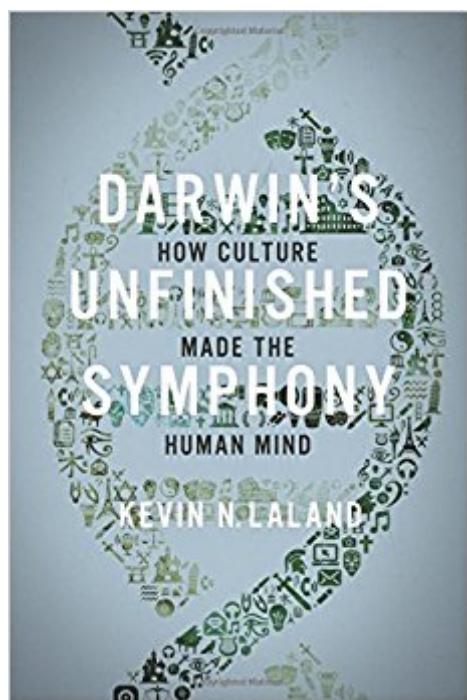


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# Darwin's Unfinished Symphony: How Culture Made The Human Mind



## Synopsis

How culture transformed human evolution Humans possess an extraordinary capacity for cultural production, from the arts and language to science and technology. How did the human mind—and the uniquely human ability to devise and transmit culture—evolve from its roots in animal behavior? Darwin's Unfinished Symphony presents a captivating new theory of human cognitive evolution. This compelling and accessible book reveals how culture is not just the magnificent end product of an evolutionary process that produced a species unlike all others—it is also the key driving force behind that process. Kevin Laland shows how the learned and socially transmitted activities of our ancestors shaped our intellects through accelerating cycles of evolutionary feedback. The truly unique characteristics of our species—such as our intelligence, language, teaching, and cooperation—are not adaptive responses to predators, disease, or other external conditions. Rather, humans are creatures of their own making. Drawing on his own groundbreaking research, and bringing it to life with vivid natural history, Laland explains how animals imitate, innovate, and have remarkable traditions of their own. He traces our rise from scavenger apes in prehistory to modern humans able to design iPhones, dance the tango, and send astronauts into space. This book tells the story of the painstaking fieldwork, the key experiments, the false leads, and the stunning scientific breakthroughs that led to this new understanding of how culture transformed human evolution. It is the story of how Darwin's intellectual descendants picked up where he left off and took up the challenge of providing a scientific account of the evolution of the human mind.

## Book Information

Hardcover: 464 pages

Publisher: Princeton University Press (March 7, 2017)

Language: English

ISBN-10: 0691151180

ISBN-13: 978-0691151182

Product Dimensions: 6.1 x 1.3 x 9.3 inches

Shipping Weight: 1.8 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 3 customer reviews

Best Sellers Rank: #52,032 in Books (See Top 100 in Books) #15 in Books > Health, Fitness & Dieting > Psychology & Counseling > Evolutionary Psychology #54 in Books > Science & Math > Nature & Ecology > Natural History #94 in Books > Textbooks > Social Sciences >

## Customer Reviews

Shortlisted for the 2017 British Psychological Society Book Awards, Best Academic Monograph"Darwin was certainly aware of the importance of human culture, but under Mr. Laland's sophisticated interpretation, cultural innovations did not merely respond to environmental challenges but also helped create the elaborate surroundings within which natural selection made us what we are today. Besides illuminating the interaction between biological and cultural evolution, he gives suitable attention to recent discoveries in the new field of cognitive ethology, which has revealed astounding mental capacities on the part of our animal relatives. . . . Mr. Laland is one of those rare biologists who have personally studied the processes--notably in fishes and rats--whereby animals learn and transmit their learning and who has also applied mathematical models to the spread of cultural traditions among human beings and other species. The evolution of learning is a well-trodden research path, but Darwin's Unfinished Symphony may be the first book-length integrated account of the evolution of teaching."--David Barash, *Wall Street Journal*"[Laland] describes a decade's worth of his and others' research, culminating in a comprehensive and fascinating solution to the vexing problem of the human mind."--*Publishers Weekly*"In Darwin's Unfinished Symphony Kevin Laland makes a powerful case that culture drove much of our species' genetic evolution over the past few million years. . . . Darwin's Unfinished Symphony makes a compelling case that elegantly seats humans within the natural world, while at the same time explaining our peculiar uniqueness."--Joseph Henrich, *Science*"This well-researched book establishes how cognitive processes are essential for cumulative learning, finding links between teaching, language, and cumulative culture. After years of studying human culture and the human mind, Laland concludes that other evolutionarily advanced animals do not possess human attributes, as is often claimed."--*Choice*"Brilliant."--Judy Siegel-Itzkovich, *The Jerusalem Post*"As Laland reveals, human endeavour is a vast, cooperative effort that cannot be explained by natural selection alone. . . . Our success, he argues, is not down to language, tool-use, empathy or any other single factor, but rather a 'whirlpool' of cultural and biological processes. In this book, he scours the animal kingdom for clues to why we are a species apart."--Stuart Blackman, *BBC Wildlife Magazine*"Kevin Laland's ambitious new book is, to my mind, the best account yet. . . . A richly rewarding and powerfully argued book."--Steven Rose, *Times Higher Education*"Darwin's Unfinished Symphony is accessible to the general reader and well

researched. It is an enjoyable and valuable place to begin or to top up your understanding of our enigmatic existence."--Mark Pagel, *New Scientist*

"With relentless determination and passion, Laland has accumulated a wealth of data and ideas from his experimental studies of social learning in many species. Spanning many disciplines, he weaves a rich, sophisticated, and ever-changing tapestry, showing us how the coevolution of cultural practices and products has shaped both the most mundane and extraordinary aspects of human life."--Eva Jablonka, Tel Aviv University "A most enjoyable and rewarding book that investigates many of humans' greatest achievements--from language to art" from the perspective of animals and evolution. Ranging across many different topics, Laland brings together processes of biological and cultural evolution in unique and fascinating ways to explain what it means to be human." Michael Tomasello, codirector of the Max Planck Institute for Evolutionary Anthropology "Kevin Laland's wonderful book explores the evolutionary origins of human culture. He argues that what separates us from the rest of the animal kingdom is our particular talent for precisely imitating others, coupled with our ability to transfer potentially huge amounts of information across time and space. As such, culture is the key to explaining the 'entangled bank' of human nature--Darwin would be proud."--Nicky Clayton, University of Cambridge "Kevin Laland is one of the pioneers in the modern study of cultural evolution. Darwin's *Unfinished Symphony* draws on his large and important body of work, showing how culture--socially transmitted knowledge--is what has made humans so successful as a species." Robert Boyd, coauthor of *Not by Genes Alone: How Culture Transformed Human Evolution* "Truly impressive. Laland presents a new theory of cognitive evolution that is deeply grounded in evolutionary theory and comparative analyses, but which doesn't make the twin mistakes of exalting humans at the expense of other species or overplaying the continuity between the two. He also demonstrates beautifully why human cultural evolution has remained an evolutionary puzzle for so long."--Louise Barrett, author of *Beyond the Brain: How Body and Environment Shape Animal and Human Minds*

*Darwin's Unfinished Symphony* is certainly ambitious. Dr. Laland tries to develop a theory which explains the incredible dichotomy between humankind and the rest of the animal kingdom. His answer to this age-old enigma is that the development of an inheritable culture which accumulates the insight of previous generations while continuously advancing has acted in a feedback mechanism with biological evolution to hyper-develop the human brain to capabilities which are only

dimly reflected in other animals. The book this most resembles in genre is Daniel Kahneman's *Thinking Fast and Slow*. It similarly summarizes a career's worth of work toward the development of an elaborate scientific theory that has interesting implications for all readers. Except here there is no NY Times book review or biography by Michael Lewis. The one reason I can think of is that Laland had not populated his book with as many results that could serve as interesting topics at an intellectual dinner party. I don't mean to belittle Kahneman's achievement, he won the Nobel prize for a reason, but I do think the success of his book has causes other than the sheer power of his theories. Laland's theory, as he concedes, may not be correct but his effort to explain, as Mortimer Adler put it, the difference of man and the difference it makes, from a purely scientific perspective should have generated a lot more interest than it has. Some of his evidence is based on computer models, which, as a data scientist, I know are not the most reliable form of support for a scientific theory because of how easily parameters can be adjusted to obtain the desired results. Even so, he provides a wealth of predictions which he validates in the real world as well. All open-minded people interested in understanding human nature and civilization, whether philosophers, scientists or just those with a curious mind should read this book. It wouldn't hurt to also try to drum up some interest among fellow intellectuals.

This is a really interesting book that is worth the time to read.

This book certainly is one of the main contributions to the theory of cultural evolution. It is a kind of opus magnum of one of the leading figures in this field of research. The theory of cultural evolution comes in two flavours: the first, the theory of memes or 'memetics' is well known after Richard Dawkins coined the word 'meme' in the seventies, but memetics is all but scientifically dead. Kevin Laland dismisses it in one sentence in footnote nr.3 „However, the modern science of cultural evolution derives very little from memetics.“. Unfortunately, that is correct. The other theory, called Dual Inheritance Theory (DIT) - also known as gene-culture coevolution - is rather unknown to the wider public, but it is alive and kicking in academia, probably because it was linked to massive mathematical modelling right from the beginning. The best known (and most accessible) book of this theory is „Not by genes alone“ by Peter Richerson and Robert Boyd, an absolute must-read for everyone interested in the subject. (Other names busy in this field of research are L. Cavalli-Sforza, Marcus Feldman, Herbert Gintis, Joseph Henrich) The author starts by accentuating the gap that separates the so-called proto-culture found in apes or dolphins or clever crows, on the one hand,

and human culture on the other hand. Only human culture is cumulative, it works like a ratchet that knows only one direction: towards more knowledge, more complexity. Those clever chimps still sit in the forest, cracking nuts as they did maybe millions of years ago, whereas the advances of human culture, especially technology, are breathtaking. Central to Laland's argumentation is the "cultural drive hypothesis": Due to a cultural feedback mechanism, the mammalian brain has driven its own evolution: Positive selection for better perceptual systems, more cross-modal mapping (in the brain), Theory of mind, Mental time travel, tool use, Enhanced diet quality (among others) led to bigger brains, which led to more efficient copying and "copying fidelity" is very important! - higher fidelity in the copying process, which is a necessary condition for cumulative culture. This is the main reason why (proto-)culture in animal population never "takes off": too low fidelity in social learning resp. copying. And the main reason why human social learning is so effective is of course language. Laland devotes a whole chapter to the question: Why did language evolve the way it did? His answer is: for effective teaching, for an active transmission (with a high degree of fidelity) of knowledge from teacher to pupil. That too is unique to *Homo sapiens*. The enormous success of our species rests on this faculty of hi-fi copying, enabling lineages of cumulative knowledge. Human culture is, according to Prof. Laland, not only a magnificent end product of an evolutionary process, like the tail of the peacock or the elaborate nest of bowder birds. Culture is an important part of the very process, it is our specific environment. Human adapted during their evolution not only to their natural environment, but even more and increasingly so to their own culture, their own product! "Human minds are not just build for culture; they are build by culture." (p.30) Humans, like no other animal before, created its own niche: "Our ancestors didn't just evolve to be suited to their world; they shaped their world. The landscape of human evolution did not pre-exist us; we built it ourselves." (page 229). Those are the main lines of Laland's reasoning. Are they convincing? I think so. I think it is outdated to treat culture as a kind of by-product of genetic/biological evolution. If culture, as E.O. Wilson famously put it, is "on the leash of genes", it is (a) a long and flexible leash, and (b) the dog is very big and wayward, and it is often not clear which side is tugging stronger... Therefore gene-culture coevolution should become the standard paradigm in human evolution. Sociobiology or Evolutionary psychology are important contributions, but they are too one-sided and unable to explain the whole picture, to account for culture's enormous influence on human evolution. But I think that there is a weak spot in DIT / gene-culture coevolution: Laland somewhat fails to account for the fact that those niches that human create, our cultural environment

with all its artifacts, ideas, traditions... - it has its own life of its own. The sphere of culture and its entities is the RESULT of human activity, but not of human DESIGN. Humans didn't design the agricultural or industrial world, they stumbled into it. Cultural evolution shows often enough unintended consequences of intentional behaviour, whether it's on a small or a big scale. There is lots of talk in this book about feedback mechanisms and runaway processes, but it is all about cognitive faculties and the hardware behind them, not about the entities of culture themselves. There is one sentence in this book where Kevin Laland alludes to this life of its own of human inventions :

When our ancestors first devised agriculture, they opened up a Pandora's box, and let loose the evil of the Anthropocene. It's the last sentence of chapter 10, just an isolated remark, nothing more. It was one of the strong sides of the so-called

meme's eye view to stress this independent dynamic in the noosphere. I would like to read a book that combines the insight of both perspectives: the selection focus on memes and the kinetic focus on social learning and teaching, as in the DIT. Laland has written an important book, presenting an up-to-date summary of the research in DIT. Unfortunately, it is not a pure pleasure to read it, because the style is somewhat dry and academic (more than 1400 endnotes, very few of them give additional information!). Readers already acquainted with the theory of cultural evolution have to read it. For beginners, I can recommend Not by genes alone (the classic text!), or The Secret of our Success by Joseph Henrich, which too is up-to-date theory of the DIT variety, but which is more fun to read.

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