
Evolutionary Theory Sean Rice

Evolutionary Dynamics
What Darwin Got Wrong
American Book Publishing Record
Facts, Conventions, and the Levels of Selection
Multilevel Selection and the Theory of Evolution
Encyclopedia of Time
Encyclopedia of Ecology
Evolutionary Biology
Challenging the Modern Synthesis
Morphological Diversity and Linguistic Cognition
Mathematical Studies on Human Disease Dynamics
Introduction to Biosemiotics
Advances in Dynamic and Mean Field Games
Computational Phenotypes
Model-Based Reasoning in Science and Technology
Evolutionary Theory
Proceedings of the National Academy of Sciences of the United States of America
Professional Journal of the United States Army
Evolutionary Biology – Concepts, Biodiversity, Macroevolution and Genome Evolution
Écoscience
The International Encyclopedia of Primatology, 3 Volume Set
Epistasis and the Evolutionary Process
Peterson's Guide to Graduate Programs in the Biological Sciences 1997
The Year in Evolutionary Biology
Challenging the Modern Synthesis
Nature
Modularity
Why Only Us
A Biologist's Guide to Mathematical Modeling in Ecology and Evolution
The Adaptive Landscape in Evolutionary Biology
Species
Design in Nature
Mutation and Evolution
Human Evolution Through Developmental Change
The American Naturalist
Military Review
Introduction to Urban Science
Phylogenetic Inference, Selection Theory, and History of Science
The Origin of Higher Taxa
The Adaptive Landscape in Evolutionary Biology

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Evolutionary Dynamics

Springer Science & Business Media

"This volume of original essays surveys recent challenges to the Modern Synthesis theory of evolution that arise from empirical advances in the understanding of evolution since the advent of the 21st century. It presents a spectrum of views by philosophers and biologists on the status and prospects of the Modern Synthesis"--Page 4 of cover.

What Darwin Got

Wrong Oxford University Press

In this groundbreaking book, Adrian Bejan takes the recurring patterns in nature—trees, tributaries, air passages, neural networks, and lightning bolts—and reveals how a single principle of physics, the constructal law, accounts for the evolution of these and many other designs in our world. Everything—from biological life to inanimate systems—generates shape and structure and evolves in a sequence of ever-improving designs in order to facilitate flow. River basins, cardiovascular systems, and bolts of lightning are very efficient flow

systems to move a current—of water, blood, or electricity. Likewise, the more complex architecture of animals evolve to cover greater distance per unit of useful energy, or increase their flow across the land. Such designs also appear in human organizations, like the hierarchical “flowcharts” or reporting structures in corporations and political bodies. All are governed by the same principle, known as the constructal law, and configure and reconfigure themselves over time to flow more efficiently. Written in an easy style that achieves clarity without sacrificing complexity, *Design in Nature* is a paradigm-shifting book that will fundamentally transform our understanding of the world around us.

American Book Publishing Record JHU Press

Draws on the languages of biology and mathematics to outline the mathematical principles according to which life evolves in an intriguing study that makes a clear and compelling case for understanding every living system in terms of evolutionary dynamics.

Facts, Conventions,

and the Levels of

Selection MIT Press

Encyclopedia of Ecology, Second Edition continues the acclaimed work of the previous edition published in 2008. It covers all scales of biological organization, from organisms, to populations, to communities and ecosystems. Laboratory, field, simulation modelling, and theoretical approaches are presented to show how living systems sustain structure and function in space and time. New areas of focus include micro- and macro scales, molecular and genetic ecology, and global ecology (e.g., climate change, earth transformations, ecosystem services, and the food-water-energy nexus) are included. In addition, new, international experts in ecology contribute on a variety of topics. Offers the most broad-ranging and comprehensive resource available in the field of ecology Provides foundational content and suggests further reading Incorporates the expertise of over 500 outstanding investigators in the field of ecology, including top young scientists with both research and teaching experience Includes multimedia resources,

such as an Interactive Map Viewer and links to a CSDMS (Community Surface Dynamics Modeling System), an open-source platform for modelers to share and link models dealing with earth system processes

Multilevel Selection and the Theory of Evolution Princeton University Press

After volume 33, this book series was replaced by the journal "Evolutionary Biology." Please visit www.springer.com/11692 for further information.

This volume continues bringing to readers the findings of eminent evolutionary biologists and paleobiologists. Among the topics discussed in this book are the origin of the dermal skeleton in conodont chordates, patterns of nucleotide substitution and codon usage in plasmid DNA evolution, a model to explain phenotype stability in functional systems, and inter-island speciation of Hawaiian biota.

Encyclopedia of Time University of Chicago Press

Over the last two decades, research into epistasis has seen explosive growth and has moved the focus of research in evolutionary

genetics from a traditional additive approach. We now know the effects of genes are rarely independent, and to reach a fuller understanding of the process of evolution we need to look at gene interactions as well as gene-environment interactions. This book is an overview of non-additive evolutionary genetics, integrating all work to date on all levels of evolutionary investigation of the importance of epistasis in the evolutionary process in general. It includes a historical perspective on this emerging field, in-depth discussion of terminology, discussions of the effects of epistasis at several different levels of biological organization and combinations of theoretical and experimental approaches to analysis.

Encyclopedia of Ecology Oxford University Press

A novel, integrative approach to cities as complex adaptive systems, applicable to issues ranging from innovation to economic prosperity to settlement patterns. Human beings around the world increasingly live in urban environments. In Introduction to Urban

Science, Luis Bettencourt takes a novel, integrative approach to understanding cities as complex adaptive systems, claiming that they require us to frame the field of urban science in a way that goes beyond existing theory in such traditional disciplines as sociology, geography, and economics. He explores the processes facilitated by and, in many cases, unleashed for the first time by urban life through the lenses of social heterogeneity, complex networks, scaling, circular causality, and information. Though the idea that cities are complex adaptive systems has become mainstream, until now those who study cities have lacked a comprehensive theoretical framework for understanding cities and urbanization, for generating useful and falsifiable predictions, and for constructing a solid body of empirical evidence so that the discipline of urban science can continue to develop. Bettencourt applies his framework to such issues as innovation and development across scales, human reasoning and strategic decision-making, patterns of

settlement and mobility and their influence on socioeconomic life and resource use, inequality and inequity, biodiversity, and the challenges of sustainable development in both high- and low-income nations. It is crucial, says Bettencourt, to realize that cities are not "zero-sum games" and that knowledge, human cooperation, and collective action can build a better future.

Evolutionary Biology CRC Press

The 'Adaptive Landscape' has been a central concept in population genetics and evolutionary biology since this powerful metaphor was first formulated by Sewall Wright in 1932. Eighty years later, it has become a central framework in evolutionary quantitative genetics, selection studies in natural populations, and in studies of ecological speciation and adaptive radiations. Recently, the simple concept of adaptive landscapes in two dimensions (genes or traits) has been criticized and several new and more sophisticated versions of the original adaptive landscape evolutionary model have been developed in response. No published volume has yet

critically discussed the past, present state, and future prospect of the adaptive landscape in evolutionary biology. This volume brings together prominent historians of science, philosophers, ecologists, and evolutionary biologists, with the aim of discussing the state of the art of the Adaptive Landscape from several different perspectives.

Challenging the Modern Synthesis Oxford University Press

Since its origin in the early 20th century, the Modern Synthesis theory of evolution has grown to become the orthodox view on the process of organic evolution. Its central defining feature is the prominence it accords to genes in the explanation of evolutionary dynamics. Since the advent of the 21st century, however, the Modern Synthesis has been subject to repeated and sustained challenges. These are largely empirically driven. In the last two decades, evolutionary biology has witnessed unprecedented growth in the understanding of those processes that underwrite the development of organisms and the inheritance of characters.

The empirical advances usher in challenges to the conceptual foundations of evolutionary theory. The extent to which the new biology challenges the Modern Synthesis has been the subject of lively debate. Many current commentators charge that the new biology of the 21st century calls for a revision, extension, or wholesale rejection of the Modern Synthesis Theory of evolution. Defenders of the Modern Synthesis maintain that the theory can accommodate the exciting new advances in biology. The original essays collected in this volume survey the various challenges to the Modern Synthesis arising from the new biology of the 21st century. The authors are evolutionary biologists, philosophers of science, and historians of biology from Europe and North America. Each of the essays discusses a particular challenge to the Modern Synthesis treatment of inheritance, development, or adaptation. Taken together, the essays cover a spectrum of views, from those that contend that the Modern Synthesis can rise to the challenges of the new biology, with little or no revision required, to those

that call for the abandonment of the Modern Synthesis. The collection will be of interest to researchers and students in evolutionary biology, and the philosophy and history of the biological sciences. *Morphological Diversity and Linguistic Cognition* American Mathematical Soc.

Debates concerning the units and levels of selection have persisted for over fifty years. One major question in this literature is whether units and levels of selection are genuine, in the sense that they are objective features of the world, or merely reflect the interests and goals of an observer. Scientists and philosophers have proposed a range of answers to this question. This Element introduces this literature and proposes a novel contribution. It defends a realist stance and offers a way of delineating genuine levels of selection by invoking the notion of a functional unit.

Mathematical Studies on Human Disease Dynamics Cambridge University Press

Over time the complex idea of "species" has evolved, yet its meaning is far from resolved. This

comprehensive work is a fresh look at an idea central to the field of biology by tracing its history from antiquity to today. Species is a benchmark exploration and clarification of a concept fundamental to the past, present, and future of the natural sciences. In this edition, a section is added on the debate over species since the time of the New Synthesis, and brings the book up to date. A section on recent philosophical debates over species has also been added. This edition is better suited non-specialists in philosophy, so that it will be of greater use for scientists wishing to understand how the notion came to be that living organisms form species. Key Selling Features: Covers the philosophical and historical development of the concept of "species" Documents that variation was recognized by pre-Darwinian scholars Includes a section on the debates since the time of the New Synthesis Better suited to non-philosophers **Introduction to Biosemiotics** Sinauer Associates Incorporated Jerry Fodor and Massimo Piatelli-Palmarini, a distinguished philosopher

and scientist working in tandem, reveal major flaws at the heart of Darwinian evolutionary theory. They do not deny Darwin's status as an outstanding scientist but question the inferences he drew from his observations. Combining the results of cutting-edge work in experimental biology with crystal-clear philosophical argument they mount a devastating critique of the central tenets of Darwin's account of the origin of species. The logic underlying natural selection is the survival of the fittest under changing environmental pressure. This logic, they argue, is mistaken. They back up the claim with evidence of what actually happens in nature. This is a rare achievement - the short book that is likely to make a great deal of difference to a very large subject. What Darwin Got Wrong will be controversial. The authors' arguments will reverberate through the scientific world. At the very least they will transform the debate about evolution.

Advances in Dynamic and Mean Field Games Elsevier

This is a book about language as a species-typical trait of humans. It

argues that language is not so exceptional after all, as according to the authors it is just the human version of a rather common and conservative organic system that they refer to as the Central Computational Complex. *Computational Phenotypes* OUP Oxford

This contributed volume considers recent advances in dynamic games and their applications, based on presentations given at the 17th Symposium of the International Society of Dynamic Games, held July 12-15, 2016, in Urbino, Italy. Written by experts in their respective disciplines, these papers cover various aspects of dynamic game theory including mean-field games, stochastic and pursuit-evasion games, and computational methods for dynamic games. Topics covered include Pedestrian flow in crowded environments Models for climate change negotiations Nash Equilibria for dynamic games involving Volterra integral equations Differential games in healthcare markets Linear-quadratic Gaussian dynamic games Aircraft control in wind shear conditions Advances in Dynamic and Mean-Field

Games presents state-of-the-art research in a wide spectrum of areas. As such, it serves as a testament to the continued vitality and growth of the field of dynamic games and their applications. It will be of interest to an interdisciplinary audience of researchers, practitioners, and graduate students. Model-Based Reasoning in Science and Technology Springer

Bringing together a team of well-known scholars, this book examines the link between linguistic cognition and morphological diversity. **Evolutionary Theory** MIT Press

Systematically presented to enhance the feasibility of fuzzy models, this book introduces the novel concept of a fuzzy network whose nodes are rule bases and their interconnections are interactions between rule bases in the form of outputs fed as inputs. **Proceedings of the National Academy of Sciences of the United States of America** SAGE Publications

This volume contains the proceedings of the AMS-IMS-SIAM Joint Summer Research Conference on Modeling the Dynamics of

Human Diseases: Emerging Paradigms and Challenges, held in Snowbird, Utah, July 17-21, 2005. The goal of the conference was to bring together leading and upcoming researchers to discuss the latest advances and challenges associated with the modeling of the dynamics of emerging and re-emerging diseases, and to explore various control strategies. The articles included in this book are devoted to some of the significant recent advances, trends, and challenges associated with the mathematical modeling and analysis of the dynamics and control of some diseases of public health importance. In addition to illustrating many of the diverse prevailing epidemiological challenges, together with the diversity of mathematical approaches needed to address them, this book provides insights on a number of topical modeling issues such as the modeling and control of mosquito-borne diseases, respiratory diseases, animal diseases (such as foot-and-mouth disease), cancer and tumor growth modeling, influenza, HIV, HPV, rotavirus, etc. This book also touches upon other

important topics such as the use of modeling in homeland security and some review and new results on various modeling paradigms including network, stochastic and deterministic formulations together with the use of optimal control and related methods for evaluating control strategies.

Professional Journal of the United States Army John Wiley & Sons

The annual Evolutionary Biology Meetings in Marseilles serve to gather leading scientists, promote the exchange of ideas and encourage the formation of international collaborations. This book contains the most essential contributions presented at the 14th Evolutionary Biology Meeting, which took place in September 2010. It comprises 19 chapters organized according to the following categories: · Evolutionary Biology · Concepts · Biodiversity and Evolution · Macroevolution · Genome Evolution Offering an up-to-date overview of recent results in the field of evolutionary biology, this book is an invaluable source of information for scientists, teachers and advanced students.

Evolutionary Biology – Concepts, Biodiversity, Macroevolution and Genome Evolution MIT Press

Modularity—the attempt to understand systems as integrations of partially independent and interacting units—is today a dominant theme in the life sciences, cognitive science, and computer science. The concept goes back at least implicitly to the Scientific (or Copernican) Revolution, and can be found behind later theories of phrenology, physiology, and genetics; moreover, art, engineering, and mathematics rely on modular design principles. This collection broadens the scientific discussion of modularity by bringing together experts from a variety of disciplines, including artificial life, cognitive science, economics, evolutionary computation, developmental and evolutionary biology, linguistics, mathematics, morphology, paleontology, physics, theoretical chemistry, philosophy, and the arts. The contributors debate and compare the uses of modularity, discussing the different disciplinary contexts of "modular thinking" in general

(including hierarchical organization, near-decomposability, quasi-independence, and recursion) or of more specialized concepts (including character complex, gene family, encapsulation, and mosaic evolution); what modules are, why and how they develop and evolve, and the implication for the research agenda in the disciplines involved; and how to bring about useful cross-disciplinary knowledge transfer on the topic. The book includes a foreword by the late Herbert A. Simon addressing the role of near-decomposability in understanding complex systems. Contributors: Lee Altenberg, Lauren W. Ancel-Meyers, Carl Anderson, Robert B. Brandon, Angela D. Buscalioni, Raffaele Calabretta, Werner Callebaut, Anne De Joan, Rafael Delgado-Buscalioni, Gunther J. Eble, Walter Fontana, Fernand Gobet, Alicia de la Iglesia, Slavik V. Jablan, Luigi Marengo, Daniel W. McShea, Jason Mezey, D. Kimbrough Oller, Domenico Parisi, Corrado Pasquali, Diego Rasskin-Gutman, Gerhard Schlosser, Herbert A. Simon, Roger D. K.

Thomas, Marco Valente, Boris M. Velichkovsky, Gunter P. Wagner, Rasmus G. Winter Vienna Series in Theoretical Biology *Écoscience* Oxford University Press "With a strong interdisciplinary approach to a subject that does not lend itself easily to the reference format, this work may not seem to support directly academic programs beyond general research, but it is a more thorough and up-to-date treatment than Taylor and Francis's 1994 *Encyclopedia of Time*. Highly recommended." —Library Journal STARRED Review Surveying the major facts, concepts, theories, and speculations that infuse our present comprehension of time, the *Encyclopedia of Time: Science, Philosophy, Theology, & Culture* explores the contributions of scientists, philosophers, theologians, and creative artists from ancient times to the present. By drawing together into one

collection ideas from scholars around the globe and in a wide range of disciplines, this *Encyclopedia* will provide readers with a greater understanding of and appreciation for the elusive phenomenon experienced as time. Features Surveys historical thought about time, including those ideas that emerged in ancient Greece, early Christianity, the Italian Renaissance, the Age of Enlightenment, and other periods Covers the original and lasting insights of evolutionary biologist Charles Darwin, physicist Albert Einstein, philosopher Alfred North Whitehead, and theologian Pierre Teilhard de Chardin Discusses the significance of time in the writings of Isaac Asimov, Samuel Taylor Coleridge, Fyodor M. Dostoevsky, Francesco Petrarca, H. G. Wells, and numerous other authors Contains the contributions of naturalists and religionists, including

astronomers, cosmologists, physicists, chemists, geologists, paleontologists, anthropologists, psychologists, philosophers, and theologians Includes artists' portrayals of the fluidity of time, including painter Salvador Dali's *The Persistence of Memory* and *The Discovery of America* by Christopher Columbus, and writers Gustave Flaubert's *The Temptation of Saint Anthony* and Henryk Sienkiewicz's *Quo Vadis* Provides a truly interdisciplinary approach, with discussions of Aztec, Buddhist, Christian, Egyptian, Ethiopian, Hindu, Islamic, Navajo, and many other cultures' conceptions of time Key Themes Biography Biology/Evolution Culture/History Geology/Paleontology Philosophy Physics/Chemistry Psychology/Literature Religion/Theology Theories/Concepts