

MATHEMATICAL MODELS OF SOCIAL EVOLUTION



A GUIDE FOR THE PERPLEXED

RICHARD McELREATH • ROBERT BOYD

Mathematical Models Of Social Evolution A Guide For The Perplexed

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Mathematical Models of Social Evolution Richard McElreath, Robert Boyd, 2007-03-15 Over the last several decades mathematical models have become central to the study of social evolution both in biology and the social sciences But students in these disciplines often seriously lack the tools to understand them A primer on behavioral modeling that includes both mathematics and evolutionary theory Mathematical Models of Social Evolution aims to make the student and professional researcher in biology and the social sciences fully conversant in the language of the field Teaching biological concepts from which models can be developed Richard McElreath and Robert Boyd introduce readers to many of the typical mathematical tools that are used to analyze evolutionary models and end each chapter with a set of problems that draw upon these techniques Mathematical Models of Social Evolution equips behaviorists and evolutionary biologists with the mathematical knowledge to truly understand the models on which their research depends Ultimately McElreath and Boyd's goal is to impart the fundamental concepts that underlie modern biological understandings of the evolution of behavior so that readers will be able to more fully appreciate journal articles and scientific literature and start building models of their own

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Theory in Social and Cultural Anthropology R. Jon McGee, Richard L. Warms, 2013-08-28 Social and cultural anthropology and archaeology are rich subjects with deep connections in the social and physical sciences Over the past 150 years the subject matter and different theoretical perspectives have expanded so greatly that no single individual can command all of it Consequently both advanced students and professionals may be confronted with theoretical positions and names of theorists with whom they are only partially familiar if they have heard of them at all Students in particular are likely to turn to the web to find quick background information on theorists and theories However most web based information is inaccurate and or lacks depth Students and professionals need a source to provide a quick overview of a particular theory

and theorist with just the basics the who what where how and why if you will In response SAGE Reference plans to publish the two volume Theory in Social and Cultural Anthropology An Encyclopedia Features Benefits Two volumes containing approximately 335 signed entries provide users with the most authoritative and thorough reference resource available on anthropology theory both in terms of breadth and depth of coverage To ease navigation between and among related entries a Reader s Guide groups entries thematically and each entry is followed by Cross References In the electronic version the Reader s Guide combines with the Cross References and a detailed Index to provide robust search and browse capabilities An appendix with a Chronology of Anthropology Theory allows students to easily chart directions and trends in thought and theory from early times to the present Suggestions for Further Reading at the end of each entry and a Master Bibliography at the end guide readers to sources for more detailed research and discussion

Social Learning William Hoppitt, Kevin N. Laland, 2013-07-21 Many animals including humans acquire valuable skills and knowledge by copying others Scientists refer to this as social learning It is one of the most exciting and rapidly developing areas of behavioral research and sits at the interface of many academic disciplines including biology experimental psychology economics and cognitive neuroscience Social Learning provides a comprehensive practical guide to the research methods of this important emerging field William Hoppitt and Kevin N Lala define the mechanisms thought to underlie social learning and demonstrate how to distinguish them experimentally in the laboratory They present techniques for detecting and quantifying social learning in nature including statistical modeling of the spatial distribution of behavior traits They also describe the latest theory and empirical findings on social learning strategies and introduce readers to mathematical methods and models used in the study of cultural evolution This book is an indispensable tool for researchers and an essential primer for students Provides a comprehensive practical guide to social learning research Combines theoretical and empirical approaches Describes techniques for the laboratory and the field Covers social learning mechanisms and strategies statistical modeling techniques for field data mathematical modeling of cultural evolution and more

Evolutionary Psychology and Information Systems Research Ned Kock, 2010-07-28 This book is a compilation of chapters written by leading researchers from all over the world Those researchers common characteristic is that they have investigated issues at the intersection of the elds of information systems IS and evolutionary psychology EP The main goal of this book is to serve as a reference for IS research building on EP concepts and theories in short IS EP research The book is organized in three main parts Part I focuses on EP concepts and theories that can be used as a basis for IS EP research Part II provides several exemplars of IS EP research in practice and Part III summarizes emerging issues and debate that can inform IS EP research including debate regarding philosophical foundations and credibility of related ndings IS EP research is generally concerned with the use of concepts and theories from EP in the study of IS particularly regarding the impact of modern information and communication technologies on the behavior of individuals groups and organizations From a practitioners perspective the most immediate

consumers of IS EP research are those who develop and use IS of which a large contingent are in businesses that employ IS to support marketing order taking production and delivery of goods and services In this context IS EP ndings may be particularly useful due to the present need to design web based interfaces that will be used by individuals from different cultures and often different countries and whose common denominator is their human nature Disbelief Will M. Gervais,2024-07-30 Does God exist This straightforward question has spawned endless debate ranging from apologists supposed proofs of God s existence to New Atheist manifestos declaring belief in God a harmful delusion In Disbelief Will M Gervais Phd a global leader in the psychological study of atheism shows that the ubiquity of religious belief and the peculiarities of atheism are connected pieces in the puzzle of human nature It s undeniable that religion is a core tenet of human nature It is also true that our overwhelmingly religious species is also as atheistic as it s ever been Yet no scientific understanding of religion is complete without accounting for those who actively do not believe In this refreshing and revelatory book Gervais argues that religion is not an evolutionary puzzle so much as two evolutionary puzzles that can only be solved together First is the Puzzle of Faith the puzzle of how Homo sapiens and Homo sapiens alone came to be a religious species Second is the Puzzle of Atheism how disbelief in gods can exist within our uniquely religious species The result is a radically cohesive theory of both faith and atheism showing how we became a uniquely religious species and why many are now abandoning their belief Through a firsthand account of breakthroughs in the scientific study of atheism including key findings from cognitive science cultural evolution and evolutionary psychology Disbelief forces a rethinking of the prevailing theories of religion and reminds both believers and atheists of the shared psychologies that set them on their distinct religious trajectories In casual prose and with compelling examples Gervais explains how we became religious why we re leaving faith behind and how we can get along with others across the religious divides we ve culturally evolved **Sense and Nonsense** Gillian R. Brown, Kevin N. Lala,2024-10-08 Evolutionary theory is one of the most wide ranging and inspiring scientific ideas and it offers a battery of methods that can be used to interpret human behaviour However researchers disagree about the best ways to use evolution to explore humanity and a number of schools of thought have emerged Sense and Nonsense third edition provides an introduction to the ideas methods and findings of five such schools namely sociobiology human behavioural ecology evolutionary psychology cultural evolution and gene culture coevolution In this revised and updated edition of their successful monograph Brown and Lala provide a balanced and rigorous analysis that scrutinises both the evolutionary arguments and the allegations of the critics carefully guiding the reader through the mire of confusing terminology claim and counter claim and polemical statements This readable and informative introductory book will be of use to undergraduate and postgraduate students for example in psychology anthropology and zoology as well as experts on one approach who would like to know more about the other perspectives and lay persons interested in evolutionary explanations of human behaviour Having completed the book the reader will feel better placed to assess the

legitimacy of claims made about human behaviour under the name of evolution and to make judgements as to what is sense and what is nonsense **Evolution Science and Ethics in the Third Millennium** Robert Cliquet, Dragana Avramov, 2018-01-10 The book aims to revitalise the interdisciplinary debate about evolutionary ethics and substantiate the idea that evolution science can provide a rational and robust framework for understanding morality It also traces pathways for knowledge based choices to be made about directions for future long term biological evolution and cultural development in view of adaptation to the expected probable and possible future and the ecological sustainability of our planetary environment The authors discuss ethical challenges associated with the major biosocial sources of human variation individual variation inter personal variation inter group variation and inter generational variation This book approaches the long term challenges of the human species in a holistic way Researchers will find an extensive discussion of the key theoretical scientific aspects of the relationship between evolution and morality Policy makers will find information that can help them better understand from where we are coming and inspire them to make choices and take actions in a longer term perspective The general public will find food for thoughts **Evolutionary and Interpretive Archaeologies** Ethan Cochrane, Andrew Gardner, 2016-09-16 This collection of original articles compares various key archaeological topics agency violence social groups diffusion from evolutionary and interpretive perspectives These two strands represent the major current theoretical poles in the discipline By comparing and contrasting the insights they provide into major archaeological themes this volume demonstrates the importance of theoretical frameworks in archaeological interpretations Chapter authors discuss relevant Darwinian or interpretive theory with short archaeological and anthropological case studies to illustrate the substantive conclusions produced The book will advance debate and contribute to a better understanding of the goals and research strategies that comprise these distinct research traditions **The Routledge Handbook of Moral Epistemology** Aaron Zimmerman, Karen Jones, Mark Timmons, 2018-11-02 The Routledge Handbook of Moral Epistemology brings together philosophers cognitive scientists developmental and evolutionary psychologists animal ethologists intellectual historians and educators to provide the most comprehensive analysis of the prospects for moral knowledge ever assembled in print The book s thirty chapters feature leading experts describing the nature of moral thought its evolution childhood development and neurological realization Various forms of moral skepticism are addressed along with the historical development of ideals of moral knowledge and their role in law education legal policy and other areas of social life Highlights include Analyses of moral cognition and moral learning by leading cognitive scientists Accounts of the normative practices of animals by expert animal ethologists An overview of the evolution of cooperation by preeminent evolutionary psychologists Sophisticated treatments of moral skepticism relativism moral uncertainty and know how by renowned philosophers Scholarly accounts of the development of Western moral thinking by eminent intellectual historians Careful analyses of the role played by conceptions of moral knowledge in political liberation movements religious institutions criminal law secondary education and

professional codes of ethics articulated by cutting edge social and moral philosophers

Computational Social

Psychology Robin R. Vallacher, Stephen J. Read, Andrzej Nowak, 2017-05-25 Computational Social Psychology showcases a new approach to social psychology that enables theorists and researchers to specify social psychological processes in terms of formal rules that can be implemented and tested using the power of high speed computing technology and sophisticated software This approach allows for previously infeasible investigations of the multi dimensional nature of human experience as it unfolds in accordance with different temporal patterns on different timescales In effect the computational approach represents a rediscovery of the themes and ambitions that launched the field over a century ago The book brings together social psychologists with varying topical interests who are taking the lead in this redirection of the field Many present formal models that are implemented in computer simulations to test basic assumptions and investigate the emergence of higher order properties others develop models to fit the real time evolution of people s inner states overt behavior and social interactions Collectively the contributions illustrate how the methods and tools of the computational approach can investigate and transform the diverse landscape of social psychology

Human Behavioral Ecology Jeremy Koster, Brooke

Scelza, Mary K. Shenk, 2024-03-14 Human behavioral ecology HBE applies the principles of evolutionary theory and optimisation to the study of human behavioural and cultural diversity Among other things HBE attempts to explain variation in behaviour as adaptive solutions to the competing life history demands of growth development reproduction parental care and mate acquisition This book is a comprehensive introduction to the theoretical orientation and specific findings of HBE It consolidates the insights of evolution and human behaviour into a single volume that reflects the current state and future of the field It brings together leading scholars from across the evolutionary social sciences to provide a comprehensive and thought provoking review of the state of the topic Throughout the authors explain the latest developments in theory and highlight critical debates in the literature while also engaging readers with ethnographic insights and field based studies that remain at the core of human behavioral ecology

Innovation in Cultural Systems Michael John O'Brien, Stephen

Shennan, 2010 Leading scholars offer a range of perspectives on the roles played by innovation in the evolution of human culture In recent years an interest in applying the principles of evolution to the study of culture emerged in the social sciences Archaeologists and anthropologists reconsidered the role of innovation in particular and have moved toward characterizing innovation in cultural systems not only as a product but also as an evolutionary process This distinction was familiar to biology but new to the social sciences cultural evolutionists from the nineteenth to the twentieth century had tended to see innovation as a preprogrammed change that occurred when a cultural group needed to overcome environmental problems In this volume leading researchers from a variety of disciplines including anthropology archaeology evolutionary biology philosophy and psychology offer their perspectives on cultural innovation The book provides not only a range of views but also an integrated account with the chapters offering an orderly progression of thought The contributors

consider innovation in biological terms discussing epistemology animal studies systematics and phylogeny phenotypic plasticity and evolvability and evo devo they discuss modern insights into innovation including simulation the random copying model diffusion and demographic analysis and they offer case studies of innovation from archaeological and ethnographic records examining developmental behavioral and social patterns Contributors Andr Ariew R Alexander Bentley Werner Callebaut Joseph Henrich Anne Kandler Kevin N Laland Daniel O Larson Alex Mesoudi Michael J O'Brien Craig T Palmer Adam Powell Simon M Reader Valentine Roux Chet Savage Michael Brian Schiffer Jeffrey H Schwartz Stephen J Shennan James Steele Mark G Thomas Todd L VanPool

Aging is a Group-Selected Adaptation Joshua Mitteldorf, 2017-02-03 Although books exist on the evolution of aging this is the first book written from the perspective of aging as an adaptive program It offers an insight into the implications of research on aging genetics The author proposes the Demographic Theory of Senescence whereby aging has been affirmatively selected because it levels the death rate over time helping stabilize population dynamics and prevent extinctions

Cooperation and Its Evolution Kim Sterelny, Richard Joyce, Brett Calcott, Ben Fraser, 2024-08-06 Essays from a range of disciplinary perspectives show the central role that cooperation plays in structuring our world This collection reports on the latest research on an increasingly pivotal issue for evolutionary biology cooperation The chapters are written from a variety of disciplinary perspectives and utilize research tools that range from empirical survey to conceptual modeling reflecting the rich diversity of work in the field They explore a wide taxonomic range concentrating on bacteria social insects and especially humans Part I Agents and Environments investigates the connections of social cooperation in social organizations to the conditions that make cooperation profitable and stable focusing on the interactions of agent population and environment Part II Agents and Mechanisms focuses on how proximate mechanisms emerge and operate in the evolutionary process and how they shape evolutionary trajectories Throughout the book certain themes emerge that demonstrate the ubiquity of questions regarding cooperation in evolutionary biology the generation and division of the profits of cooperation transitions in individuality levels of selection from gene to organism and the human cooperation explosion that makes our own social behavior particularly puzzling from an evolutionary perspective Bradford Books imprint

Mark Blaug: Rebel with Many Causes Marcel Boumans, Matthias Klaes, 2013-11-29 This collection of eminent contributions discusses the ideas and works of Mark Blaug who has made important and often pioneering contributions to economic history economic methodology the economics of education development economics cultural econo

An Introduction to Social Psychology Miles Hewstone, Wolfgang Stroebe, Klaus Jonas, 2016-08-22 For over 25 years An Introduction to Social Psychology has been combining traditional academic rigor with a contemporary level of cohesion accessibility pedagogy and instructor support to provide a definitive guide to the engaging and ever evolving field of social psychology This sixth edition completely revised and updated to reflect current issues and underlying theory in the field has been specially designed to meet the needs of students at all levels with contributions written by leading

psychologists each an acknowledged expert in the topics covered in a given chapter The text benefits hugely from an updated range of innovative pedagogical features intended to catch the imagination combined with a rigorous editorial approach which results in a cohesive and uniform style accessible to all Each chapter addresses both major themes and key studies showing how the relevant field of research has developed over time and linking classic and contemporary perspectives

Speech Dynamics Felicitas Kleber, Tamara Rathcke, 2024-10-07 The relationship between diachronic change and synchronic variation at the articulatory auditory acoustic and social level is one of the greatest puzzles in the study of language Even though plentiful examples exist to suggest that dynamics of synchronic variation and diachronic change are tightly interconnected a unified theory to account for language change in its relationship to all layers of synchronic variation remains a desideratum This volume compiles new evidence from articulatory acoustic auditory sociolinguistic and phonological analyses of segmental and prosodic data and computational modelling and offers a refreshing theoretical angle on the ongoing debates in language change The volume is divided into three sections each focusing on one aspect of speech dynamics the historical the emerging and the theoretical each making a step toward a unified view of speech dynamics at the interface of synchronic variation and diachronic change The large range of methodologies and theories represented in this book will appeal to scholars from a variety of linguistic fields with an interest in speech dynamics including phoneticians phonologists sociolinguists typologists computational and historical linguists

Cooperation and Collective Action David M. Carballo, 2012-12-15 Past archaeological literature on cooperation theory has emphasized competition's role in cultural evolution As a result bottom up possibilities for group cooperation have been under theorized in favor of models stressing top down leadership while evidence from a range of disciplines has demonstrated humans to effectively sustain cooperative undertakings through a number of social norms and institutions *Cooperation and Collective Action* is the first volume to focus on the use of archaeological evidence to understand cooperation and collective action Disentangling the motivations and institutions that foster group cooperation among competitive individuals remains one of the few great conundrums within evolutionary theory The breadth and material focus of archaeology provide a much needed complement to existing research on cooperation and collective action which thus far has relied largely on game theoretic modeling surveys of college students from affluent countries brief ethnographic experiments and limited historic cases In *Cooperation and Collective Action* diverse case studies address the evolution of the emergence of norms institutions and symbols of complex societies through the last 10 000 years This book is an important contribution to the literature on cooperation in human societies that will appeal to archaeologists and other scholars interested in cooperation research

Archaeological Theory Today Ian Hodder, 2014-02-27 Now in a revised and updated second edition this volume provides an authoritative account of the current status of archaeological theory as presented by some of its major exponents and innovators over recent decades It summarizes the latest developments in the field and looks to its future exploring some of the cutting edge ideas at the

forefront of the discipline The volume captures the diversity of contemporary archaeological theory Some authors argue for an approach close to the natural sciences others for an engagement with cultural debate about representation of the past Some minimize the relevance of culture to societal change while others see it as central some focus on the contingent and the local others on long term evolution While few practitioners in theoretical archaeology would today argue for a unified disciplinary approach the authors in this volume increasingly see links and convergences between their perspectives The volume also reflects archaeology's new openness to external influences as well as the desire to contribute to wider debates The contributors examine ways in which archaeological evidence contributes to theories of evolutionary psychology as well as to the social sciences in general where theories of social relationships agency landscape and identity are informed by the long term perspective of archaeology The new edition of Archaeological Theory Today will continue to be essential reading for students and scholars in archaeology and in the social sciences more generally

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