

Lucy's Legacy. The Quest for Human Origins

Donald C. Johanson and Kate Wong

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On my bulletin board at work is a quote given to the Boston Globe by the renowned paleontologist Farish Jenkins. It reads, "I was always interested in anatomy and how things work. But I stay away from human evolution.... Those anthropologists are savage." (Rimas 1996). Though cultural anthropologists may cringe at his use of the word "savage," Jenkins' point is an important one. Our field, though known primarily for its thrilling discoveries about human origins, gives the simultaneous impression (deserved or not) of being riddled with personal controversy and dramas more fitting for daytime TV than the Discovery Channel. Though insightful and thoroughly entertaining, some of the popular science books about our field written this decade have done little to change this impression—*The First Human* (Gibbons 2006), *A New Human* (Morwood and van Oosterzee 2007), and *Adventures in the Bone Trade* (Kalb 2001) immediately come to mind. And yet, to those of us involved in paleoanthropology, the exciting aspects of our field are not the conflicting personalities, permit battles, or snide remarks. Instead, what excites and motivates us is our unending curiosity about human origins, the thrill of discovery, and the recognition that there is so much more for us to learn and discover. In that regard, Donald Johanson and Kate Wong's *Lucy's Legacy: The Quest for Human Origins* is a breath of fresh air.

Ideally, paleoanthropologists should strive to make our work accessible and exciting. We have a responsibility to tell the general public what we know, and perhaps more importantly, how we know it. Johanson and Wong seamlessly interweave scientific information within page-turning tales of fossil hunting in Ethiopia. Over thirty years since discovering Lucy, Johanson writes *Lucy's Legacy* in a tone of deep pride and satisfaction. The wealth of scientific evidence suggests that the hypothesis put forth by Donald Johanson and Tim White in the late 1970s and into the 1980s was correct; the Hadar fossils represent a single sexually dimorphic species—*Australopithecus afarensis*—and this species (or an immediate australopith descendent) most likely gave rise to the genus *Homo*. In *Lucy's Legacy*, we are told of an Ethiopian bar named "Lussy," and Johanson's ability to breeze through customs because of his discovery. It is revealed that the original Lucy book (Johanson and Edey 1981) inspired David Lordkipanidze, the lead scientist at the prolific and important Dmanisi fossil site, to become a paleoanthropologist. Johanson is proud—proud of the fossils he discovered and proud of the work the Hadar team did and continues to do. Who can blame the man who unearthed one of the most famous fossils ever discovered?

However, the tone of this Lucy book is different from that found in *Lucy: The Beginnings of Humankind* (Johanson and Edey, 1981), which at least one reviewer found to be condescending and unnecessarily one-sided (Frayer 1983). This shift in Johanson's tone is undoubtedly aided by the addition of Scientific American writer Kate Wong, who has somehow been able to effectively and enthusiastically communicate what paleoanthropologists have been doing for the last decade, without harping on the small and truly unimportant squabbles we get into. For example, Johanson's dealings with Richard Leakey in the 1970's and 1980's are described as "friendly rivalries." Potential controversies, such as the video-tape incident (p. 82–83) are described as "misunderstandings." And the book is filled with colorful and endearing descriptions of researchers. Profiles of Kay Behrensmeyer, Zeray Alemseged, Chris Campisano, Carol Ward and many, many others, give the reader a better sense of who we are as scientists and individuals.

The sanguine tone of *Lucy's Legacy* is certainly not because Johanson and Wong avoid controversial topics; instead, they present many currently contentious paleoanthropological issues with a truly balanced approach. For instance, both Brunet's and Wolpoff's interpretations of the *Sahelanthropus* cranium are presented fairly and, noting that bipedalism is probably the critical hominin adaptation, Johanson and Wong state that "better evidence of bipedality would verify his [Brunet's] claim." Though Johanson and Wong clearly express doubts over the legitimacy of *Kenyanthropus platyops* as a new hominin lineage, Leakey's interpretation is certainly not summarily dismissed, as the small molars on the KNM-WT 40000 skull would remain even if the skull shape is distorted by an expanded matrix. Finally, Johanson and Wong navigate the LB 1 Flores controversy with tempered grace and consider both the speciation and pathology arguments before concluding correctly that a second skull would go a long way towards addressing either of these hypotheses.

The beginning of *Lucy's Legacy* takes us back to 1974 with Johanson rehashing the discovery of Lucy with the same enthusiasm and story-telling abilities that captivated readers in the original Lucy book. Although Johanson reflects quite fondly on the Hadar discoveries of the 1970's, he does not relive these glory days throughout *Lucy's Legacy*. Instead, by page 22, we are taken into Johanson's lab and into the minds of paleoanthropologists, Bill Kimbel, Yoel Rak, and Bob Walters. A strength of this book is the message that while new scientific information (like the Lucy skeleton) may provide a few answers, it generates a pano-

ply of new scientific questions and hypotheses. Though the two decades after Lucy's discovery are rife with political turmoil in Ethiopia, Johanson's team eventually returns to Hadar and makes important discoveries that are beginning to address the many questions that emerged from the Lucy and First Family discoveries. Throughout this first part of the book, Johanson and Wong explain concepts such as paleomagnetism, K/Ar dating, functional morphology, cladistics, and speciation in a language accessible to most readers. The authors also make a point to describe the emerging role that Ethiopian paleoanthropologists, such as Zeray Alemseged, are playing in understanding human origins.

In the 35 years since Lucy's discovery, paleoanthropologists have amassed an impressive collection of fossils. Johanson and Wong go as far to say that there is now an "embarrassment of riches" of australopith fossils (p. 183). Parts 2 and 3 of *Lucy's Legacy* introduce the reader to many of the fossils that have been recovered since 1974, and the many new questions that these fossils have allowed us to ask. The reader also is introduced to the debate over the earliest purported hominins—*Ardipithecus*, *Orrorin* and *Sahelanthropus*. Johanson and Wong delve into the origins of *Homo*, the fossils being unearthed from Dmanisi (a site which should have been demarcated in the map on page 1), and the puzzling fossils from the island of Flores. The book continues this journey through human evolution, concluding with some remarks on the latest understanding of Neandertals, the origins of language, and the origins of "modern" human behavior.

Throughout Parts 2 and 3 of *Lucy's Legacy*, Johanson and Wong continue to hammer home a critical theme of this book—fossil discoveries produce more scientific questions than answers. In fact, for graduate students struggling to find a thesis topic, Johanson and Wong litter this book with ideas and devote the Epilogue, "Unsolved Mysteries," to the many paleoanthropological questions that are currently unanswered.

Of course, few books are perfect. In statements that could only make the political satirist Steven Colbert proud, we are told that Don Johanson finds fossils with his "gut" (p. 4 and p. 87). Certainly, we can all appreciate that there is a degree of intuition and luck involved in some hominin discoveries. However, using this terminology misinforms the reader and creates an image of paleoanthropologists aimlessly trekking through East Africa, guided not by geological maps, but by their viscera. Johanson and Wong certainly do make up for these statements in describing the importance of provenience, and the methods behind paleomagnetism, radiometric dating, and microstratigraphy, somehow without being esoteric. Furthermore, though we are told that Bill Kimbel's hero is Franz Weidenreich (p. 104), Weidenreich himself is later (Chapter 15) misrepresented as being ultimately in favor of an independent evolutionary model for the different human races. The long and unfortunate history of Weidenreich's ideas being misrepresented has been addressed elsewhere (Caspari and Wolpoff 1997).

Though the authors do a commendable job describing

how evolution by means of natural selection works, misleading statements can still be found. The reader is told that in the transition from australopiths to *Homo*, the teeth and chewing muscles "shrink" as if Lamarckian evolution was at work. With evolution so poorly understood by the general public, using evolutionary shorthand that "teeth shrank" or "heads and legs grew" should be replaced with wordier although more accurate statements that "individuals with smaller teeth, longer legs, larger brains (etc...) preferentially survived." Though there are selected references at the back of the book, I also think it is important for the public to understand *where* the information they are being given comes from. In this regard, *The First Human* (Gibbons 2006) and *Human Natures* (Ehrlich 2000) are models for how to employ footnotes to allow an interested reader to learn much more about a given topic or assertion in the book. Such footnotes would have improved *Lucy's Legacy* and made it an important resource, rather than just a pleasant read.

Though briefly mentioned, I was surprised to not find a more detailed discussion of the controversial exhibit, coincidentally also named "Lucy's Legacy." Though many have objected to the original Lucy skeleton traveling to the United States and Europe, Johanson has been one of the few scientists who has not argued against the idea. The book would have been strengthened with the addition of Johanson's own thoughts on this matter. Perhaps a line or two that teaching the public about evolution is important enough that the risks of displaying the original skeleton are worth it. Or perhaps it was worth it because of the opportunity to CT scan Lucy while she was in Texas? Or perhaps it is not worth it? It is a fascinating discussion, and I am surprised to have not seen it fleshed out in more detail in this book.

Nevertheless, I would recommend *Lucy's Legacy* to my students, my friends, and family members. Certainly, this book will catch up the individual who read the original Lucy book in 1981, and perhaps has not paid much attention to paleoanthropology since. Additionally, this book presents a more accurate portrayal of what we do for the layperson who thinks that a paleoanthropologist is some cross between Indiana Jones and the character Ross from the popular television show *Friends*. However, this book is not just for the layperson. I also would recommend this read to my fellow anthropologists. It is a reminder of how exciting paleoanthropology is, why many of us got involved in this field in the first place, and how lucky we all are to do this work for a living.

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