather similar titles, the books by Hartwig and by Schwartz and Tattersall are in fact quite distinct, but both are welcome additions to the evolutionary anthropologist's reference shelf.

In his preface and introduction, Hartwig specifically positions his anthology as a successor to Szalay and Delson's book² and as a technical complement to works by Conroy,⁵ Fleagle,¹ and others such as Martin,⁶ which are less focused on paleoprimateology. Hartwig's volume includes twenty-five chapters by thirty-one authors, few of which can be individually discussed here. Only three authors contributed to more than one chapter, always in different sections (Rasmussen on primate origins and early catarrhines, Walker on lorisids and early *Homo*, and Begun on pliothecids and European hominoids).

This is a fairly unified book, with indexes to major authors and taxa, as well as a consolidated bibliography, in addition to subdivided lists of "primary references" at the end of each chapter. Following a brief survey of primate origins, mainly a review of models with passing mention of Plesiadapiformes and other archontans, there are five major sections on prosimians, anthropoid origins and platyrrhines, "basal" catarrhines and Old World monkeys, hominoids, and human paleontology. Most of these have an introductory chapter with special reference to the historical emphasis that Hartwig desired, followed by three to five solid chapters reviewing a small geographic or taxonomic segment of the fossil record in semi-standardized format. This begins with a history of discovery and debate (which readers might think too long compared to later sections), followed by taxonomic and morphological detail, and concluding with a discussion of evolutionary patterns and interpretations. The taxonomy section features a classification to the species level, then a review of each included genus with discussion of the type species, and sometimes all others, proceeding from type specimen through age and geographic range to a variably detailed anatomical definition or discussion. There are no synonymies, and authorship often is not provided for subgenera or suprageneric taxa. This is in strong contrast to the unnecessary but uniform listing of type specimen catalog numbers, which will be useful only to potential revisers, who would have to go to the original sources anyway.

Space prevents discussion of most chapters here, but the section on hominoids may be of greatest interest to this journal's readers. Pilbeam introduces the topic with an insightful review of prior studies, emphasizing some of the diverse approaches and arguments since his own last major analysis⁷ but avoiding or ignoring an even more influential predecessor.⁸ Harrison surveys late Oligocene to mid-Miocene catarrhines, arriving at several important, if controversial, conclusions. He presents in detail his previously summarized argument that *Proconsul* and

close relatives were not hominoids, but rather derived early catarrhines, predating the hominoid-cercopithecoid divergence because they lack synapomorphies with the modern apes. Afropithecines and nyanzapithecines are included in the Proconsulidae as thus conceived; these taxa are well characterized, but only in the "evolution" section of the chapter. Dendropithecidae is defined to receive some but not all of the smaller conservative Miocene catarrhines. *Morotopithecus* is tentatively recognized as a hominoid apparently predating the hylobatid-hominid divergence on the basis of derived features of one lumbar vertebra and an uncertainly referred scapular glenoid fragment, combined with craniodental and femoral morphology like that of proconsulids. Harrison hesitantly rejects the alternative that *Morotopithecus* is an afropithecine with a unique axial skeleton, convergent on hominoids perhaps due to its large mass. This taxon might be pivotal in understanding hominoid origins, especially if its age is closer to 21 Ma instead of the faunally derived 15 Ma. However, if it predates the gibbon-great ape split it would still not refute the model of hominoid (or hominid) diversification outside of Africa,^{9,10} followed by hominine reentry to Africa.

In addition to refining that model, Begun's review of European hominoids surveys *Dryopithecus*, *Oreopithecus*, and *Ouranopithecus* (generically separated from *Graecopithecus*) and extends into southwest Asia to discuss *Griphopithecus* and *Ankarapithecus*. Kelley examines the Asian hominoids, overlapping Begun's discussion of *Griphopithecus* but, surprisingly, ignoring *Ankarapithecus* while concentrating on *Sivapithecus* and *Lufengpithecus*. The last genus is placed in a new pongine tribe, but I am unconvinced, preferring to consider it, like *Dryopithecus*, a "stem hominid." Although their fossils are rare, hylobatids are important both as a divergent hominoid clade and for their reflection of conservative morphology, yet neither Kelley nor any other author discusses them. Ward and Duren return to Africa to survey the later Miocene taxa. They follow Andrews^{11,12} by including the afro-

pithecines (*Nacholapithecus* and *Equatorius*) and kenyapithecines (*Kenyapithecus*) in Hominidae, while leaving *Otaviapithecus*, *Samburupithecus*, and *Orrorin* of uncertain subfamily status. Generic diagnoses for the first three are long and detailed, and the evolutionary discussion clear if too brief: For example, Ward and Duren tantalizingly suggest that new fossils from Kenya may refute the “African re-entry” hypothesis. I was surprised at the lack of reciprocal referencing among these and other chapters. Ward and Duren specifically refer to both Kelley and Harrison, without supporting or refuting the latter. But all four of these chapters overlap significantly and most authors appear to be unaware of the others. That is a common problem in most collected volumes: If the editor does not supervise interaction among related chapters it will not happen, and the overall value of the book is reduced.

Another deficit of the volume is the rarity of discussion of taxonomic entities above the genus level. Subfamilies, families, superfamilies, and even ordinal-group taxa (even the few newly named ones) are not characterized or diagnosed except where some authors violate the imposed format, either with generic discussions or in their evolution sections. Such discussions are important summaries of characters linking genera both taxonomically and evolutionarily. Moreover, newly named taxa must be clearly delineated in order to be “available” systematically. If this work is designed to be a reference source, the editor should have required such discussions and convinced the publisher of their value, despite the effect on manuscript length.

On the other hand, Hartwig explicitly notes that he wants readers to develop their own ideas of primate phylogeny based on the data presented. This may explain, but in my opinion does not justify, the rarity of phylogeny diagrams, whether cladograms or trees. Such diagrams rapidly summarize large amounts of text and help the reader zero in on questions that an author may develop nearby. In Begun’s chapter on European hominoids, for example, three cladograms of generic relationships differ widely but are separated by only three steps out of 480, emphasizing the potential

pitfalls of using numerous characters in a parsimony analysis. Begun specifically prefers one cladogram based on “informed choice,” while I worry also about the clarity and reproducibility of character-state coding. More important, however, is the question of whether readers should be left to draw their own conclusions in a book like this. I suggest that it is more valuable for authors to present and argue for their interpretations, even if some may prove ephemeral. The reader can decide which are worthwhile only if alternatives are clearly presented. Hartwig wisely allowed authors to determine their own taxonomies, rather than imposing a standard system, but he failed to follow through by encouraging clear diagrams and phylogenetic conclusions as well.

By contrast, the number of specimen illustrations in this work is high. Their quality is mixed, but usually is good for both photographs and drawings although, in some cases, neither sources nor permissions are obvious. On the other hand, maps showing site locations are entirely absent. Errors of fact exist but are not rampant; no finger-pointing is required. Ours is a fast-moving field. Hartwig’s introduction includes a list of all primate genera accepted by this volume’s authors in order of description, and already there are at least a Pakistani ?cheirogaleid (*Bugtilemur*¹³), two new African cercopithecids (*Kuseracolobus* and *Pliopapio*¹⁴), and the presumed hominins *Ardipithecus*, *Kenyanthropus*, and *Sahelanthropus*. However, given the fact that *Australopithecus* is not listed, perhaps hominins are ignored in this table.

Schwartz and Tattersall do not have to worry about such ancient African taxa, as their book focuses squarely on the European segment of the human paleontology dataset. This book is the first of a planned quartet (at least) of volumes that will document the entire record of human evolution. It begins with a discussion of Schwartz and Tattersall’s very different but equally standardized format. The focus of interest is the locality and the potential population it yields; specimens are described in alphabetical order by site name. Sixty-one sites are included, alphabetically from Abri Pataud to Zafarraya and chronologically from Dmanisi (ca. 1.8 Ma) to Chancelade

(mid-Magdalenian). Why certain Late Upper Paleolithic moderns are included and others ignored is never addressed. Maps showing all site locations follow drawings of the craniodental elements that label features discussed in the text.

Each sample is well illustrated, almost always by monochrome photographs taken by the senior author, although a few by other photographers are used, and several digital images of casts fill gaps that would otherwise exist. As this review was to be submitted, the original Combe Capelle 1 skull, described from such a cast, was rediscovered.¹⁵ The original photos are excellent, although the final quality is reduced through less than superior publishing. The remains are described in moderate detail, beginning with generalities about preservation and the entire cranium, then proceeding from the face over the vault to the base, several “endocranial compartments,” the mandible, and the dentition. When numerous specimens are known from a site, one or more are used as reference standards and others briefly compared to them. The reader may be disappointed to find no sign of two other expected sections: there is no analytical synthesis and no measurements are provided, the photographs being thought sufficient to give “an adequate guide to size.” Schwartz and Tattersall argue that as previous authors have not agreed on what metrical data to provide, or their developmental or functional relevance, they will offer none, preferring to concentrate on morphology alone. I can agree with the primacy of the latter, but not the abandonment of the former. Even less acceptable is their rejection of interpretation. One would hope that these respected colleagues (and personal friends), having spent years traveling the globe in order to see each specimen at first hand, would give us the benefit of their opinions on population affinities and variability, taxonomy, phylogeny, and perhaps adaptation. They do promise a “systematic analysis of the genus *Homo*” in volume two, after further description of African and Asian specimens. Volume three is scheduled to cover all “early hominids” with systematic conclusions. Yet, for the nonce, we are left like Frodo at the gates of Mordor,¹⁶ awaiting a guide to the dark regions within.

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MEETINGS OF INTEREST

May 22–24, 2003**International Anthropological Congress: Anthropology and Society**

Memorial Congress to the 60th anniversary of death of Dr. Ales Hrdlicka Praha-Humpolec, Czech Republic
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June 22–28, 2003**V Congress of the International Association for the Study of Human Paleontology**

Barcelona-Sitges (Spain)
Sponsored by the United Nations Educational, Scientific, and Cultural Organization and the Universitat de Barcelona
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Excursions: Arago Cave, Altamira - North Spain and a visit to the new museum and replica of the Altamira Cave, Atapuerca - Burgos, Granada & Murcia.
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The conference will focus on the global impact of human overpopulation.
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July 14–18, 2003**XVth International Conference of Ethiopian Studies**

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