

## Book Reviews

*Paleofantasy: What Evolution Really Tells Us about Sex, Diet, and How We Live.* By Marlene Zuk. 328 pp. New York: W.W. Norton & Company. 2013. \$27.95 (cloth), \$16.95 (paper).

*The Paleo Manifesto: Ancient Wisdom for Lifelong Health.* By John Durant. 359 pp. New York: Harmony Books. 2013. \$25.00 (cloth), \$12.00 (e-book).

Interest in Paleolithic diets, exercise regimens, and lifestyles has been on the rise in both popular culture and academic circles for the last 25 years. Mel Konner and S. Boyd Eaton began publishing on diet and health in the context of our evolutionary history in the mid-1980s (Eaton and Konner, 1985; Eaton et al., 1988), and in the 1990s Randolph Nesse and George Williams began discussing the application of evolutionary theory to the study and practice of medicine (Nesse and Williams, 1994; Williams and Nesse, 1991). Since then, it has become increasingly difficult to keep up with the number of books and articles claiming an evolutionary perspective to explain all manner of contemporary human biological and behavioral phenomena.

In a sea of Paleo perspectives, critiques, and discussions distributed across online and print media, it remains an ever-growing challenge for editors, educators, and interested readers to separate the proverbial wheat from the chaff. This problem is only exacerbated by Americans' relatively poor understanding of evolutionary theory, leading many otherwise smart individuals to fall victim to just-so stories asserted from the loudest "experts" on the tallest soapboxes. We are now critically due for works that distinguish the imagined Paleolithic from one resulting from the best science produced by anthropologists, geneticists, and evolutionary biologists.

These two books, both published in 2013, represent the poles of that effort: the wheat and the chaff.

Both are written for a general audience and examine how our evolutionary history can inform contemporary diet, exercise, and health. The similarities, however, end there. Where Zuk uses frequent citations to present a clear record consistent with the latest science, Durant argues predominantly from personal experience and conviction: "The students who always went to class, never left the library, and got straight As? They were called 'tools' (p. 86)... too many people entrust their day-to-day decisions to authority figures—the tools, as it were—on the assumption that the experts actually know what they're talking about" (p. 88).

Throughout *The Paleo Manifesto*, Durant remains highly critical of science and authority: "Rather than looking for the answer in a scientific journal, molecular biology textbook, or classroom (like tools would), biohackers get their hands dirty" (p. 89). A hacker values simplicity and elegance, he notes, and approaches most problems with the 80/20 rule: "20% of the input produces 80% of the outcome—and trying to achieve 100% perfection is a waste of time" (p. 87). These comments help put much of the book in perspective, since it seems he's done about 20% of the research one might expect of legitimate scholarship to promote a story that's simple and straightforward but only about 80% correct.

Durant begins the book with a series of vignettes that imply an overview of human evolutionary history. Several chapters open with clever allegories for the human condition, including heart disease among captive gorillas resulting from unnatural diet and activity (Chapter 2), record setting hot-air balloonists of the mid-19<sup>th</sup> century suffering greatly as they ascended "so fast, they were unprepared both genetically and culturally" (p. 69, Chapter 5), and the parallel advances in genetics and computer technology of the late 20<sup>th</sup> century (Chapter 6). Unfortunately, these few sections of smart and engaging writing fall amidst a lot of fluff.

How did our lineage emerge from a long history of mammalian and primate evolution? Despite titling Chapter 2, "Know Thy Species (Animal Age): 530 million years ago to 2.6 million years ago," Durant discusses nothing that occurred during that period, and provides no discussion of evolution at all.

What was life like among early agricultural communities and civilizations? For his "research" on Chapter 4, "Moses the Microbiologist (Agricultural Age): 8000 B.C. to A.D. 1769," Durant notes, "any bookstore will do, since the bestselling book of all time—the Bible—sprang out of the Fertile Crescent thousands of years ago, where the Agricultural Revolution first took off" (p. 49). The rest of the chapter uses a few religious texts to argue a very specific thesis seemingly unrelated to the rest of the book: that Mosaic Law mandated hygienic practices that science would not fully understand for another 1800 years. Here Durant completely ignores archeological and historical scholarship on the subject, apparently content with the debatable (at best) belief those religious texts represent factual and definitive accounts of life in the Levant.

Lack of intellectual rigor and reliance on anecdotal inductive reasoning pervade much of the rest of the book. Durant often turns personal experiences and convictions into implicit recommendations, including periodic fasting (18–72 hours), functional fitness exercise (Crossfit and barefoot running), exposure to extreme temperatures (sweat baths and polar bear plunges), and frequent sun exposure. Dubious scientific claims are made throughout the book—without citation—to support the narrative, leading one to question whether such information comes from peer-reviewed research or a bartender at the local pub. These claims include infertile women regaining fertility by adding animal foods to their diet and fever-reducing medications leading to increased rates of cancer.

Durant may appeal to a demographic of "modern cavemen," but this work otherwise falls flat as an educational piece because it confuses more than it informs. Several offhand misogynistic comments also make it clear his intended readers are not female, nor those uncomfortable with sexist slurs, gender stereotypes, or the blatant objectification of women: (1) "victorious males experience a surge of testosterone, which is probably preparation to mate with excited cheerleaders" (p. 12); (2) "encouraging modern women to eat more fat is about as easy as selling them a makeup called Ugly" (p. 107); (3) "a padded nook was... even better for watching women in yoga pants stretching, doing sit-ups, and using medicine balls" (p. 167); and (4) "Mirrors reinforced the motivation to 'look good naked.' Since men and women have different ideas about what that means, they self segregated; bros hit the weights, wanting to bulk up; chicks stuck to aerobics, wanting to slim down" (p. 167).

*The Paleo Manifesto* is a confused work that at times admits humans thrive under a variety of diets and activity patterns and at other times implies we would be better off following the single diet, activity pattern, and lifestyle reminiscent of an imagined Paleolithic past. In that confusion Durant exposes the downside of simple and aesthetically-pleasing explanatory narratives: they often fail to represent reality.

Modern humans do thrive on a variety of dietary and activity patterns within a variety of environments. That doesn't make our evolutionary history irrelevant but instead highlights the complexity of modern gene-environment interactions and the nature and consequence of genetic variation. We need to begin making sense of all this variation and that process requires a grounded, evidence-based picture of our long evolutionary history and a deeper understanding of how evolutionary processes work and how humans continue to adapt in response to our built and continually rebuilt environment.

In *Paleofantasy*, Zuk begins that important discussion of the efficacy of returning to a Paleolithic lifestyle by dismantling a number of misperceptions about human evolution increasingly appearing in popular media and epitomized in Durant's *The Paleo Manifesto*.

The central thesis of *Paleofantasy* is that public perception of Paleolithic life and what it means for humans today, promoted by a growing community of Paleo lifestyle advocates, is based on a superficial understanding of that deep history and how evolution works. Chapter by chapter, Zuk uses quotes drawn from online blogs and books by popular authors to present popular misperceptions before discussing the scientific evidence that reveals reality to be much more complicated (and exciting) than the stories being used to sell books, diet plans, and fitness club memberships.

Zuk occasionally oversimplifies and caricatures the perspectives of Paleo advocates by selecting provocative posts from online discussion boards and blogs. These straw men can be frustrating but, since Zuk focuses on the fantasies and not the advocates of the fantasies, most readers will likely feel less rankled than I suspect will those readers who are already committed to a modern Paleo lifestyle.

Zuk describes her general approach on page 58:

I see nothing wrong with trying to explain the psychology or behavior of humans using an evolutionary framework. I do, however, find that people have a hard time viewing themselves dispassionately, and when it comes to explaining our own behavior, we have a regrettable tendency to see what we want to see and rationalize what we already want to do. That often means that if we can think of a way in which a behavior, whether it is eating junk food or having an affair, might have been beneficial in an ancestral environment, we feel vindicated, or at least justified.

In Chapter 1, Zuk addresses misunderstandings of what evolution is, how it works and how it is often portrayed in the media, and provides an overview of what we think we know about human evolutionary history. Throughout, she adopts a skeptical and cautious approach to the evidence, often questioning what it means, what it suggests, and what we might speculate.

In Chapters 2 and 3, Zuk squarely addresses the frequent claim that biological evolution is far too slow for our species to have adapted genetically to the very recent agricultural and industrial environment we have created. She

provides a clear overview of what we think we know about our evolutionary history from the origins of bipedalism to the manufacture of lithic technology, the expansion of the hominin brain, and the emergence of our own species.

On the transition to agriculture, Zuk notes that claims of agriculture as a curse (frequently ascribed to Jared Diamond) are often inflated and fail to acknowledge the blessings that also accompanied these transitions. Several such benefits included increases in population size, the potential for populations to evolve faster, rapid rise in cultural innovations, and lower rates of aggression and violence.

To address frequent claims that evolutionary processes are simply too slow to allow for significant adaptation since the origins of agriculture, she describes evidence of major evolutionary changes occurring within ten different species in as few as five years (e.g., 20 generations of crickets). Clearly "slow" is relative, and the 5000-10,000 years since the origins of agriculture have been sufficient for a number of genetic adaptations in humans, including lactase persistence, amylase gene multiplication, and the emergence and spread of the sickle cell allele.

The rest of *Paleofantasy* argues rather successfully against specific claims made by various Paleo advocates about diet (e.g., those related to milk, meat, grains, and cooking), exercise (e.g., short and variable is good, prolonged endurance is bad), gender stereotypes and relationships (e.g., males are programmed for infidelity), patterns of health and disease (e.g., agriculturalists all died relatively young), and that humans are no longer evolving.

A clear-eyed view of our evolutionary history is critically important for inspiring research capable of addressing some of the biggest questions in nutrition, exercise science, and public health today. Zuk's *Paleofantasy* is a welcome step forward in an ongoing discussion of how we can integrate knowledge of our deep past to create a healthier and happier future.

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*Fresh Fruit, Broken Bodies: Migrant Farmworkers in the United States*. By Seth Holmes. 264 pp. Berkeley: University of California Press. 2013. \$65.00 (cloth), \$27.95 (paper or e-book).

*Fresh Fruit, Broken Bodies* is an exemplar of the insights and practical implications that emerge through engaged research into both the roots of human struggle and sources of resilience of those most directly involved.