Accepted: 5 July 2017
DOI: 10.1002/evan.21543

BOOK REVIEW

WILEY

This isn't rocket science

THE KINGDOM OF SPEECH

By Tom Wolfe

(2016) New York: Little, Brown and Company. 185 p. $26.00 (cloth). ISBN: 9780316404624

THE EVOLUTION OF EVERYTHING

By Matt Ridley

(2015) New York: Harper Perennial. 368 p. $28.99 (cloth). ISBN 9780316404624

A FOOT IN THE RIVER: WHY OUR LIVES CHANGE - AND THE LIMITS OF EVOLUTION

By Felipe Fernandez-Armesto

(2015) New York: Oxford University Press. 304 p. $34.95 (cloth). ISBN 9780198744429.

ULTRASOCIETY: HOW 10,000 YEARS OF WAR MADE HUMANS THE GREATEST COOPERATORS ON EARTH

By Peter Turchin

(2016) Chaplin, CT: Beresta Books. 266 p. $18.95 (cloth). ISBN 9780996139519.

EVOLUTION IN FOUR DIMENSIONS: GENETIC, EPIGENETIC, BEHAVIORAL, AND SYMBOLIC VARIATION IN THE HISTORY OF LIFE, REVISED EDITION

By Eva Jablonka and Marion Lamb.

2014. Cambridge, MA: The MIT Press. 520 pp. $29.95 (paper). ISBN 2900262600698

Earnest Hooton,[1] reflecting on the science of race in the 1930s, was apprehensive about what long-term impact his German colleagues would have on the field: "There is ... a rapidly growing aspect of physical anthropology which is nothing less than a malignancy. Unless it is excised, it will destroy the science. I refer to the perversion of racial studies and of the investigation of human heredity to political uses and to class advantage.... [T]he output of physical anthropology may become so suspect that it is impossible to accept the results of research without looking behind them for a political motive."

However, Hooton had it backwards: The politics wasn't a tumor on science, it was the essence of the science itself. This really isn't like studying fruit flies. And now that we have a good idea what the political stakes are and what the patterns of human diversity are, we can acknowledge this science as being not so much biological, but fundamentally biopolitical. You simply cannot talk sensibly about who we are and where we came from without engaging the cultural values that inhere in the conversation.

One biopolitical landscape incorporates attacks on Charles Darwin. This usually is a signpost of creationism and the reaction from the scientific community is generally predictable and swift. And although Tom Wolfe's new book attacking Darwin is indeed somewhat bizarre, it isn't even really creationist. His big idea, taken from linguist Daniel Everett,[2] is that language isn't a biological autapomorphy, like eyebrows or valgus knees, but rather a discovery or invention, like vacuum cleaners or sugarless bubble gum. The possibility that the dichotomy might be a false one apparently occurs to neither of them.

After all, if language were not in some sense a biological feature, then it is difficult to explain why our vocal tract differs from a chimpanzee's and why you can't teach a chimp to talk, as psychologists since before Robert Yerkes have consistently tried and failed to do.[3] And if it were not a cultural feature, then it is difficult to explain why people learn to speak so many different more-or-less equivalent languages rather than just one really good hard-wired language.

The first half of the book is a romp through the career of Charles Darwin, written in an overtly anachronistic and frankly sophomoric style. The second half of the book leaps to savage Noam Chomsky. You can become distracted by the author giving Ian Tattersall a post at MIT (p. 149) or awarding Joseph Dalton Hooker a knighthood 20 years before Queen Victoria did (p. 32), or the antiquated use of "man" as a general term for the species, but it really isn't even worth the time. "Even the smartest apes don't have thoughts," he writes on p. 162, "so much as conditioned responses to certain primal pressures," a view pretty squarely from another century.

Wolfe's rhetoric is mainly deployed to boost the work of Everett,[4] who seems to be rather a better linguist than ethnographer. He says that the Pirahã language lacks the feature of recursion, which Chomsky believes that all languages have. This ought to be little more than classic "Bongo-Bongoism" — the ethnographic demonstration that the mythical people of "Bongo-Bongo" lack whatever facet of human behavior all people are supposed to have, as first-generation ethnographers aggressively liked to point out a century ago. But Wolfe observes that when Everett wrote about the overall simplicity and primitiveness of the Pirahã language and lifeways, the published comments in *Current Anthropology* were dubious. "They all had their reservations about this and that," Wolfe writes. But "this and that" were actually the

articulated doubts about the basic competence of Everett's ethnography. That is serious, because it means that the stuff being said about the Pirahã is not quite reliable enough to be considered anthropological data. They "had preserved a civilization virtually unchanged for thousands, god-knew-how-many-thousands, of years" (p. 113), says Wolfe. When he calls them "the most primit – er, indigenous – tribe known to exist on earth" (p. 142), the sophisticated reader may be forgiven for reading it as romanticized pseudo-anthropological nonsense. But clearly, the book is not aimed at the sophisticated reader.

The book concludes with a radical taxonomic proposition: that humans are cognitively so distinct that we should be alone in a higher taxonomic category. If you don't know that Julian Huxley[25] said as much many decades ago and that Terry Deacon[5] did so more recently — at the subkingdom and phylum levels, respectively — then you might find the suggestion original or threatening. It's actually neither. It's just a matter of how much or how little you choose to privilege phylogeny when classifying.

One of Wolfe's quirks is to attribute to Darwin the goal of developing a "Theory of Everything." But of course that wasn't Darwin at all; that was Herbert Spencer and some of Darwin's more recent acolytes, among them Matt Ridley. His new book, *The Evolution of Everything*, answers the question, "What if everything in the universe were to be understood as differentially-replicating elements, whose most favorable alternatives have been tested in free competition and have thrived to produce all the good stuff out there?" The first few chapters deal primarily with the evolution of the natural order; the remaining dozen chapters deal with the evolution of socio-cultural forms. The big message is that systems spontaneously create and maintain themselves efficiently without governmental interference. The meaning of evolution, consequently, is that all social planning is bad. In fact, it's creationist. Leave it all alone, and the cream will naturally rise to the top, as it always has, and the future will be as rosy as the past.

In the midst of all this cry for freedom and deregulation — including, by the way, that relating to the environment, which the author apparently believes can also take care of itself — we encounter the occasional grudging admission that such freedom might not actually evolve the best of all possible worlds. "The right thing to do about poor, hungry and fecund people is to give them hope, opportunity, freedom, education, food and medicine, including of course contraception" (p. 214). But Ridley never mentions how this "doing" and "giving" will come about when his entire social desideratum involves allowing the free market of natural selection to work without any centralized plan. Perhaps, then, I can be forgiven if I begin to harbor some doubts about the author's sincerity when he sheds a few tears on behalf of the hoi polloi.

I actually found myself trying to suppress a sense of moral outrage as I worked my way through this book. Ridley idealizes a system of social behavior that runs on greed, maximizes inequality, and fails to engage with issues like justice and fairness. It is a distressing caricature of Darwinism. I frankly came to see the book as an abuse of science, as an attempt to rationalize an evil social philosophy by recourse to nature. The reason this kind of pervy-Darwinistic thought was repudiated many decades ago is that it was recognized as a vulgar scientific rationalization for the exploitative existence of the rich and powerful social classes. If there is a Darwinian lesson to be extracted from the history of the twentieth century, it is probably that the poor require constant protection from the policies of the overwealthy and underpigmented.

Historian Felipe Fernández-Armesto takes a different approach to similar questions, denying that evolution can provide a useful model for understanding cultural history. His understanding of modern history differs from Ridley's in failing to identify any clear connection between deregulation and cultural, economic, or political success. "We lurch," he says on p. 217, "from one failed solution to its equal, opposite reaction: from overplanning to madcap deregulation and back."

In many ways, *A Foot in the River* is a mirror-image of *The Evolution of Everything*, being a work that is knowledgeable about history, yet weak in biology. Nevertheless, it puts forward some ideas worth considering. The underlying theory holds culture to emerge from contemplation of the past (i.e., memory) and future (i.e., anticipation). Ideas provide the raw material for cultural change and cultural contact is its pacemaker. While this might sound like a favorable situation in which to analogize to population genetic models of mutation and gene flow, Fernández-Armesto resists: "The nature of an innovation – how good or bad it is, how economical, how attractive, how flexible – has far less impact than the cultural context that receives or rejects it" (p. 94). This sounds, to my ears, evocative of Ernst Mayr's[6] criticism of the biology behind the facile "beanbag genetics" of early microevolutionary theory.

Indeed, while most work modeling cultural evolution on biology is derived from anagenetic population genetics models, Fernández-Armesto poses a question about, for lack of a better term, the cladogenetic nature of cultural evolution. Why did we evolve, for example, to speak and think and act so many different, yet fairly equivalent, ways? Or essentially, why are there cultures?

The most interesting proposal herein is the suggestion that cannibalism, when considered as a symbolic rather than a nutritive act, might provide a useful definition of the human condition. While the accusation of cannibalism is dehumanizing, the commission of it generally implies a distinction between sacred and profane, an expression of the most basic human symbolic thought. If people eat people for symbolic reasons — special people, under special circumstances — might we imagine our fossil cannibal ancestors to be like us? Does, say, the contemplation of Neanderthal cannibalism show it to be a symbolic marker of their bestiality or a symbolic practice as evidence of their humanity? As far as I know, chimpanzees do not eat adults of their kind. When humans do, it is overwhelmingly in ritualistic or medicalistic — that is to say, symbolic — contexts. Should we then think any less of Neanderthals?

Peter Turchin's *Ultra Society* lurches back to the microevolution analogy. Here the driving force in human cultural history is intergroup competition, meaning war. Thus, history will be reducible to military tactics, technology to weaponry, and culture to its EurAsian cutting edge. Turchin's argument is that a proper naturalistic, biological, evolutionary view shows that the modern, cooperative world is the

unintended consequence of the history of war, the most obvious form of competition between groups. How so? "By eliminating poorly coordinated, uncooperative, and dysfunctional states it creates more cooperative, more peaceful, and more affluent ones" (p. 42).

Now let's pause just a second to examine the intellectual and moral turf here. Like most biological models of cultural evolution, we are going to talk about cooperation and altruism, which we can see outside of our species. We are not going to talk about equality and justice, which are moral qualities, and hardly meaningful outside the context of human political systems. There is good reason for this: Outside of a blip in the 1960s, embodied by Theodosius Dobzhansky,[7] whenever evolutionary biologists have opened their mouths about issues of a social, political, or moral nature, they have tended to be embarrassments.

Human evolutionary science is political and moral turf. Anybody who refuses, at this late date, to acknowledge that simply isn't serious enough to be working on it. Turchin does acknowledge it. "Many people, myself included, do not think that war is really good for anything. War is evil. Sometimes, it is a lesser evil" (p. 114). "When I call war 'creative' or 'productive' my intent is not to glorify it nor to argue that war is in any sense good. By 'creative' I simply mean that it has been one of the important selection forces for large-scale cooperative societies" (p. 116).

But what are the attributes of the modern world that Turchin ultimately attributes to war? He specifies cooperation (p. 40), social intelligence (p. 106), and social justice (p. 186). I must say that those things sound pretty good to me. So if the products of war are ultimately good, does it not follow that war itself is ultimately good? Should I perhaps once again suspect the sincerity of the disclaimer that war is evil? It's that persistent moral question that nips at the heels of any biologist interested in people: In this case, should we be working to prevent war or to rationalize it?

Consider this thought. "It is true that the progress of civilization … has suffered a thousand regrettable interruptions by the unavoidable horrors of the present war and has led to painful relapses into barbarism. Yet, all in all, the beneficial progress of evolution outweighs the injurious effects of the regressive development during the war. The average course which the history of humanity and the evolution of all organic life follows is … three steps forward, two steps backward." That wasn't Turchin; that was Ernst Haeckel[8] saying more or less the same thing that Turchin does as he defended the German Empire in the pages of The New York Times during World War I. Whether, or how much, Turchin agrees with Haeckel is beside the point; what is at issue is the moral compass of those who purport to speak for a science of human affairs. We tend to be suspicious of those who talk about war but who work less to prevent it. After all, there really are think-tanks devoted to justifying militarism, racism, and other retrogressive ideologies. (Turchin's advice is that war would be prevented if we would cooperate more. I don't get the connection, since war itself is a highly cooperative effort.)

So the science is biopolitical and there are, indeed, conflicting values to be negotiated in Darwin's name. Like libertarian Darwinism, militaristic Darwinism is a moral discourse because it tells you what the scientist thinks are the important lessons to be drawn from nature. The question is whether the moral interests and priorities of the scientist accord with those of the reader. So when Turchin explains that "we wish to better understand our societies so that we can make them more cooperative, more peaceful, and more wealthy" (p. 78), perhaps he needs to be gently reminded that some of us also wish to make our societies more just and more equal. And if your social science is not aimed toward those ends, then please excuse us for not being so enthusiastic about it.

This book is not as infuriating as *The Evolution of Everything*; indeed, it has an almost naive quality. Turchin, for example, recognizes the inanity of Ridley's position but sees it in psychological rather than in biopolitical terms: "Selfish people are naturally attracted to theories that postulate the essential selfishness of human beings. They find such theories liberating, giving them carte blanche to be selfish and greedy and feel good about it" (p. 65). Yet he doesn't speculate about what kind of people are naturally attracted to theories that postulate the inherent violence, aggression, and militarism of human beings. Perhaps World War III will bring self-awareness.

Evolution in Four Dimensions is a new and updated edition of what is probably the most important book on evolution so far this century. The reason surely is that Jablonka and Lamb are not working within the intellectual universe of reduction and competition, grounded in the theoretical genetics of Ronald Fisher and William Hamilton. Rather, their evolutionary universe is one of reaction and hierarchy, grounded in the developmental genetics of C. H. Waddington.

The important question running through of all this work is: What is the nature of the relationship between descendants and ancestors? That is much more than simply a biological question. At the far end of the spectrum, you are simply your ancestry, which has obviously favorable implications for hereditary aristocracies. At the near end of the spectrum, you are not bound by your ancestry, but are capable of fundamentally transcending it in various ways. One way might be through the inheritance of acquired characters.[9,10] Another might be through culture.[11,12] And still a third might be through developmental plasticity,[13,14] suddenly a hot topic in modern biology.[15]

The far end of the scientific spectrum reached its zenith twice in the twentieth century, with the hereditarianism that accompanied the eugenics movement in the 1920s and the Human Genome Project in the 1990s.[16] The Human Genome Project justified itself with as yet unfulfilled promises of ultimate self-knowledge, not to mention curing the diseases lurking in your genes. But now the breathlessly purple prose of the "Book of Man," "The Code of Codes," and "The Human Blueprint" has been obliged to give way to more sober evaluations of the kind, manner, and significance of whatever is inherited besides nucleotide sequences.[17] Jablonka and Lamb consequently identify and explore three other types of inherited variation in addition to the genetic: the epigenetic, behavioral, and symbolic.

Although their focus is on biology, the authors are sophisticated enough to recognize that human sciences do not stand in isolation

from human humanities, but are bound to them in ways that range from obvious and silly (*vide supra*) to subtle and complex. Jablonka and Lamb indeed raise the possibility of inequality and poverty as a cause of significant epigenetic variation. This is very concordant with traditional thought in human biology, but noteworthy in coming from general evolutionary theory and, perhaps, as part of what some have called an "extended" evolutionary synthesis.

In this case, however, the extension would be founded on different epistemic assumptions about the workings of nature. The idea that nature consists of individual elements interacting with one another worked very well in physical science, and thus came to comprise the foundation of natural science as well. But suppose at least some important part of biological reality consists not so much of things and their interactions, but of transformations and relationships.[18] This kind of "unthinking" of the basis of nature lay at the heart of Alfred North Whitehead's dense but influential philosophy of nature. For example, the recent idea that animals are active agents in constructing their own niches rather than passive occupants of them[19] is adumbrated in Whitehead's "organicist" philosophy. As Whitehead[20] himself explained nearly a century ago:"The watchwords of the nineteenth century have been, struggle for existence, competition, class warfare, commercial antagonism between nations, military warfare. The struggle for existence has been construed into a gospel of hate. The full conclusion to be drawn from a philosophy of evolution is fortunately of a more balanced character. Successful organisms modify their environment. Those organisms are successful which modify their environments so as to assist each other."

C. H. Waddington's view of nature was strongly influenced by Whitehead's.[20] Indeed, Waddington took the term "canalization" from Whitehead and freely acknowledged his intellectual debt to the philosopher. So, too, did he take the ideas of Waddington's close friend, the anthropologist Gregory Bateson.[21]

No sensible person is planning to throw Darwin under the bus. Nevertheless, there is some fundamental conflict between the human evolutionary theory of the 1960s and that of the 2010s.[22] What if species aren't just gene pools and organisms aren't just genotypes? What if human beings aren't just an organized bunch of human cells, but also trillions of endosymbiotic bacteria? What if studying population genetics (what G. G. Simpson purportedly called "the minor features of evolution") doesn't really describe or explain the major features of human evolution any better than it explains cultural evolution? What if human nature and culture aren't so distinct and we are all, in a sense, cyborgs? What if biological systems aren't really made up of stable and discretely mutable things that enter into associations and combinations with each other, but are made up of inherently volatile transformations and relationships? What if genes aren't really bounded natural elements, but mental constructs along a physical chromosome? What if natural selection doesn't just operate among organisms, but among bits of chromosomes, groups of organisms, species, clades, and societies? What if the fit and not-so-fit sometimes survive along with the fittest? What if most genetic variation is neutral? What if the principal effects of genes reside in their context rather than the precise structure of their products? What if developmental reactions to the conditions of life can indeed be transmitted to future generations? What if studies of human biodiversity are inherently loaded with political value in their assumptions, conception, sampling, analysis, and interpretation? At what point would it be legitimate to finally invoke Thomas Kuhn?[23]

Jonathan Marks
Department of Anthropology
University of North Carolina at Charlotte
Charlotte, NC 28215
Email: jmarks@uncc.edu

REFERENCES

[1] Hooton EA. 1937. Apes, men, and morons. New York: G. P. Putnam's Sons. p 217–218.

[2] Everett DL. 2005. Cultural constraints on grammar and cognition in Pirahã. Curr Anthropol 46:621–646.

[3] Radick G. 2007. The simian tongue: the long debate about animal language. Chicago: University of Chicago Press.

[4] Everett DL. 2012. Language: the cultural tool. New York: Pantheon.

[5] Deacon TW. 1997. The symbolic species: the co-evolution of language and the brain. New York: WW Norton & Co.

[6] Mayr E. 1959. Where are we? Cold Spring Harbor Symp Quantitative Biol 24:1–14.

[7] Dobzhansky T. 1962. Genetics and equality. Science 137:112–115.

[8] Haeckel E. 1916. Ernst Haeckel gives Germany's peace terms. The New York Times, March 19: SM4.

[9] Gissis S, Jablonka E, editors. 2011. Transformations of Lamarckism: from subtle fluids to molecular biology. Cambridge, MA: MIT Press.

[10] Meloni M. 2016. Political biology: science and social values in human heredity from eugenics to epigenetics. New York: Palgrave Macmillan.

[11] Tylor EB. 1871. Primitive culture: researches into the development of mythology, philosophy, religion, language, art and custom. London: John Murray.

[12] Boas F. 1911. The mind of primitive man. New York: Macmillan.

[13] Shapiro HL. 1939. Migration and environment. New York: Oxford University Press.

[14] Kaplan B. 1954. Environment and human plasticity. Am Anthropol 56:781–799.

[15] Bateson P, Gluckman P. 2011. Plasticity, robustness, development and evolution. New York: Cambridge University Press.

[16] Nelkin D, Lindee MS. 1995. The DNA mystique: the gene as cultural icon. New York: Freeman.

[17] Richardson S, Stevens H, editors. 2015. Postgenomics: perspectives on biology and the genome. Durham: Duke University Press.

[18] Ingold T, Pálsson G, editors. 2013. Biosocial becomings: integrating social and biological anthropology. New York: Cambridge University Press.

[19] Fuentes A. 2016. The extended evolutionary synthesis, ethnography, and the human niche: toward an integrated anthropology. Curr Anthropol 57:S13–S26.

[20] Whitehead AN. 1925. Science and the modern world. Cambridge: Cambridge University Press. p 265.

[21] Bateson G. 1972. Steps to an ecology of mind. New York: Ballantine.

[22] Peterson EL. 2011. The excluded philosophy of evo-devo? Revisiting CH Waddington's failed attempt to embed Alfred North Whitehead's "organicism" in evolutionary biology. Hist Philos Life Sci 33:301–320.

[23] Schultz E. 2009. Resolving the anti-antievolutionism dilemma: a brief for relational evolutionary thinking in anthropology. Am Anthropol 111:224–237.

[24] Kuhn T. 1962. The structure of scientific revolutions. Chicago: University of Chicago Press.

[25] Huxley J. 1957. New bottles for new wine: essays. London: Chatto & Windus.