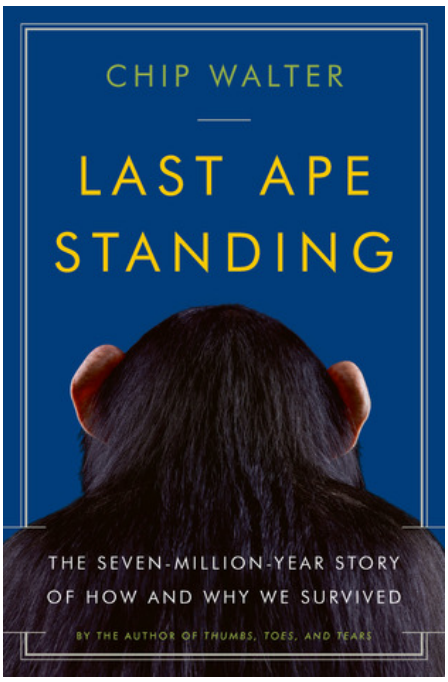

Last Ape Standing: The Seven-Million-Year Story of How and Why We Survived

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Over the past 150 years scientists have discovered evidence that at least twenty-seven species of humans evolved on planet Earth. These weren't simply variations on apes, but upright-walking humans who lived side by side, competing, cooperating, sometimes even mating with our direct ancestors. Why did the line of ancient humans who eventually evolved into us survive when the others were shown the evolutionary door? Chip Walter draws on new scientific discoveries to tell the fascinating tale of how our survival was linked to our ancestors being born more prematurely than others, having uniquely long and rich childhoods, evolving a new kind of mind that made us resourceful and emotionally complex; how our highly social nature increased our odds of survival; and why we became self aware in ways that no other animal seems to be. *Last Ape Standing* also profiles the mysterious "others" who evolved with us-the Neanderthals of Europe, the "Hobbits" of Indonesia, the Denisovans of Siberia and the just-discovered Red Deer Cave people of China who died off a mere eleven thousand years ago. *Last Ape Standing* is evocative science writing at its best-a witty, engaging and accessible story that explores the evolutionary events that molded us into the remarkably unique creatures we are; an investigation of why we do, feel, and think the things we do as a species, and as people-good and bad, ingenious and cunning, heroic and conflicted.

Last Ape Standing: The Seven-Million-Year Story of How and Why We Survived Details

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From Reader Review Last Ape Standing: The Seven-Million-Year Story of How and Why We Survived for online ebook

Angie Boyter says

3-. I had started this once a year or two ago and aborted after just a few chapters because the first part of the book was dull and repetitious. Read again for the book group.
There are some interesting ideas in the book that might lead to good discussion in our group, but there are enough flaws that I might have thrown in the towel again if I were on my own.
Some of the writing style is quite enjoyable and expresses his thoughts beautifully, but this is balanced by too many mechanical errors, even things like misspelled words, like "irresistable", and non-parallel sentence structure that makes the reader stop and go back because I think I missed a word somewhere. A good editor could have improved my enjoyment significantly.
I was familiar with a good bit of what he discusses, especially about the mind, like the Trolley Problem, but on topics I do not know well and wanted to know better, like epigenetics, I found his treatment not enlightening, and sometimes I even felt he used terms wrong, like "working memory" (I looked up this term to confirm my belief.). And there were some things where he seems to assume knowledge a normal reader would not have, like he says "Remember Konrad Lorenz's 'innate releasing mechanism"?" I did not and searched my kindle edition to see where he had discussed it. He had not, so.I can only assume he thinks we all know what that is.
In addition, it seemed to me that the book was not QUITE sure of its focus; it seemed to go from paleoanthropology to modern brain structure, etc.

Elizabeth Theiss says

Why did home sapiens survive and other closely related species such as Neanderthals and Denisovans become extinct? Chip Walters takes up the question and provides alternative theories of what could have happened based on contemporary archeological evidence. The writing style is lively and non-scholarly in a good way, at times bordering on the irreverent.

Walters' descriptions of Neanderthals and how they lived are fascinating. It appears that Homo sapiens not only lived in the same vicinity at the same time as Neanderthals but also clearly mated with them, as evidenced by the percentage of people whose cells contain Neanderthal DNA.

Found this book fascinating, especially the chapter on consciousness and its impact on the human capacity for invention.

As a coda to this review, I recently learned that I am of Neanderthal descent. I share 3.2% of my DNA with the Neanderthal species. This calls for a rereading of the book with a focus on traits I share with my ancestors.

Eric says

This book is one of the best that I have read that has focused solely on human evolution. This author takes a

specific focus on why we have survived while other humans have not and does not wander into arguments for evolution or much description about how it takes place. As a result, I would not recommend this book for someone who is unfamiliar with evolution, but, rather for the reader that has some familiarity with the process. For instance, this would make an excellent introductory volume in a class that focuses on human evolution.

One of the greatest points for me, as someone with an anthropology degree, is his description of the difficulties that the field of paleoanthropology has when it comes to analysis and te amount of fossilized material that there is to be found. It helps to show the reader why there is so much debate within the field and invites the reader into the discussion.

Tanja Berg says

Rating 4* out of 5. This despite the fact that I was chocked to find a typo in the "author's note" right at the beginning of book. It didn't exactly promise great things to come. I was mistaken. The rest of the book was lucid and readable. I didn't find any more typos. I learned a few things that I've missed before.

I wasn't aware that we shared the world with several other species of human in the early days. Nor that there were many parallel species of two-legged creatures on the prehistoric savanna at the same time. However, these days we are the only ones left. It's not long ago - only about 30000 years - that the last Neanderthal died. Makes me wonder what new heights of racism might have existed if they were still with us. Of course, one theory claims that we mated with them, so perhaps we didn't hate them. All humans except Africans have 1-4% Neanderthal genes. (Of course, I've met examples who clearly must have had more). I also learned that Neanderthals actually had bigger brains than us. I must have heard about this before, but I never reflected on it previously.

I'm not exactly sure why we made it over other species. One is that we were being born earlier, with extended childhoods and that - unlike other species of apes - our brains continues to grow long after birth. In many ways we resemble baby apes and retain juvenile looks, something called "neoteny". We are, in many ways, "learning machines". Although it becomes more difficult in adulthood, we are still capable of learning new things throughout our lives. Which would be a good adaptive trait.

Although it took me forever to read - at least it felt that way, being me - I still enjoyed it. I often become impatient with books that require too much time (that is, a week or more). Although the fact that this one did is mostly because I didn't have such long stretches of time to read. There are so many other things crowding for my attention these days, plus long days at the office. A horrible excuse, I know! Anyway, if you enjoy reading about evolution and early human history, then this is highly recommended. It's interesting and fun rather than bonedry.

Kerie says

When I went to college many years ago I minored in anthropology so we got a lot of information on ancient humans. This book shows how much the body of knowledge has changed, while revealing how often scientists claim something is true while they're actually just making it up as they go along. It also shows off many other things I really find distasteful about science and our modern culture now.

The tone of the book is naturally overtly humanist, with us being the top of evolution and the best thing since sliced bread. I found it arrogant and off-putting. The assumption that humans are the best and brightest is frankly bullshit. Science really has no idea how any other creature really thinks, it only has assumptions based on its mythology, and a bunch of tests that can be (and usually are) interpreted as a matter of opinion but are then passed along to the public as fact. This has the effect of reinforcing the idea that humans are the best and brightest because the tests start from that stance and aren't truly open as they'd like to think. And anyway objectivity is a dirty word; our culture objectifies everything to the detriment of all life.

Humans are the best, really? OK, then, let's see one of you scientists go out into a jungle and survive with nothing but your bare hands and a termite fishing stick, like the chimpanzees do. Oh, you can't? Well, then we aren't the best at everything then, are we?

I also have really come to abhor this culture's hatred of nature as evidenced in this book CONSTANTLY by referring to early humans' living conditions as horrible, harsh, brutal, etc. For a modern human, pampered by his toys and inventions, living locked away from being in a relationship with nature, maybe it's true, but I doubt very much that the early peoples felt this way any more than any other wild creature in its natural habitat. It's modern people who are afraid of nature and living wild, who the hell knows what the ancients felt or even what a wild creature now really feels and thinks about its place in the world? Indigenous cultures all over the world, when found by the colonizers of Europe, were content living in their ancient ways. Some cultures didn't know what lying was. Some cultures didn't know what rape was. They didn't fear and hate nature, they had close personal relationships with it, fulfilling relationships. It's us, the moderns, that are the broken ones to be pitied. And the awful ones to be feared.

Science always holds itself up as truth but always gives itself away. The author kept saying over and over again how nobody really knows what people thought or lived like in the distant past, not even how many extinct varieties of human there were or how they were descended from and related to one another. And then goes on to speak with certainty about most of the connections and peoples. One hypothesis about Neanderthal communication was so bizarre I thought I was suddenly reading a fantasy novel. Interpretive dance. Do you mean like bees? Seriously? OK then. Because nobody can use language if they don't have identical equipment to Homo Sapiens. /facepalm Nobody knows, and nobody will ever know, what people lived like, spoke like, thought of themselves in ancient times -- most people today can't even do it with their next door neighbor.

I walk away from this book feeling more than ever that the sciences are the mythological dogma of the monotheism known as humanism. And I wonder why more people don't question these things. How can people talk about extinct humans with certainty when the scientists themselves argue about what each piece of evidence means with the fervor that the early church fathers argued the substance of Christ at the First Council of Nicea? It's not objective truth if you have to argue other people into agreeing with you when they have an alternative theory. There is no difference between the early church and science except that now there are machines to measure things that supposedly tell us the truth of the ancient past and mysteries of the universe, which are then interpreted according to each scientists individual personal preferences. Nah, it's all completely objective.

If you read this as mythology it's good enough I suppose. But it's best not to go around speaking with certainty of people a million years dead. It tends to make the speaker look like a credulous fool.

Maitrey says

Last Ape Standing (LAS) was a bit of a letdown for me. I was expecting it to fill gaps in what I knew of the human evolutionary tree, but it turned out to be pop-sci and it's subtitle was very misleading. I think I should've read up more on Chip Walter before picking this book up.

LAS moves very quickly from our last common ancestor with the chimps to very recent hominins like Homo rudolfensis and Homo ergaster. Therefore the seven million year journey is almost halfway done in the first few pages itself. Turns out you can't blame Chip too much, we really don't know much about those human species and the fossil records and whatever little of their tools and workmanship is heavily disputed, even fought over, by palaeoanthropologists.

I'm happy I've a decent idea of where problem species such as Homo habilis and H. erectus fit in the human evolutionary tree thanks to reading this book. (TL;DR: they don't, both habilis and erectus have been relegated to side branches, and it's widely believed we're directly descended from from H. ergaster and H. heidelbergensis.)

Some great insights into human evolution are marred by forays into pop-psychology (and not any new pop-psychology at that) and other related areas that any well-informed five year old will surely know. Otherwise the writing was clear and not at all jargon-heavy.

Overall, this book is a concise, well written, not to mention a very up-to-date introduction to human evolution.

P.S. I'd love recommendations for new books on human evolution written by scientists.

Maron Anrow says

I have mixed feelings about this book.

I teach Evolutionary Psychology, so when I read popular books on evolution, I'm either looking (1) to learn new stuff about my favorite topic, or (2) for something accessible and easy for my students to read. I picked up this book for the first reason. The implications of Homo sapiens' coexistence with other hominins (e.g., Neanderthals, Denisovans) has grabbed hold of me recently, and this book appeared to be entirely about that topic. While it does address it a fair amount, it's ultimately just another "here's how and why humans evolved" book. However, I'd say it does adopt some fresh approaches, one of which is why Homo sapiens were more successful than other hominins (although that ultimately just became an account of our species' unique adaptations, and why they work so well). What I found most enlightening about this book was the theory that retaining youthful characteristics--both in appearance and behavior--was crucial to human evolution. Somehow I've never encountered that before, and it's quite compelling. So, I did indeed learn something new from this book. That's nice.

At the same time, because this is a topic I'm very familiar with, it's hard not to be critical... and I found a lot to criticize. I had few criticisms early on, but by the end I found myself constantly irritated. First, while I understood everything just fine, there are spots where the author unwisely assumes reader familiarity with concepts that should be broken down and explained. For this reason, I'd hesitate before recommending this

book to someone who is new to human evolution and/or evolutionary psychology.

But there are worse flaws, and while I feel bad being critical, I can't help it because this is a topic I care deeply about. First, the author used the phrase "more evolved" when describing a particular hominin species, and there are few things that make me want to kick someone more than the phrase "more evolved" (*oh my god we are not a great-chain-of-being wtf and this is a book about evolution*).

Second, I had to immediately wonder about the author's credentials when he wrote in a footnote that the number of Native Americans living in the continental U.S. "before the arrival of white men...couldn't have exceeded many more than tens of thousands." What?! Does he mean IN TOTAL?! Even so... Apparently he hasn't read 1491: New Revelations of the Americas Before Columbus. That made me immediately skeptical of some of the more provocative theories he cited, like how Neanderthals hummed. Speaking of citations, what's with the lack of a well-organized bibiography? The book has a bibliography, but a carefully-researched work of non-fiction should provide page-by-page references (whereas this one just dumps them all together at the end, other than a handful of footnoted citations. Why did those statements receive citations while the vast majority didn't?).

Third, there was both subtle and not-so-subtle male bias in the writing. This ranged from many uses of the word "man" (instead of human or individual) to the omission of female issues in human evolution (so much emphasis on hunting! Early man was clever and strong hunter! Rawr!). Ugh. This particular sentence irked me, because it assumes a male perspective: "This makes fewer goals in life more important--from an evolutionary point of view--than successfully landing at least one sexual partner." Increasing number of sexual partners has a direct effect on men's fitness, but the same is not true of women because of their slower reproductive rate. This doesn't mean there's never a fitness advantage to women having more than one partner (a good example is cuckoldry; i.e., having a sexual affair with a partner whose genes are more desirable for one's offspring than one's pair-bonded partner, and getting that pair-bonded partner to invest in offspring that aren't his own), but in general, increasing number of sexual partners is not a strategy for women to increase their fitness. If he had simply wrote "...than landing a sexual partner," that would be okay. But the insertion of the phrase "at least one" is a good example of the male-centric assumptions I noticed in this book. Actually, I take that back. The phrase isn't the problem. The entire sentence implies that any partner is better than no partner, which *is* true for men's fitness. For women, indiscriminate sex has the potential to harm her long-term fitness even if it results in immediate reproduction.

Fourth, I question some of the estimates for the emergence of certain characteristics, like self-awareness. The author suggests that modern self-awareness emerged 50,000 years ago, after Homo sapiens made their way to Europe. So he's either denying this particular psychological capacity to humans who hadn't left Africa by that time, or he's saying the trait evolved independently in separate groups of humans all over the world. Other work I've read suggests that self-awareness likely existed by the time of Homo erectus, because they carried their tools with them and thinking about the future requires a sense of self. Granted, the author of this book fixates on "speaking to oneself in one's head" as modern self-awareness so maybe this is just an argument of semantics, but I think "inner thought" is simply using language with self-awareness and not a separate adaptation in its own right. Therefore, I think 50,000 years is way too late for an estimate of the emergence of self-awareness. (I also wonder if his estimates of the evolution of language are a bit late.) Okay, I think I'm starting to sound a bit cranky, and of course I could be very wrong about all this. But even if I'm wrong about the evolution of self-awareness, the implications of his timeline (i.e., either self-awareness evolved independently or some people don't have it) are messed up.

Finally, I got a little tired of some repetitive points, such as "We humans wouldn't be here at all if not for X!" or "Y nearly prevented us from existing at all!" The emphasis on human uniqueness also felt like a massive

self-congratulatory pat on the back for what a special species we are. Of course, that *is* the topic of the book (why we're the only hominin species alive today), but sometimes it felt a little too over-the-top. And, truthfully, we need to stop patting ourselves on the back so fucking much. (Apparently writing this has made me angry!)

All those criticisms aside, this wasn't a bad book. I read it in two days, and I did learn something new.

Jeanette says

Yes, it has more flaws than some would say a 4 star non-fiction science field read would warrant. Although as I read I did waver. And at one point was considering a 2 because of some aspects in the writing style. But in the end, I decided that it is well worth the read and informative to a 4 star level. And especially for those with no real compass to the direction these inquiries have so far accomplished. Yes, he does make rather "out of place" simile and analogy wording that attempts to be funny. Sometimes it is. Most times it is not. In effect, by trying to lighten the mood for this record which describes history and minutia for at least 26 different homo forms of past extinctions, the form of the telling may irk the more knowledgeable, IMHO.

So if I am honest I recommend this for the more introductory to homo forms crowd. If you know little about the human remains record of forensics or anthropology study for origins of location / or the millennia and more of Earth's eras in which all life has changed and expanded or not- then this is the book for you. Because it absolutely does translate some of those distances in time with the creatures who lived within them quite well for the more common non-scientific reader. It informs with excellent charting and graphics. They are 5 star as are the mock ups of the species as they may have looked in health. And it also places the difficult categorizations names and classifications in a frame for reference. If you've never tried to read in this field, that alone is a good beginning.

Having done some work with Cognitive tracking and other forensic related brain structure and operation to recall (early 1990's and it's ancient history now except for some of the memory work) tests and having a more than average interest concerning points for the HUGE differences in theory/examples from when I first studied this in the 1960's- it still kept my interest to the vast changes for successions and time periods of overlap and altered locations. While at the same time it introduced to me a couple of brand new interesting facts. Especially concerning side branches of homo that formerly were considered our direct line ancestor/ descendant forms. But the last few chapters? Subjective symbols and the future homo sapiens summation were mere skims of the water. Way too much supposition and wide-angle guesswork. Nothing more than a pretty and far too simplistic story.

What made me want to cut another whole star was some of the attitudinal commenting. Homo sapiens was never the pinnacle of importance nor at a place in the Earth history in which he puts our form, IMHO. But that doesn't translate to his progressions or forms materials being stilted or slanted. And I'm also not so sure on the "almost" extinction of homo sapiens during the succession of ice ages about 50-70 millennia ago. That's a wide statement.

But what raises this another whole star is the excellence of the argument and proofs displayed in chapters here for our specific species' (sapiens) lengthening of childhood and child features and why that occurred. It's quite important when you compare the many other homo species which took the various other evolved routes for faster replacement and reproduction in order to confront terrible conditions or heavy mortality instead by faster numbers of replacement. When maturity begins at 5 or 8, there is much more time to reproduce larger

numbers of offspring, but there is also much less time for brain growth and testing of environments some describe as "play". Which forces the altered structures for that play function another way altogether by a side accident of longer use occurring. It was an immense push for brain growth and newer specific brain regions sapiens now holds. (Neoteny)

And I do disagree with some other reviewers who have posted that Chip Walter gives a much more deadly and dire picture for our various homo forms and for our own ancestors (DNA from other species that reside still in us) than existed in their own period's reality. The tooth and claw of life length and competitive condition in a dozen different measures was, IMHO, even more difficult than Walter poses. Not less. Individual life was short. 30 was old, and 35 began ancient. Most adults had some permanent physical damage or deformity injury way before age related changes set in. Teeth studies, as the ones about the maturing age in years for various former species in this book are quite interesting to read also. They are 4 star plus, as is the flea related proofs for our mixed species DNA as it exists in homo sapiens today.

Wendy says

**Note* I received an advanced readers' copy of this book as part of the Goodreads First Reads program.*

I first encountered Paleolithic humans and Neanderthals in 7th grade, in the pages of Jean Auel's 1980 novel The Clan of the Cave Bear, a sexy (and often not so sexy) portrayal of a time period in which fiction, as far as we knew then, was about as accurate a depiction as the scant archaeological tracings we'd unearthed. (I'll have to go back and read it again to see how her view of cave-people stacks to modern science--I hear it's held up rather well!) If you're like me and haven't kept up on your paleo-archaeological blogs since your Clan of the Cave Bear days (ha ha), allow me to blow your mind. First, if your ancestors hail from Europe, or Asia, or the Americas...you probably have Neanderthal DNA.(!) Did you just feel your skull for brow ridges and an occipital bun? I did. Add to that the discoveries of fossil remains of two different species (sub-species?) of humans--one found as recently as 2012--who may have lived alongside modern humans until as recently as 13,000ish years ago and...well, you'll agree we have a lot of intriguing reading to catch up on. It's worth pointing out that this thirst for knowledge is built into our genetics as well, just another small part of what makes us uniquely human.

Chip Walter's recent book is certainly timely, providing a wide-angle discussion of what it means to be human and alive in the 21st century, while our prehistoric brethren are reduced to fossils and a few measly drops in the ocean of our DNA. The most recent studies and data are all in evidence here; fossil records of prehistoric people are still notoriously scant, but scientific advances such as the ability to genetically map a tiny bone shard is enough to tell us that a Denisovan finger bone found in a Siberian cave belonged to a brown-eyed, dark-skinned girl, or that Neanderthals may have included fair-skinned and red-haired individuals. Or that, based on tooth wear, that Neanderthals grew to adulthood a few years earlier than Homo sapiens.

I dig all this newly-gathered scientific evidence, though I still struggle a little more with scientific theories of prehistoric thoughts and culture because the evidence for them is slim to nonexistent. One section of the book describes a scientist's intricate model of Neanderthal language which, he claims, was musical, tonal and choreographic, based solely (as far as I could tell) on a model of their (comparatively) undeveloped vocal cords. The scientist's creativity fascinates me (creativity is another hallmark of us humans, and Walter spends a thought-provoking chapter wondering why this is, and how creativity came about, and why

Neanderthals didn't paint in caves but Cro Magnon humans did) but I couldn't help myself as I started to come up with my own alternatives for Neanderthal language. Tongue clicking? sign language? Without a time machine how could we know? Does it matter if we know, or if we speculate all day long? As humans, is it possible NOT to speculate?

The book as a whole is aimed at curious hominids such as myself, and tries to answer--or at least encourages the reader to think very differently about--the "why are we here? Why are ONLY we here?" questions from various approaches. This book isn't just about ancient history and science, it also deals with the development of human psychology from instinct-driven creatures to self-aware individuals who are creative, who make decisions, and who identify with the voice in their heads as belonging, somehow, to them. Walter's voice is wry and appealing, and he can even slip in sly references to Tralfamadorians and the Princess Bride that illuminated and amused (me, at least). From discussions of our strangely long childhoods and lifelong playfulness to the development of language and morality, there's a little bit here for everyone, though I'll resist breaking this review down by each chapter because it's already on the long side! 190 pages seems like a small space to try to tackle so many big thoughts, but I would argue that this book serves as a fantastic, thought-provoking & readable introduction to paleo-archaeology that draws from the most recent science out there, and is a good jumping-off place, if you like, for further reading. There are plenty of worthwhile footnotes and references to help point you in the right direction. I even forced my husband to watch Cave of Forgotten Dreams with me just so I could visually and emotionally absorb some of what I was reading. Though I've since found that the archaeological field appears to be fraught with conflicting theories (when humans first left Africa is one of the big scientific battlefields, it seems), I felt that the author fairly presented evidence of those conflicting sides, yet didn't seem to have a particular agenda. My biggest beef, honestly, is with the fossil record itself; it's such a tease to have bits and pieces of it made available to us, yet with little hope that we will ever, for certain, be able to fill in the gaps of prehistory.

One final, gratuitous word: Neanderthals. I've always suspected they were maligned and misunderstood, as Victorian-era science often had that effect on its undeserving subjects. The chapter on our Ice-age cousins (and possible paramours?) lays a lot of that archaic thinking to rest. Anyway, I'll be haunting those paleo-geek blogs in the near future, as I can't wait to see what the next decade of archaeology reveals!

Maxine says

Last Ape Standing is the story of us, homo sapiens, and how we survived against all odds, why we, of all the hominoids who stood up on their own two feet and walked out of the trees and onto the African savannah, became the last ape standing.

According to author Chip Walter, this outcome was never assured. In fact, many of the things that came together to make us, well, us could also have led us to the same end as all of the other hominoids who walked this planet - 27 at last count, four of which were discovered as Walter was writing this book.

Walter lays out our journey from a small group of gracile hominoids in eastern Africa, through our journey to populate almost every niche and cranny of this planet with the exception of Antarctica, to our present and, perhaps, final stage. He also speculates on what the future holds for us, whether, in the end, our very success will be our downfall and, if so, what or whom will replace us.

Walter relays our story in a highly cogent, highly readable, and surprisingly entertaining way. If you have ever wondered what made us the amazing creature we are, the only one with the capacity to even

contemplate the question of our existence, this book has some fascinating answers for you and perhaps even more questions to stimulate the huge brain evolution has graced us with.

David says

There is evidence that over twenty different human or near-human species have lived in the past seven million years. They did not all live sequentially; many lived at the same time, and probably interacted from time to time. Some species may have killed off others, while perhaps they inter-bred on occasion. (How do two different species interbreed? That is not clear to me.) In the end, only *homo sapiens* survived. This is the story of how and why our species survived. It wasn't a fore-ordained result. Luck--or randomness--plays a large part in evolution. The book emphasizes how the *homo sapiens* brain evolved as it did, and the major impact it had on all aspects of our anatomy and psychology.

Chip Walter is an excellent writer. He has a wonderful talent for explaining complex subjects in a straight-forward manner, and making them sound simple. Walter's style is never condescending; he is thoroughly engaging, without peppering his writing with grating humor (unlike some other science writers). He has an ability to state the obvious, and then show why the non-obvious consequences are so important. Even though Walter does not understand the definition of a quadrillion, I would highly recommend this book to anybody just beginning to be interested in evolution.

Nicholas Spies says

I just finished reading ***Last Ape Standing*** **by William "Chip" Walter and found it to be a fascinating, if tentative, story of the rise of *Homo Sapiens* to the top a field of some twenty-seven contenders for the crown of "most intelligent species on Earth". As the author freely admits, the number twenty-seven was more or less picked at random, as there is no telling what new fossil evidence will emerge in the near to distant future. Nevertheless, as the author points out, this has been a fascinating time for paleoanthropologists, who now have have at their disposal a powerful investigative tool with which to make sense of what laymen would consider merely random bone fragments.**

This tool is the ability to extract from even snippets of the DNA obtained from some ancient sub-human remains a means to make scientific hypotheses of how particular bone fragments are related to other bone fragments. Previous to the decoding of the human genome, paleoanthropologists could only make inferences about the relationship between fossils, based on the shape, size, and some indications of an individual's age based on the development of teeth and bones along with where the artifacts were found and the history of the geology surrounding them. Much of the rest was pure conjecture.

Now that DNA forensics are available, along with a knowledge of primate and human genomes, the developments of the last seven million years or so--the point when humans parted genetic ways with chimpanzees, their closest living relatives--was not simply a matter of a linear path from their common ancestor to modern humans, but was, rather a bush of contending developments of many kinds of post-ape but pre-human species, given the fecund nature of evolutionary development. The problem becomes not simply a question of how the bones fit into human evolution, but whether they are in our ancestral line at all,

although we would be cousins of one degree or another of their hapless owners because we homonins all descended from a common ancestor. [BTW: the term 'homonin' versus the more commonly used term 'homonid' is explained in the book.]

The fascinating question is how was it that *Homo Sapiens* survived this 7-million year period, while all of the other evolutionary experiments of walking-apes-with-(relatively)big-brains failed. Not only was it possible that many of our evolutionary cousins had contact with one another and with our distant ancestors (although it is impossible to characterize the nature of this contact for lack of evidence) such contacts must have been uncommon as the entire "quasi-human" population was relatively small, although it covered nearly every livable spot on Earth, on foot, from its place of origin, the savannahs of Africa. It is also unknown whether such early "peoples" were capable of interbreeding, either with each other and/or with our ancestors. Further understanding of the human genome may help to settle this issue.

The story becomes more clear at about 100,000 years ago, when most of the variant hominims had fallen by the evolutionary wayside, with the conspicuous exception of the Neanderthals, who had successfully survived the glaciers of Europe, and in turn whose physiology was shaped by the cold climate. Although Neanderthals and the precursors of *Homo Sapiens* who arrived later co-existed for tens of thousands of years, and possibly interbred, the Neanderthals gradually died out, the last possibly at Gibraltar only 20,000 years ago.

Although *Last Ape Standing* is of necessity only a snapshot of our recent knowledge of the workings of evolution in the 7 million years that have separated the great apes and humans such as ourselves, it is highly readable and poses a lot of "what ifs", because the outcomes, and the reasons for those outcome are often very unintuitive, surprising and are determined almost as much by the vagaries of climate, volcanic eruptions and other geologic changes over which even we have little control, as much as our having the largest brains of any primate.

There was nothing preordained about the ascendancy of *Homo Sapiens*, as evolution is driven by the dual forces of genetic mutation (at the molecular level), which introduces genetic variation, and the survival of individuals who are able to thrive in their environment long enough to have offspring.

So, Mr. Walter's story is as cautionary as it is inspiring, for it shows clearly how those who were superbly suited to one environment were taken down when the environment changed. Alas, the same could as well be true of us, who should remember that of all the species of life brought forth by evolution, 99.99% are thought to be extinct.

Philip says

The bulk of this book was a solid 5 stars, but there were several sections that were so complex and almost textbook-y that by the end I was just toughing it out. This isn't a particularly long book, but it is incredibly dense, and so despite Walker's friendly, "science-light" writing style it just took me forever to get through -

although that's probably more a reflection on myself and my own mental limitations than a criticism of Walker.

When he was discussing the development, expansion, interaction and ultimate fate of the various human species - a full 27 (so far)! - man, I couldn't get enough. But then he'd go off into the development of the human brain and personality, and I'd end up skimming and ultimately skipping large sections just to get back to the "cavemen story." This accounted for three of the book's eight chapters - "Learning Machine," "Tangled Web," and "The Voice Inside Your Head" - and for me that was just way too much on dentrites and neurons epigenomes, when what I really wanted was to get back to cave paintings and aurochs and homotheriums and Indonesia's "hobbits" and migration patterns and who invented the throwing spear, (answer: the Cro-Magnons; Neanderthals merely stabbed - losers!).

Walker's epilogue on where - and if - humanity goes next is unsettling, mixing humanist pessimism (there's no way our biological evolution can keep up with our technological revolution) with scifi optimism (unless we basically become cyborgs), and constitutes a thought-provoking stand-alone essay. So if like me, you end up skimming the last 25 or so pages, make sure to pay close attention again at the very end.

Overall, a fascinating, fact-filled book on a topic of personal interest that just maybe could have been 1-1/2 chapters shorter. As Walker points out, this is an on-going story with new discoveries being made on a regular basis. But with this information now going me a semi-solid foundation, I think I'll get any future updates from National Geographic.

Grace Di Cecco says

The content matter was interesting but the writing style is painful

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Sarah says

First off I should say that I found this book quite interesting. Even though I was somewhat less interested in the evolution considerations and much more interested in the paleoanthropology, still, it was a pretty fascinating read and definitely gave me a slightly different lens through which to peer at my modern existance.

I did, however, have a bit of a hard time following the "family tree" and how each human species connected to others and whether their territory overlapped, how they migrated, etc. There were a few graphics to help with this, but I would have appreciated more.

Finally, the thing that bothered me most about this book and that I found constantly distracting was how he erased women from his discussions of prehistoric humans. Rather than refer to humans in the plural form, or use something slightly more awkward like he or she (or even alternating between she and he), he always refers to all the humans as he. Further, when he describes accomplishments made by modern day humans, he also only ever refers to achievements made by men. I'm almost positive that even prehistoric humans were 50% female, and that one can scrape up at least one gratuitous example of female historical accomplishment, so why not be a little more inclusive? History has been pretty good at wiping out the presence of women thus far; I'd like to think we were beyond that at this point...or could at least make a halfassed effort to pretend we

are.