

# The Dominant Animal Human Evolution And Environment Paul R Ehrlich

A complete account of evolutionary thought in the social, environmental and policy sciences, creating bridges with biology.

Biodiversity-the genetic variety of life-is an exuberant product of the evolutionary past, a vast human-supportive resource (aesthetic, intellectual, and material) of the present, and a rich legacy to cherish and preserve for the future. Two urgent challenges, and opportunities, for 21st-century science are to gain deeper insights into the evolutionary processes that foster biotic diversity, and to translate that understanding into workable solutions for the regional and global crises that biodiversity currently faces. A grasp of evolutionary principles and processes is important in other societal arenas as well, such as education, medicine, sociology, and other applied fields including agriculture, pharmacology, and biotechnology. The ramifications of evolutionary thought also extend into learned realms traditionally reserved for philosophy and religion. The central goal of the In the Light of Evolution (ILE) series is to promote the evolutionary sciences through state-of-the-art colloquia-in the series of Arthur M. Sackler colloquia sponsored by the National Academy of Sciences-and their published proceedings. Each installment explores evolutionary perspectives on a particular biological topic that is scientifically intriguing but also has special

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relevance to contemporary societal issues or challenges. This tenth and final edition of the In the Light of Evolution series focuses on recent developments in phylogeographic research and their relevance to past accomplishments and future research directions. Powerful, impassioned essays on living and being in the world, from the bestselling author of *The End of Nature* and *Deep Economy* For a generation, Bill McKibben has been among America's most impassioned and beloved writers on our relationship to our world and our environment. His groundbreaking book on climate change, *The End of Nature*, is considered "as important as Rachel Carson's classic *Silent Spring*"\* and *Deep Economy*, his "deeply thoughtful and mind-expanding"\*\*\* exploration of globalization, helped awaken and fuel a movement to restore local economies. Now, for the first time, the best of McKibben's essays—fiery, magical, and infused with his uniquely soulful investigations of modern life—are collected in a single volume, *The Bill McKibben Reader*. Whether meditating on today's golden age in radio, the natural place of biting black flies in our lives, or the patriotism of a grandmother fighting to get corporate money out of politics, McKibben inspires us to become better caretakers of the Earth—and of one another. \**The Plain Dealer* (Cleveland ) \*\*Michael Pollan Creates three-dimensional scientific reconstructions for twenty-two species of extinct humans, providing information for each one on its emergence, chronology, geographic range, classification, physiology, environment, habitat, cultural achievements, coex Travis Rayne Pickering argues that the advent of

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ambush hunting approximately two million years ago marked a milestone in human evolution, one that established the social dynamic that allowed our ancestors to expand their range and diet. He challenges the traditional link between aggression and human predation, however, claiming that while aggressive attack is a perfectly efficient way for our chimpanzee cousins to kill prey, it was a hopeless tactic for early human hunters, who—in comparison to their large, potentially dangerous prey—were small, weak, and slow-footed. Technology that evolved from wooden spears to stone-tipped spears and ultimately to the bow and arrow increased the distance between predator and prey and facilitated an emotional detachment that allowed hunters to stalk and kill large game. Based on studies of humans and of other primates, as well as on fossil and archaeological evidence, *Rough and Tumble* offers a new perspective on human evolution by decoupling ideas of aggression and predation to build a more realistic understanding of what it is to be human.

New York Times Bestseller From the most celebrated heir to Darwin comes a groundbreaking book on evolution, the summa work of Edward O. Wilson's legendary career. Sparking vigorous debate in the sciences, *The Social Conquest of Earth* upends “the famous theory that evolution naturally encourages creatures to put family first” (*Discover*). Refashioning the story of human evolution, Wilson draws on his remarkable knowledge of biology and social behavior to demonstrate that group selection, not kin selection, is the premier driving force of human evolution. In a work that

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James D. Watson calls “a monumental exploration of the biological origins of the human condition,” Wilson explains how our innate drive to belong to a group is both a “great blessing and a terrible curse” (Smithsonian). Demonstrating that the sources of morality, religion, and the creative arts are fundamentally biological in nature, the renowned Harvard University biologist presents us with the clearest explanation ever produced as to the origin of the human condition and why it resulted in our domination of the Earth’s biosphere.

There exists an undeniable chasm between the capacities of humans and those of animals. Our minds have spawned civilizations and technologies that have changed the face of the Earth, whereas even our closest animal relatives sit unobtrusively in their dwindling habitats. Yet despite longstanding debates, the nature of this apparent gap has remained unclear. What exactly is the difference between our minds and theirs? In *The Gap*, psychologist Thomas Suddendorf provides a definitive account of the mental qualities that separate humans from other animals, as well as how these differences arose. Drawing on two decades of research on apes, children, and human evolution, he surveys the abilities most often cited as uniquely human -- language, intelligence, morality, culture, theory of mind, and mental time travel -- and finds that two traits account for most of the ways in which our minds appear so distinct: Namely, our open-ended ability to imagine and reflect on scenarios, and our insatiable drive to link our minds together. These two traits explain how our species was

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able to amplify qualities that we inherited in parallel with our animal counterparts; transforming animal communication into language, memory into mental time travel, sociality into mind reading, problem solving into abstract reasoning, traditions into culture, and empathy into morality. Suddendorf concludes with the provocative suggestion that our unrivalled status may be our own creation -- and that the gap is growing wider not so much because we are becoming smarter but because we are killing off our closest intelligent animal relatives. Weaving together the latest findings in animal behavior, child development, anthropology, psychology, and neuroscience, this book will change the way we think about our place in nature. A major argument for reconsidering what makes us human, *The Gap* is essential reading for anyone interested in our evolutionary origins and our relationship with the rest of the animal kingdom.

Sale asserts that vestiges of a more ecologically sound way of life do exist today, offering redemptive possibilities for ourselves and for the planet."--BOOK JACKET.

The origins of religion and ritual in humans have been the focus of centuries of thought in archaeology, anthropology, theology, evolutionary psychology and more. Play and ritual have many aspects in common, and ritual is a key component of the early cult practices that underlie the religious systems of the first complex societies in all parts of the world. This book examines the formative cults and the roots of religious practice from the earliest times until the development of early religion in the Near East, in China, in Peru, in Mesoamerica and beyond. Here, leading prehistorians and other specialists

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bring a fresh approach to the early practices that underlie the faiths and religions of the world. They demonstrate the profound role of play ritual and belief systems and offer powerful new insights into the emergence of early civilization. Today many school students are shielded from one of the most important concepts in modern science: evolution. In engaging and conversational style, *Teaching About Evolution and the Nature of Science* provides a well-structured framework for understanding and teaching evolution. Written for teachers, parents, and community officials as well as scientists and educators, this book describes how evolution reveals both the great diversity and similarity among the Earth's organisms; it explores how scientists approach the question of evolution; and it illustrates the nature of science as a way of knowing about the natural world. In addition, the book provides answers to frequently asked questions to help readers understand many of the issues and misconceptions about evolution. The book includes sample activities for teaching about evolution and the nature of science. For example, the book includes activities that investigate fossil footprints and population growth that teachers of science can use to introduce principles of evolution. Background information, materials, and step-by-step presentations are provided for each activity. In addition, this volume: Presents the evidence for evolution, including how evolution can be observed today. Explains the nature of science through a variety of examples. Describes how science differs from other human endeavors and why evolution is one of the best avenues for helping students understand this distinction. Answers frequently asked questions about evolution. *Teaching About Evolution and the Nature of Science* builds on the 1996 National Science Education Standards released by the National Research Council--and offers detailed guidance on how to evaluate and choose instructional

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materials that support the standards. Comprehensive and practical, this book brings one of today's educational challenges into focus in a balanced and reasoned discussion. It will be of special interest to teachers of science, school administrators, and interested members of the community.

A theory of human evolution and history based on ever-increasing mutual dependency between humans and things In this engaging exploration, archaeologist Ian Hodder departs from the two prevailing modes of thought about human evolution: the older idea of constant advancement toward a civilized ideal and the newer one of a directionless process of natural selection. Instead, he proposes a theory of human evolution and history based on "entanglement," the ever-increasing mutual dependency between humans and things. Not only do humans become dependent on things, Hodder asserts, but things become dependent on humans, requiring an endless succession of new innovations. It is this mutual dependency that creates the dominant trend in both cultural and genetic evolution. He selects a small number of cases, ranging in significance from the invention of the wheel down to Christmas tree lights, to show how entanglement has created webs of human-thing dependency that encircle the world and limit our responses to global crises.

The hominin fossil record documents a history of critical evolutionary events that have ultimately shaped and defined what it means to be human, including the origins of bipedalism; the emergence of our genus *Homo*; the first use of stone tools; increases in brain size; and the emergence of *Homo sapiens*, tools, and culture. The Earth's geological record suggests that some evolutionary events were coincident with substantial changes in African and Eurasian climate, raising the possibility that critical junctures in human evolution and behavioral development may have been affected by the environmental characteristics of the areas

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where hominins evolved. Understanding Climate's Change on Human Evolution explores the opportunities of using scientific research to improve our understanding of how climate may have helped shape our species. Improved climate records for specific regions will be required before it is possible to evaluate how critical resources for hominins, especially water and vegetation, would have been distributed on the landscape during key intervals of hominin history. Existing records contain substantial temporal gaps. The book's initiatives are presented in two major research themes: first, determining the impacts of climate change and climate variability on human evolution and dispersal; and second, integrating climate modeling, environmental records, and biotic responses. Understanding Climate's Change on Human Evolution suggests a new scientific program for international climate and human evolution studies that involve an exploration initiative to locate new fossil sites and to broaden the geographic and temporal sampling of the fossil and archeological record; a comprehensive and integrative scientific drilling program in lakes, lake bed outcrops, and ocean basins surrounding the regions where hominins evolved and a major investment in climate modeling experiments for key time intervals and regions that are critical to understanding human evolution.

Man the Hunted argues that primates, including the earliest members of the human family, have evolved as the prey of any number of predators, including wild cats and dogs, hyenas, snakes, crocodiles, and even birds. The authors' studies of predators on monkeys and apes are supplemented here with the observations of naturalists in the field and revealing interpretations of the fossil record. Eyewitness accounts of the 'man the hunted' drama being played out even now give vivid evidence of its prehistoric significance. This provocative view of human evolution suggests that



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countless adaptations that have allowed our species to survive (from larger brains to speech), stem from a considerably more vulnerable position on the food chain than we might like to imagine. The myth of early humans as fearless hunters dominating the earth obscures our origins as just one of many species that had to be cautious, depend on other group members, communicate danger, and come to terms with being merely one cog in the complex cycle of life. In humanity's more than 100,000 year history, we have evolved from vulnerable creatures clawing sustenance from Earth to a sophisticated global society manipulating every inch of it. In short, we have become the dominant animal. Why, then, are we creating a world that threatens our own species? What can we do to change the current trajectory toward more climate change, increased famine, and epidemic disease? Renowned Stanford scientists Paul R. Ehrlich and Anne H. Ehrlich believe that intelligently addressing those questions depends on a clear understanding of how we evolved and how and why we're changing the planet in ways that darken our descendants' future. The Dominant Animal arms readers with that knowledge, tracing the interplay between environmental change and genetic and cultural evolution since the dawn of humanity. In lucid and engaging prose, they describe how Homo sapiens adapted to their surroundings, eventually developing the vibrant cultures, vast scientific knowledge, and technological wizardry we know today. But the Ehrlichs also explore the flip side of this triumphant story of innovation and conquest. As we clear forests to raise crops and build cities, lace the continents with highways, and create chemicals never before seen in nature, we may be undermining our own supremacy. The threats of environmental damage are clear from the daily headlines, but the outcome is far from destined. Humanity can again adapt—if we learn from our evolutionary past. Those lessons

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are crystallized in *The Dominant Animal*. Tackling the fundamental challenge of the human predicament, Paul and Anne Ehrlich offer a vivid and unique exploration of our origins, our evolution, and our future.

A FINALIST FOR THE PULITZER PRIZE NAMED A BEST BOOK OF THE YEAR BY THE NEW YORK TIMES BOOK REVIEW, SMITHSONIAN, AND WALL STREET JOURNAL A major reimagining of how evolutionary forces work, revealing how mating preferences—what Darwin termed "the taste for the beautiful"—create the extraordinary range of ornament in the animal world. In the great halls of science, dogma holds that Darwin's theory of natural selection explains every branch on the tree of life: which species thrive, which wither away to extinction, and what features each evolves. But can adaptation by natural selection really account for everything we see in nature? Yale University ornithologist Richard Prum—reviving Darwin's own views—thinks not. Deep in tropical jungles around the world are birds with a dizzying array of appearances and mating displays: Club-winged Manakins who sing with their wings, Great Argus Pheasants who dazzle prospective mates with a four-foot-wide cone of feathers covered in golden 3D spheres, Red-capped Manakins who moonwalk. In thirty years of fieldwork, Prum has seen numerous display traits that seem disconnected from, if not outright contrary to, selection for individual survival. To explain this, he dusts off Darwin's long-neglected theory of sexual selection in which the act of choosing a mate for purely aesthetic reasons—for the mere pleasure of it—is an independent engine of evolutionary change. Mate choice can drive ornamental traits from the constraints of adaptive evolution, allowing them to grow ever more elaborate. It also sets the stakes for sexual conflict, in which the sexual autonomy of the female evolves in response to male sexual control. Most crucially, this framework provides important

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insights into the evolution of human sexuality, particularly the ways in which female preferences have changed male bodies, and even maleness itself, through evolutionary time. The Evolution of Beauty presents a unique scientific vision for how nature's splendor contributes to a more complete understanding of evolution and of ourselves.

A bold, illuminating new take on the love of animals that drove human evolution. Why do humans all over the world take in and nurture other animals? This behavior might seem maladaptive—after all, every mouthful given to another species is one that you cannot eat—but in this heartening new study, acclaimed anthropologist Pat Shipman reveals that our propensity to domesticate and care for other animals is in fact among our species' greatest strengths. For the last 2.6 million years, Shipman explains, humans who coexisted with animals enjoyed definite adaptive and cultural advantages. To illustrate this point, Shipman gives us a tour of the milestones in human civilization—from agriculture to art and even language—and describes how we reached each stage through our unique relationship with other animals. The Animal Connection reaffirms our love of animals as something both innate and distinctly human, revealing that the process of domestication not only changed animals but had a resounding impact on us as well.

Dan Lieberman has written an innovative, exhaustively researched and carefully argued book dealing with the evolution of the human head. In it he addresses three interrelated questions. First, why does the human head look the way it does? Second, why did these transformations occur? And third, how is something as complex and vital as the head so variable and evolvable? This book addresses these questions in three sections. The first set of chapters review how human and ape heads grow, both in terms of individual parts (organs and regions) and as an integrated

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whole. The second section reviews how the head performs its major functions: housing the brain, chewing, swallowing, breathing, vocalizing, thermoregulating, seeing, hearing, tasting, smelling, and balancing during locomotion. The final set of chapters review the fossil evidence for major transformations of the head during human evolution from the divergence of the human and ape lineages through the origins of *Homo sapiens*. These chapters use developmental and functional insights from the first two sections to speculate on the developmental and selective bases for these transformations.

Though we have other distinguishing characteristics (walking on two legs, for instance, and relative hairlessness), the brain and the behavior it produces are what truly set us apart from the other apes and primates. And how this three-pound organ composed of water, fat, and protein turned a mammal species into the dominant animal on earth today is the story John S. Allen seeks to tell.

Everyone wonders what tomorrow holds, but what will the real future look like? Not decades or even hundreds of years from now, but thousands or millions of years into the future. Will our species change radically? Or will we become builders of the next dominant intelligence on Earth- the machine? These and other seemingly fantastic scenarios are the very possible realities explored in Peter Ward's *Future Evolution*, a penetrating look at what might come next in the history of the planet. Looking to the past for clues about the future, Ward describes how the main catalyst for evolutionary change has historically been mass extinction. While many scientist direly predict that humanity will eventually create such a situation, Ward argues that one is already well underway--the extinction of large mammals--and that a new Age of Humanity is coming that will radically revise the diversity of life on Earth. Finally, Ward examines the question of human extinction and

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reaches the startling conclusion that the likeliest scenario is not our imminent demise but long term survival--perhaps reaching as far as the death of the Sun! Full of Alexis Rockman's breathtaking color images of what animals, plants and other organisms might look like thousands and millions of years from now, Future Evolution takes readers on an incredible journey through time from the deep past into the far future.

Dominance and Aggression in Humans and Other Animals: The Great Game of Life examines human nature and the influence of evolution, genetics, chemistry, nurture, and the sociopolitical environment as a way of understanding how and why humans behave in aggressive and dominant ways. The book walks us through aggression in other social species, compares and contrasts human behavior to other animals, and then explores specific human behaviors like bullying, abuse, territoriality murder, and war. The book examines both individual and group aggression in different environments including work, school, and the home. It explores common stressors triggering aggressive behaviors, and how individual personalities can be vulnerable to, or resistant to, these stressors. The book closes with an exploration of the cumulative impact of human aggression and dominance on the natural world. Reviews the influence of evolution, genetics, biochemistry, and nurture on aggression Explores aggression in multiple species, including insects, fish, reptiles, birds, and mammals Compares human and animal aggressive and dominant behavior Examines bullying, abuse, territoriality, murder, and war Includes nonaggressive behavior in displays of respect and tolerance Highlights aggression triggers from drugs to stress Discusses individual and group behavior, including organizations and nations Probes dominance and aggression in religion and politics Translates the impact of human behavior over time on the

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natural world

Only then will we have any hope of preventing the worst-case scenario of the sixth mass extinction.

Russell Tuttle synthesizes a vast literature in primate evolution and behavior to explain how apes and humans evolved in relation to one another and why humans became a bipedal, tool-making, culture-inventing species distinct from other hominoids. He refutes the theory that we are sophisticated, instinctively aggressive and destructive killer apes.

Why do humans, uniquely among animals, cooperate in large numbers to advance projects for the common good? Contrary to the conventional wisdom in biology and economics, this generous and civic-minded behavior is widespread and cannot be explained simply by far-sighted self-interest or a desire to help close genealogical kin. In *A Cooperative Species*, Samuel Bowles and Herbert Gintis--pioneers in the new experimental and evolutionary science of human behavior--show that the central issue is not why selfish people act generously, but instead how genetic and cultural evolution has produced a species in which substantial numbers make sacrifices to uphold ethical norms and to help even total strangers. The authors describe how, for thousands of generations, cooperation with fellow group members has been essential to survival. Groups that created institutions to protect the civic-minded from exploitation by the selfish flourished and prevailed in conflicts with less cooperative groups. Key to this process was the evolution of social emotions such as shame and guilt, and our capacity to internalize social norms so that acting ethically became a personal goal rather than simply a prudent way to avoid punishment. Using experimental, archaeological, genetic, and ethnographic data to calibrate models of the coevolution of genes and culture as well as prehistoric warfare and other

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forms of group competition, *A Cooperative Species* provides a compelling and novel account of how humans came to be moral and cooperative.

Humans domesticated dogs soon after Neanderthals began to disappear. This alliance between two predator species, Pat Shipman hypothesizes, made possible unprecedented success in hunting large Ice Age mammals—a distinct and ultimately decisive advantage for human invaders at a time when climate change made both humans and Neanderthals vulnerable.

Most of us never think about how we get from one place to another. For most people, putting one foot in front of the other requires no thought at all. Yet the fact that we and other species are able to do so is one of the great triumphs of evolution. To truly understand how life evolved on Earth, it is crucial to understand movement. *Restless Creatures* makes the bold new argument that the true story of evolution is the story of locomotion, from the first stirrings of bacteria to the amazing feats of Olympic athletes. By retracing the four-billion-year history of locomotion, evolutionary biologist Matt Wilkinson shows how the physical challenges of moving from place to place—when coupled with the implacable logic of natural selection—offer a uniquely powerful means of illuminating the living world. Whales and dolphins look like fish because they have been molded by the constraints of underwater locomotion. The unbending physical needs of flight have brought bats, birds, and pterodactyls to strikingly similar anatomies. *Movement* explains why we have opposable thumbs, why moving can make us feel good, how fish fins became limbs, and even why—classic fiction

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notwithstanding—there are no flying monkeys nor animals with wheels. Even plants aren't immune from locomotion's long reach: their seeds, pollen, and very form are all determined by their aptitude to disperse. From sprinting cheetah to spinning maple fruit, soaring albatross to burrowing worm, crawling amoeba to running human—all are the way they are because of how they move. There is a famous saying: "nothing in biology makes sense unless in the light of evolution." As Wilkinson makes clear: little makes sense unless in the light of locomotion. A powerful yet accessible work of evolutionary biology, *Restless Creatures* is the essential guide for understanding how life on Earth was shaped by the simple need to move from point A to point B.

In the tradition of *Guns, Germs, and Steel* and *Sapiens*, a winner of the Royal Society Prize for Science Books shows how four tools enabled us humans to control the destiny of our species "A wondrous, visionary work"—Tim Flannery, scientist and author of the bestselling *The Weather Makers* What enabled us to go from simple stone tools to smartphones? How did bands of hunter-gatherers evolve into multinational empires? Readers of *Sapiens* will say a cognitive revolution -- a dramatic evolutionary change that altered our brains, turning primitive humans into modern ones -- caused a cultural explosion. In *Transcendence*, Gaia Vince argues instead that modern humans are the product of a nuanced coevolution of our genes, environment, and culture that goes back into deep time. She explains how, through four key elements -- fire, language, beauty, and



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time -- our species diverged from the evolutionary path of all other animals, unleashing a compounding process that launched us into the Space Age and beyond.

Provocative and poetic, *Transcendence* shows how a primate took dominion over nature and turned itself into something marvelous.

In this book the author, a Harvard evolutionary biologist presents an account of how the human body has evolved over millions of years, examining how an increasing disparity between the needs of Stone Age bodies and the realities of the modern world are fueling a paradox of greater longevity and chronic disease. It illuminates the major transformations that contributed key adaptations to the body: the rise of bipedalism; the shift to a non-fruit-based diet; the advent of hunting and gathering, leading to our superlative endurance athleticism; the development of a very large brain; and the incipience of cultural proficiencies. The author also elucidates how cultural evolution differs from biological evolution, and how our bodies were further transformed during the Agricultural and Industrial Revolutions. While these ongoing changes have brought about many benefits, they have also created conditions to which our bodies are not entirely adapted, the author argues, resulting in the growing incidence of obesity and new but avoidable diseases, such as type 2 diabetes. The author proposes that many of these chronic illnesses persist and in some cases are intensifying because of 'dysevolution,' a pernicious dynamic whereby only the symptoms rather than the causes of these maladies are treated. And finally, he advocates the use of evolutionary information

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to help nudge, push, and sometimes even compel us to create a more salubrious environment. -- From publisher's web site.

“A fascinating new analysis of human violence, filled with fresh ideas and gripping evidence from our primate cousins, historical forebears, and contemporary neighbors.” —Steven Pinker, author of *The Better Angels of Our Nature* We Homo sapiens can be the nicest of species and also the nastiest. What occurred during human evolution to account for this paradox? What are the two kinds of aggression that primates are prone to, and why did each evolve separately? How does the intensity of violence among humans compare with the aggressive behavior of other primates? How did humans domesticate themselves? And how were the acquisition of language and the practice of capital punishment determining factors in the rise of culture and civilization? Authoritative, provocative, and engaging, *The Goodness Paradox* offers a startlingly original theory of how, in the last 250 million years, humankind became an increasingly peaceful species in daily interactions even as its capacity for coolly planned and devastating violence remains undiminished. In tracing the evolutionary histories of reactive and proactive aggression, biological anthropologist Richard Wrangham forcefully and persuasively argues for the necessity of social tolerance and the control of savage divisiveness still haunting us today.

Explores the impact and inconsistencies of human evolution upon human nature, examining the physical, intellectual, cultural, and sexual aspects of human

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development and behaviors in the light of current scientific theory.

How our collective intelligence has helped us to evolve and prosper Humans are a puzzling species. On the one hand, we struggle to survive on our own in the wild, often failing to overcome even basic challenges, like obtaining food, building shelters, or avoiding predators. On the other hand, human groups have produced ingenious technologies, sophisticated languages, and complex institutions that have permitted us to successfully expand into a vast range of diverse environments. What has enabled us to dominate the globe, more than any other species, while remaining virtually helpless as lone individuals? This book shows that the secret of our success lies not in our innate intelligence, but in our collective brains—on the ability of human groups to socially interconnect and learn from one another over generations. Drawing insights from lost European explorers, clever chimpanzees, mobile hunter-gatherers, neuroscientific findings, ancient bones, and the human genome, Joseph Henrich demonstrates how our collective brains have propelled our species' genetic evolution and shaped our biology. Our early capacities for learning from others produced many cultural innovations, such as fire, cooking, water containers, plant knowledge, and projectile weapons, which in turn drove the expansion of our brains and altered our physiology, anatomy, and psychology in crucial ways. Later on, some collective brains generated and recombined powerful concepts, such as the lever, wheel, screw, and writing, while also creating the institutions

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that continue to alter our motivations and perceptions. Henrich shows how our genetics and biology are inextricably interwoven with cultural evolution, and how culture-gene interactions launched our species on an extraordinary evolutionary trajectory. Tracking clues from our ancient past to the present, *The Secret of Our Success* explores how the evolution of both our cultural and social natures produce a collective intelligence that explains both our species' immense success and the origins of human uniqueness.

*Conceptual Breakthroughs in Ethology and Animal Behavior* highlights, through concise summaries, the most important discoveries and scientific revolutions in animal behavior. These are assessed for their relative impact on the field and their significance to the forward motion of the science of animal behavior. Eighty short essays capture the moment when a new concept emerged or a publication signaled a paradigm shift. How the new understanding came about is explained, and any continuing controversy or scientific conversation on the issue is highlighted. Behavior is a rich and varied field, drawing on genetics, evolution, physiology, and ecology to inform its principles, and this book embraces the wealth of knowledge that comes from the unification of these fields around the study of animals in motion. The chronological organization of the essays makes this an excellent overview of the history of animal behavior, ethology, and behavioral ecology. The work includes such topics as Darwin's role in shaping the study of animal behavior, the logic of animal contests, cognition, empathy in animals, and animal personalities. Succinct

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accounts of new revelations about behavior through scientific investigation and scrutiny reveal the fascinating story of this field. Similar to Dr. John Avise's Contemporary Breakthroughs in Evolutionary Genetics, the work is structured into vignettes that describe the conceptual revolution and assess the impact of the conceptual change, with a score, which ranges from 1-10, providing an assessment of the impact of the new findings on contemporary science. Features a lively, brisk writing style and brief entries to enable easy, enjoyable access to this essential information Includes topics that cover the range of behavioral biology from mechanism to behavioral ecology Can also be used as supplemental material for an undergraduate animal behavior course, or as the foundational text for an upper level or graduate discussion course in advanced animal behavior

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Examines human evolution, from its beginnings as a hunter-gatherer species to the dominant species on the planet, and argues that the further exploitation of the planet could be the human race's downfall.

How did we become the linguistic, cultured, and hugely successful apes that we are? Our closest relatives--the other mentally complex and socially skilled primates--offer tantalizing clues. In Tree of Origin nine of the world's top primate experts read these clues and compose the most extensive picture to date of what the behavior of monkeys and apes

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can tell us about our own evolution as a species. It has been nearly fifteen years since a single volume addressed the issue of human evolution from a primate perspective, and in that time we have witnessed explosive growth in research on the subject. *Tree of Origin* gives us the latest news about bonobos, the make love not war apes who behave so dramatically unlike chimpanzees. We learn about the tool traditions and social customs that set each ape community apart. We see how DNA analysis is revolutionizing our understanding of paternity, intergroup migration, and reproductive success. And we confront intriguing discoveries about primate hunting behavior, politics, cognition, diet, and the evolution of language and intelligence that challenge claims of human uniqueness in new and subtle ways. *Tree of Origin* provides the clearest glimpse yet of the apelike ancestor who left the forest and began the long journey toward modern humanity.

Taking an ecological approach to our evolution, Clive Finlayson considers the origins of modern humans within the context of a drying climate and changing landscapes. Finlayson argues that environmental change, particularly availability of water, played a critical role in shaping the direction of human evolution, contributing to our spread and success. He argues that our ancestors carved a niche for themselves by leaving the forest and forcing their

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way into a long-established community of carnivores in a tropical savannah as climate changes opened up the landscape. They took their chance at high noon, when most other predators were asleep. Adapting to this new lifestyle by shedding their hair and developing an active sweating system to keep cool, being close to fresh water was vital. As the climate dried, our ancestors, already bipedal, became taller and slimmer, more adept at travelling farther in search of water. The challenges of seeking water in a drying landscape moulded the minds and bodies of early humans, and directed their migrations and eventual settlements. In this fresh and provocative view of a seven-million-year evolutionary journey, Finlayson demonstrates the radical implications for the interpretation of fossils and technologies and shows that understanding humans within an ecological context provides insights into the emergence and spread of *Homo sapiens sapiens* worldwide.

The Development of an Extraordinary Species We human beings share 98 percent of our genes with chimpanzees. Yet humans are the dominant species on the planet -- having founded civilizations and religions, developed intricate and diverse forms of communication, learned science, built cities, and created breathtaking works of art -- while chimps remain animals concerned primarily with the basic necessities of survival. What is it about that two

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percent difference in DNA that has created such a divergence between evolutionary cousins? In this fascinating, provocative, passionate, funny, endlessly entertaining work, renowned Pulitzer Prize-winning author and scientist Jared Diamond explores how the extraordinary human animal, in a remarkably short time, developed the capacity to rule the world . . . and the means to irrevocably destroy it. A powerful new theory of human nature suggests that our secret to success as a species is our unique friendliness “Brilliant, eye-opening, and absolutely inspiring—and a riveting read. Hare and Woods have written the perfect book for our time.”—Cass R. Sunstein, author of *How Change Happens* and co-author of *Nudge* For most of the approximately 300,000 years that *Homo sapiens* have existed, we have shared the planet with at least four other types of humans. All of these were smart, strong, and inventive. But around 50,000 years ago, *Homo sapiens* made a cognitive leap that gave us an edge over other species. What happened? Since Charles Darwin wrote about “evolutionary fitness,” the idea of fitness has been confused with physical strength, tactical brilliance, and aggression. In fact, what made us evolutionarily fit was a remarkable kind of friendliness, a virtuosic ability to coordinate and communicate with others that allowed us to achieve all the cultural and technical marvels in human history. Advancing what they call the “self-



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domestication theory,” Brian Hare, professor in the department of evolutionary anthropology and the Center for Cognitive Neuroscience at Duke University and his wife, Vanessa Woods, a research scientist and award-winning journalist, shed light on the mysterious leap in human cognition that allowed *Homo sapiens* to thrive. But this gift for friendliness came at a cost. Just as a mother bear is most dangerous around her cubs, we are at our most dangerous when someone we love is threatened by an “outsider.” The threatening outsider is demoted to sub-human, fair game for our worst instincts. Hare’s groundbreaking research, developed in close coordination with Richard Wrangham and Michael Tomasello, giants in the field of cognitive evolution, reveals that the same traits that make us the most tolerant species on the planet also make us the cruelest. *Survival of the Friendliest* offers us a new way to look at our cultural as well as cognitive evolution and sends a clear message: In order to survive and even to flourish, we need to expand our definition of who belongs.

Numbers of peoples. Population structure and projection. The limits of the earth. Food production. Environmental threats to man. Ecosystems in jeopardy. Optimum population and human biology. Birth control. Family planning and population control. Social, political, and economic changes. The international scene.

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“Magisterial and uplifting . . . A brilliant, grandscale sampling of sixty-five million years of human evolution . . . It shows the sweep and grandeur of life in its unrelenting course.” —The Denver Post

Stretching from the distant past into the remote future, from primordial Earth to the stars, *Evolution* is a soaring symphony of struggle, extinction, and survival; a dazzling epic that combines a dozen scientific disciplines and a cast of unforgettable characters to convey the grand drama of evolution in all its awesome majesty and rigorous beauty. Sixty-five million years ago, when dinosaurs ruled the Earth, there lived a small mammal, a proto-primate of the species *Purgatorius*. From this humble beginning, Baxter traces the human lineage forward through time. The adventure that unfolds is a gripping odyssey governed by chance and competition, a perilous journey to an uncertain destination along a route beset by sudden and catastrophic upheavals. It is a route that ends, for most species, in stagnation or extinction. Why should humanity escape this fate? Praise for *Evolution* “Spectacular.”—The New York Times Book Review “Strong imagination, a capacity for awe, and the ability to think rigorously about vast and final things abound in the work of Stephen Baxter. . . . [Evolution] leaves the reader with a haunting portrayal of the distant future.”—Times Literary Supplement “A breath of fresh air . . . The miracle of

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Evolution is that it makes the triumph of life, which is its story, sound like the real story.”—The Washington Post Book World

How our ability to learn from each other has been the essential ingredient to our remarkable success as a species Human beings have evolved to become the most dominant species on Earth. This astonishing transformation is usually explained in terms of cognitive ability—people are just smarter than all the rest. But Robert Boyd argues that culture—our ability to learn from each other—has been the essential ingredient of our remarkable success. He shows how a unique combination of cultural adaptation and large-scale cooperation has transformed our species and assured our survival—making us the different kind of animal we are today. Based on the Tanner Lectures delivered at Princeton University, *A Different Kind of Animal* features challenging responses by biologist H. Allen Orr, philosopher Kim Sterelny, economist Paul Seabright, and evolutionary anthropologist Ruth Mace, as well as an introduction by Stephen Macedo.

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