

Cultural evolutionary theory: How culture evolves and why it matters

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Human cultural traits—behaviors, ideas, and technologies that can be learned from other individuals—can exhibit complex patterns of transmission and evolution, and researchers have developed theoretical models, both verbal and mathematical, to facilitate our understanding of these patterns. Many of the first quantitative models of cultural evolution were modified from existing concepts in theoretical population genetics because cultural evolution has many parallels with, as well as clear differences from, genetic evolution. Furthermore, cultural and genetic evolution can interact with one another and influence both transmission and selection. This interaction requires theoretical treatments of gene–culture coevolution and dual inheritance, in addition to purely cultural evolution. In addition, cultural evolutionary theory is a natural component of studies in demography, human ecology, and many other disciplines. Here, we review the core concepts in cultural evolutionary theory as they pertain to the extension of biology through culture, focusing on cultural evolutionary applications in population genetics, ecology, and demography. For each of these disciplines, we review the theoretical literature and highlight relevant empirical studies. We also discuss the societal implications of the study of cultural evolution and of the interactions of humans with one another and with their environment.

cultural evolution | mathematical models | gene–culture coevolution | niche construction | demography

Human culture encompasses ideas, behaviors, and artifacts that can be learned and transmitted between individuals and can change over time [1]. This process of transmission and change is reminiscent of Darwin's principle of descent with modification through natural selection, and Darwin himself drew this explicit link in the case of languages: "The formation of different languages and of distinct species, and the proofs that both have been developed through a gradual process, are curiously parallel" [2,3]. Theory underpins most scientific endeavors, and, in the 1970s, researchers began to lay the groundwork for cultural evolutionary theory, building on the neo-Darwinian synthesis of genetics and evolution by using verbal, diagrammatic, and mathematical models [4–8]. These models are, by necessity, approximations of reality [9], but because they require researchers to specify their assumptions and extract the most important features from complex processes, they have proven exceedingly useful in advancing the study of cultural evolution [10]. Here, we review the field of cultural evolutionary theory as it pertains to the extension of biology through culture. We focus on human culture because the bulk of cultural evolutionary models are human-centric and certain processes such as cumulative culture seem to be unique to humans. However, numerous nonhuman species also exhibit cultural transmission, and we consider the areas of overlap between models of human and animal culture in Discussion.

The study of cultural evolution is important beyond its academic value. Cultural evolution is a fundamentally interdisciplinary field, bridging gaps between academic disciplines and facilitating connections between disparate approaches. For example, the advent of technologies for revealing genomic variation has led to a plethora of studies that measure associations

between DNA variants and traits that have major cultural components, such as years of schooling, marriage choices, IQ test results, and poverty. Perhaps because of the perceived greater precision of the genomic data, these culturally transmitted components have been relegated to the deep background, creating a misleading public portrayal of the traits as being predetermined by genetics (see, e.g., ref. [1]). Models of the dynamics of interaction among culture, demography, and genetics, which uncover the complexities in the determination of these behaviors and traits, are crucial to remedy this potentially dangerous misinterpretation.

Here, we explore the ways in which cultural evolutionary theory and its applications enhance our understanding of human history and human biology, focusing on the links between cultural evolutionary theory and population genetics, human behavioral ecology, and demography. Throughout, we give examples of efforts to apply theory to data, linking models of cultural evolution to empirical studies of genetics, language, archaeology, and anthropology. For example, studies of cultural factors, including language and customs, help biologists interpret patterns of genetic evolution that might be misinterpreted if the cultural context were not taken into account. Finally, we outline several societal implications of cultural evolutionary theory.

Population Genetics and Cultural Evolution

Many of the first models of cultural evolution drew explicit parallels between culture and genes by modifying concepts from theoretical population genetics and applying them to culture. Cultural patterns of transmission, innovation, random fluctuations, and selection are conceptually analogous to genetic processes of transmission, mutation, drift, and selection, and many of the mathematical techniques used to study genetics can be useful in the study of culture [1,12]. However, these mathematical approaches had to be modified to account for the differences between genetic and cultural transmission. For example, we do not expect cultural transmission to follow the rules of genetic transmission strictly. Indeed, cultural traits are likely to deviate from all three laws of Mendelian inheritance: segregation, independent assortment, and dominance [13].

The simple observation that cultural traits need not conform to Mendelian inheritance is sufficient to produce complex evolutionary dynamics. If children are likely to reject a cultural trait that both of their parents possess, the frequency of that trait in the population may oscillate between generations [4]. In addition, if two biological parents have different forms of a cultural trait, their child is not necessarily equally likely to acquire the

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Culture Evolves Culture Evolves

**R. Alexander Bentley, Michael J.
O'Brien**

Culture Evolves

Evolution of Culture Robin Dunbar, 2019-07-29 This book explores the ways in which contemporary evolutionary thinking might inform the study of the peculiarly human phenomenon of symbolic culture including language ritual religion religion and art. It draws together contributions from biologists linguists anthropologists and archaeologists in order to establish common ground where collaboration and interaction will be especially productive and challenging in the study of those fundamental aspects of our biology that makes us human. Multidisciplinary An evolutionary approach to culture

Culture Evolves Andrew Whiten, 2012 Culture broadly defined as all we learn from others that endures for long enough to generate customs and traditions shapes vast swathes of our lives and has allowed the human species to dominate the planet in an evolutionarily unique way. Culture and cultural evolution are uniquely significant phenomena in evolutionary biology they are products of biological evolution yet they supplement genetic transmission with social transmission thus achieving a certain independence from natural selection. However cultural evolution nevertheless expresses key Darwinian processes itself and also interacts with genetic evolution. Just how culture fits into the grander framework of evolution is a big issue though yet one that has received relatively little scientific attention compared to for example genetic evolution. Our capacity for culture appears so distinctive among animals that it is often thought to separate us cultural beings from the rest of nature and the Darwinian forces that shape us. Culture Evolves presents a different view arising from the recent discoveries of a diverse range of disciplines that focus on evolutionary continuities. First recent studies reveal that learning from others and the transmission of traditions are more widespread and significant across the animal kingdom than earlier recognized helping us understand the evolutionary roots of culture. Second archaeological discoveries have pushed back the origins of human culture to much more ancient times than traditionally thought. These developments together suggest important continuities between animal and human culture. A third new array of discoveries concerns the later diversification of human cultures where the operations of Darwinian like cultural evolutionary processes are increasingly identified. Finally surprising discoveries have been made about the imprint of cultural evolution in children's predisposition to acquire culture. The result of a major interdisciplinary meeting held by the Royal Society and the British Academy this book presents the work of leading experts from the fields of ethology behavioural ecology primatology comparative psychology archaeology anthropology evolutionary biology and developmental psychology.

Evolution and Culture Thomas G. Harding, 1960 A unified interpretation of the evolution of species humanity and society. **Culture Evolves** Andrew Whiten, 2012 Culture broadly defined as all we learn from others that endures for long enough to generate customs and traditions shapes vast swathes of our lives and has allowed the human species to dominate the planet in an evolutionarily unique way. Culture and cultural evolution are uniquely significant phenomena in evolutionary biology they are products of biological evolution yet they supplement genetic transmission with social transmission thus achieving a certain independence from natural selection

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Society and Culture: Evolving Perspectives in Sociology and Anthropology Dr. S. VENKATA PRASAD RAO, Dr. DONIPATI SUMALATHA, 2025-05-06. *Society and Culture: Evolving Perspectives in Sociology and Anthropology* edited by Dr Venkata Prasad Rao, Sriram and Dr Donipati Sumalatha is a comprehensive academic volume that brings together diverse scholarly contributions from students, researchers, and faculty members. This book explores a wide array of sociological and anthropological themes, shedding light on the ever-changing nature of human societies and cultural practices. The chapters in this book cover various theoretical perspectives, empirical studies, and contemporary debates in both disciplines, offering valuable insights into social structures, cultural transformations, identity formations, globalization, and the impact of modernity on traditional societies. By incorporating interdisciplinary approaches, the book bridges the gap between classical theories and contemporary societal challenges, making it a valuable resource for students, academics, and professionals engaged in sociology and anthropology. With contributions from a range of authors, the book ensures a multifaceted discussion that highlights regional, national, and global contexts. It aims to enhance readers' understanding of how societies function, evolve, and respond to social, political, and economic changes. This collection serves as a significant academic reference, fostering critical thinking and encouraging further research into the complex relationships between society and culture in the modern world.

The Origin and Evolution of Cultures Robert Boyd, Peter J. Richerson, 2005-01-20. *The Origin and Evolution of Cultures* presents articles based on two notions: that culture is crucial for understanding human behaviour and that culture is part of biology. Interest in this collection will span anthropology, psychology, economics, philosophy, and political science.

The Evolution of Culture Stefan Linquist, 2017-03-02 Recent years have seen a transformation in thinking about the nature of culture. Rather than viewing culture in opposition to biology, a growing number of researchers now regard culture as subject to evolutionary processes. Recent developments in this field have shifted some of the traditional academic fault lines. Alliances are forming between researchers trained in anthropology, evolutionary biology, psychology, and philosophy. Meanwhile, several distinct schools of thought have appeared which differ in their vision of what an evolutionary approach to culture should look like. This volume contains some of the most influential publications on these subjects from the past few decades. A theoretical background chapter and critical introduction identify the core issues at stake in the new study of cultural evolution. These chapters are followed by sections on each of the four dominant approaches: the phylogenetic approach, memetics, dual inheritance theory, and niche construction. Following these are two chapters on closely related topics: the psychological mechanisms of culture and the existence of culture in non-human animals. Overall, this volume provides an up-to-date overview of some of the most exciting trends in contemporary evolutionary thought.

Cultural Evolution

Charles Abram Ellwood, 1927 **Techno-Cultural Evolution** William McDonald Wallace, 2007 Evolution has long shaped human behavior. Yet just recently have we learned that evolution based on natural selection is not the continuous process Darwin assumed. It is instead a two-part process of change and stability called punctuated equilibrium, with natural selection operating mainly on the frontiers of change. Taking account of biology's latest understanding of evolution, it becomes clear that culture evolves by a similar process. This is important because over the past 30,000 years most human evolution and the behavioral changes that go with it have occurred in our cultures, not in our genes. Knowing the process by which culture evolves clarifies the origin of many of our current problems both within and between cultures. The author contends that new technology drives cultural evolution much as mutations change our DNA. The problem is that technology is now coming at us so fast that it is inducing circuit overload in cultures all over the world, leading to conflict. Techno-Cultural Evolution, which builds on the insights of such bestsellers as Jared Diamond's *Guns, Germs, and Steel* and *Collapse*, explains how this process works and what it means for all of us.

Cultural Evolution Alex Mesoudi, 2024-05-31 Charles Darwin changed the course of scientific thinking by showing how evolution accounts for the stunning diversity and biological complexity of life on earth. Recently there has also been increased interest in the social sciences in how Darwinian theory can explain human culture. Covering a wide range of topics including fads, public policy, the spread of religion, and herd behavior in markets, Alex Mesoudi shows that human culture is itself an evolutionary process that exhibits the key Darwinian mechanisms of variation, competition, and inheritance. This cross-disciplinary volume focuses on the ways cultural phenomena can be studied scientifically, from theoretical modeling to lab experiments, archaeological fieldwork to ethnographic studies, and shows how apparently disparate methods can complement one another to the mutual benefit of the various social science disciplines. Along the way the book reveals how new insights arise from looking at culture from an evolutionary angle.

Cultural Evolution

provides a thought provoking argument that Darwinian evolutionary theory can both unify different branches of inquiry and enhance understanding of human behavior *The Acceleration of Cultural Change* R. Alexander Bentley, Michael J. O'Brien, 2024-05-21

How culture evolves through algorithms rather than knowledge inherited from ancestors From our hunter gatherer days we humans evolved to be excellent throwers chewers and long distance runners We are highly social crave Paleolithic snacks and display some gendered difference resulting from mate selection But we now find ourselves binge viewing texting while driving and playing Minecraft Only the collective acceleration of cultural and technological evolution explains this development The evolutionary psychology of individuals the drive for food and sex explains some of our current habits but our evolutionary success Alex Bentley and Mike O'Brien explain lies in our ability to learn cultural know how and to teach it to the next generation Today we are following social media bots as much as we are learning from our ancestors We are radically changing the way culture evolves Bentley and O'Brien describe how the transmission of culture has become vast and instantaneous across an Internet of people and devices after millennia of local ancestral knowledge that evolved slowly Long evolved cultural knowledge is aggressively discounted by online algorithms which prioritize popularity and recency If children are learning more from Minecraft than from tradition this is a profound shift in cultural evolution Bentley and O'Brien examine the broad and shallow model of cultural evolution seen today in the science of networks prediction markets and the explosion of digital information They suggest that in the future artificial intelligence could be put to work to solve the problem of information overload learning to integrate concepts over the vast idea space of digitally stored information *The Evolution of Culture, and Other Essays* Augustus Henry Lane-Fox Pitt-Rivers, 2020-01-09

In *The Evolution of Culture and Other Essays* Augustus Henry Lane Fox Pitt Rivers explores the intricate relationship between culture and human evolution presenting a series of essays that delve into anthropology archaeology and sociology Through meticulous analysis and a comparative approach Pitt Rivers illuminates the ways in which cultural practices evolve over time influenced by both environmental factors and social interactions His literary style marked by clarity and rigor invites readers to question dogmas of cultural stagnation and appreciate the dynamic nature of human societies within a historical context Pitt Rivers a pioneering figure in archaeology and a prominent anthropologist of the 19th century was deeply influenced by the burgeoning ideas of evolutionary theory His extensive fieldwork and keen observations of indigenous cultures provided him with firsthand insight into the variability and complexity of human customs This background allowed him to formulate a nuanced understanding of culture as a living entity constantly shaped by its interactions with various ecological and societal factors This compelling collection is essential reading for anyone interested in anthropology cultural studies or history Pitt Rivers incisive perspectives not only enhance our understanding of cultural evolution but also challenge us to consider the implications of these ideas in contemporary society Engage with this seminal work to enrich your appreciation of the ever evolving tapestry of human experience **The Origin and Evolution of Cultures** Los Angeles Robert Boyd Professor of

Anthropology University of California,Davis Peter J. Richerson Professor of Environmental Science and Policy University of California,2004-12-22 Oxford presents in one convenient and coherently organized volume 20 influential but until now relatively inaccessible articles that form the backbone of Boyd and Richerson s path breaking work on evolution and culture Their interdisciplinary research is based on two notions First that culture is crucial for understanding human behavior unlike other organisms socially transmitted beliefs attitudes and values heavily influence our behavior Secondly culture is part of biology the capacity to acquire and transmit culture is a derived component of human psychology and the contents of culture are deeply intertwined with our biology Culture then is a pool of information stored in the brains of the population that gets transmitted from one brain to another by social learning processes Therefore culture can account for both our outstanding ecological success as well as the maladaptations that characterize much of human behavior The interest in this collection will span anthropology psychology economics philosophy and political science

Evolution, Culture, and the Human Mind

Mark Schaller,Ara Norenzayan,Steven J. Heine,Toshio Yamagishi,Tatsuya Kameda,2011-03-17 Evolution Culture and the Human Mind is the first scholarly book to integrate evolutionary and cultural perspectives on human psychology The contributors include world renowned evolutionary cultural social and cognitive psychologists These chapters reveal many novel insights linking human evolution to both human cognition and human culture including the evolutionary origins of cross cultural differences

Continuities in Cultural Evolution Margaret Mead,2017-07-12 Margaret Mead once said I have spent most of my life studying the lives of other peoples faraway peoples so that Americans might better understand themselves Continuities in Cultural Evolution is evidence of this devotion All of Mead s efforts were intended to help others learn about themselves and work toward a more humane and socially responsible society Scientist writer explorer and teacher Mead brought the serious work of anthropology into the public consciousness This volume began as the Terry Lectures given at Yale in 1957 and was not published until 1964 after extensive reworking The time she spent on revision is evidence of the importance Mead attached to the subject the need to develop a truly evolutionary vision of human culture and society This was desirable in her eyes both in order to reinforce the historical dimension in our ideas about human culture and to preserve the relevance of historical and cultural diversity to social economic and political action Given the present state of academic and public discourse alike this volume speaks to us in a language we badly need to recover

The Social Sciences and Their Interrelations William F. Ogburn,Alexander Goldenweiser,1927 The Concept of Evolution and Its Application to Cultural Phenomena Stuart Merrill Peters,1982

Cultural Evolution Kevin McCaffree,2022-03-14 Since the dawn of social science theorists have debated how and why societies appear to change develop and evolve Today this question is pursued by scholars across many different disciplines and our understanding of these dynamics has grown markedly Yet there remain important areas of disagreement and debate what is the difference between societal change development and evolution What specific aspects of cultures change develop or evolve and why Do societies change develop

or evolve in particular ways perhaps according to cycles or stages or in response to survival necessities How do different disciplines from sociology to anthropology to psychology and economics approach these questions This book provides complex and nuanced answers to these and many other questions First the book invites readers to consider the broad landscape of societal dynamics across human history beginning with humanity's origins in small nomadic bands of hunter gatherers through to the emergence of post industrial democracies Then the book provides a tour of several prominent existing theories of cultural change development and evolution Approaches to explaining cultural dynamics will be discussed across disciplines and schools of thought from meme theories to established cumulative cultural evolutionary theories to newly emerging theories on cultural tightness looseness The book concludes with a call for theoretical integration and a frank discussion of some of the most unexamined structures that drive cultural dynamics across schools of thought

Man and Culture Clark Wissler, 1923 1923 A group of lectures given by Wissler at the State Universities of Michigan Iowa Nebraska and Kansas and also before the Anthropological Society of St Louis and the Galton Society of New York The object of these lectures was to present the problems and scope of contemporary anthropology and recognizing that the most pertinent question before us as a people is the relation of civilization to man the emphasis in these pages has been placed upon culture and its biological background *The Evolution of Culture* Augustus Henry Lane-Fox Pitt-Rivers, 1906 Ed by J L Myres With an introduction by Henry Balfour

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