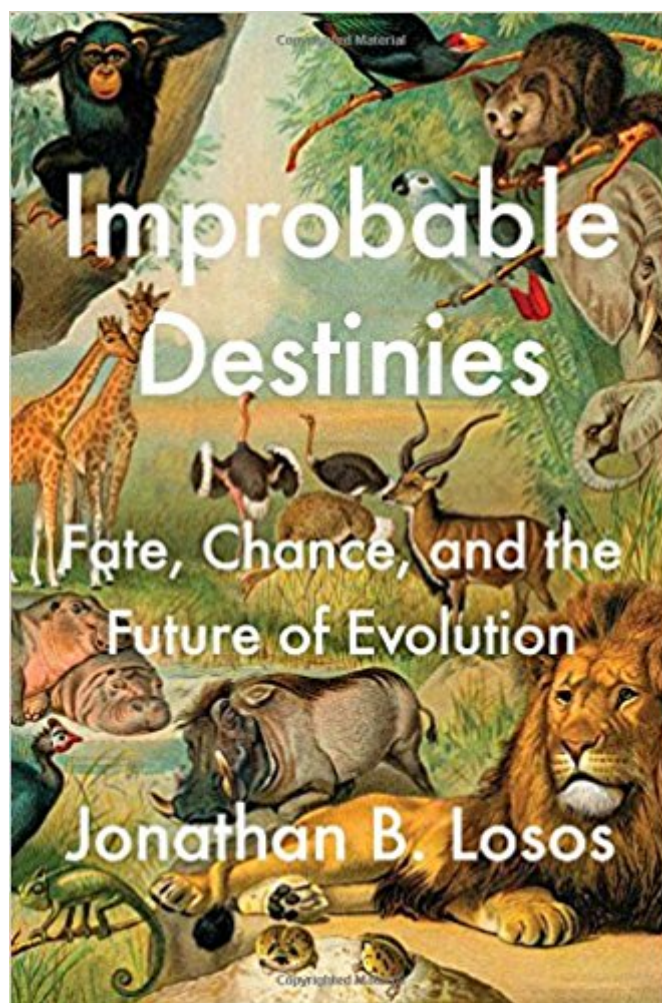


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Improbable Destinies: Fate, Chance, and The Future Of Evolution



Synopsis

A major new book overturning our assumptions about how evolution works. Earth's natural history is full of fascinating instances of convergence: phenomena like eyes and wings and tree-climbing lizards that have evolved independently, multiple times. But evolutionary biologists also point out many examples of contingency, cases where the tiniest change—a random mutation or an ancient butterfly sneeze—caused evolution to take a completely different course. What role does each force really play in the constantly changing natural world? Are the plants and animals that exist today, and we humans ourselves, inevitabilities or evolutionary flukes? And what does that say about life on other planets? Jonathan Losos reveals what the latest breakthroughs in evolutionary biology can tell us about one of the greatest ongoing debates in science. He takes us around the globe to meet the researchers who are solving the deepest mysteries of life on Earth through their work in experimental evolutionary science. Losos himself is one of the leaders in this exciting new field, and he illustrates how experiments with guppies, fruit flies, bacteria, foxes, and field mice, along with his own work with anole lizards on Caribbean islands, are rewinding the tape of life to reveal just how rapid and predictable evolution can be. *Improbable Destinies* will change the way we think and talk about evolution. Losos's insights into natural selection and evolutionary change have far-reaching applications for protecting ecosystems, securing our food supply, and fighting off harmful viruses and bacteria. This compelling narrative offers a new understanding of ourselves and our role in the natural world and the cosmos.

Book Information

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Customer Reviews

“This is a wonderfully serious book with a lighthearted voice. Is evolution predictable or contingent? Big question. Why do adaptations converge? Big question. Why is the platypus unique? Smaller question, but fun! Read, enjoy, think.”

• David Quammen, author of *The Song of the Dodo* and *Spillover*

“Deep, broad, brilliant and thought-provoking. . . . In staggeringly clear and engaging prose, Losos shows us remarkable vignettes of scientists working at personal and professional risk in all sorts of habitats • field, lab and museum • to elucidate stunning mechanisms of evolution. . . . He is one of the premier writers in biology today.”

• Nature

“[A] compelling book.”

• Science

“In a refreshingly accessible narrative, laced with piquant anecdotes, Losos underscores the human significance of science affecting not only how we interpret our own place on the planet but also how we envision life in distant galaxies. Wonderfully lucid; singularly engaging.”

• Booklist (starred review)

“A cheerful, delightfully lucid primer on evolution and the predictive possibilities within the field.”

• Kirkus (starred review)

“Every now and then a brilliant book comes along that helps us rethink what we know about a subject. Jonathan B. Losos’s fascinating, compulsively readable *Improbable Destinies* is just such a book. . . . With vivacious writing and thoughtful, provocative insights, Losos’s captivating study of evolution deserves to be read alongside the books of E.O. Wilson (*The Social Conquest of Earth*) and Stephen Jay Gould (*Wonderful Life*).”

• BookPage

“*Improbable Destinies* is one of the best books on evolutionary biology for a broad readership ever written. Its subjects • the unfolding of Earth’s biological history, the precarious nature of human existence, and the likelihood of life on exoplanets • are presented in a detailed, exciting style expected from an authentic scientist and naturalist.”

• Edward O. Wilson, University Research Professor Emeritus, Harvard University

“Losos explains both the science and the underlying philosophy of the questions being asked in an accessible and engaging manner . . . The book is as enjoyable as it is informative.”

• Publishers Weekly

“Is evolution a story foretold? Or is it little more than the rolls of DNA’s dice? In *Improbable Destinies*, Jonathan Losos tackles these fascinating questions not with empty philosophizing, but with juicy tales from the front lines of scientific research. Drunk flies, fast-evolving lizards, mutating microbes, and hypothetical humanoid dinosaurs all grace the pages of this wonderfully thought-provoking book.”

• Carl Zimmer, author of *A Planet of Viruses* and *The Tangled Bank*

“A rich, provocative, and very accessible book, *Improbable Destinies* is an exclusive behind-the-scenes tour of the ecological theater and evolutionary play of

life, expertly guided one of its most insightful observers. Jonathan Losos has shone a light on a largely unheralded cast of fascinating creatures and ingenious scientists who are reshaping our view of why life is the way it is.

•Sean B. Carroll, author of *The Serengeti Rules* and *Brave Genius*
Praise for Jonathan B. Losos' *Lizards in an Evolutionary Tree*:
“A rich compendium of information by an extraordinarily insightful biologist.”
“Lucid language and simplicity in writing [create] magic throughout the book.”
•Environment and Ecology

Jonathan B. Losos is a biology professor and director of the Losos Laboratory at Harvard University and Curator of Herpetology at Harvard's Museum of Comparative Zoology. His research regularly appears in top scientific journals, such as *Nature* and *Science*, and he has written a popular series about his work for *The New York Times*. Losos is the editor in chief of *The Princeton Guide to Evolution* and a member of the National Geographic Society's Committee for Research and Exploration. He is the author of *Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles*.

This is an incredibly engaging read; I couldn't put it down! Not only does Losos write with great clarity about complicated scientific theories, he makes it fun and totally accessible for the non-scientist audience who is interested in evolution and the scientists who are at the cutting edge of developing evolutionary theory. Losos takes the reader with him to exotic places where there are athletic lizards to catch; iridescent guppies to fish out and duckbill platypuses on the loose. He explains what Darwin never thought possible; that evolution can be seen in real time and experiments can be designed in nature to test these various evolutionary theories. Competing theories about how animals and humans evolved are lucidly explained even extrapolating from them as to what life on other planets might look like should it exist. The scientific community has recognized the importance of Losos' work giving him high marks for this groundbreaking book even comparing him to the great evolutionary biologist Stephen J. Gould. Anyone interested in the theories of evolution must read this book, scientist and non-scientist alike; you'll be thrilled you did.

Nice read so far, but I was surprised to find the author speculating on pp. 40-41 about why Conway Morris 'went from detailing Cambrian curiosities to cataloging convergence' and offering the following: he may just have been following the crowd, he objected on spiritual grounds to 'Gould's views on the haphazard nature of evolution,' and he was embarrassed that Gould had praised his work,

subsequently found to be mistaken. These are completely out of line in a work that claims to be -- and ought to be -- a scientific explanation for why one theory is better than another. The author's job is to explain why Morris is wrong -- either because his claim is incoherent or not well-supported; it is not to disparage the man by querying his motives. His motive may simply be that he thinks the evidence is in his favor. The passages come off as ad hominem. So...the bottom line is that I now have a question about the author's judgment that I did not have before pp. 40-41 and that puts a damper on the rest of the text.

What an amazing book. Downside, I had to read it on a kindle and missed out on all the footnotes throughout (provided at the end of the book), which was one of the most entertaining parts of "Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles". I have a hard copy on the way, someday it might arrive (Mexico). Upside, reading Jonathan Losos's writing. For me, no one writes more clearly about evolutionary biology than Dr. Losos. This book is accessible to anyone, especially those interested in evolution (I would say more accessible than *Wonderful Life* by Stephen Jay Gould). I especially enjoyed his entertaining descriptions of scientists and their projects (it made me feel like these famous scientist were normal people like myself). For aspiring evolutionary biologist this book is a must read and will certainly prove to be an important milestone. As an avid fly fisherman I am dubious about the lizard noosing comparison, not that I think nothing compares to fly fishing but because when fly fishing you have to be okay with not catching fish. At which point fly fishing becomes much more than catching fish.

The book seems promising, especially after the first two chapters situate the important debate and findings about convergent evolution. However, the book quickly degenerates into a lengthy series of stories that read like diary entries intermingled with observations on experiments (both the author's and others' experiments). I expected science and I got the Bulwer-Lytton of evolutionary biology: "Another time a walk along a stream above a waterfall turned into a cliff-hanger. Not just because it was suspenseful (which it was), but because he ended up hanging over a cliff, clutching a bush, Indiana Jones-style." (p. 146) Missing? "It was a dark and stormy night." And on and on and on. The book is absolutely nothing like what it claims to be. Popular science writing at its very, very worst. I cannot recommend it.

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