

Why Information Grows The Evolution Of Order From Atoms To Economies

An ethologist shows man to be a gene machine whose world is one of savage competition and deceit

In 1996, the Institute of Medicine (IOM) released its report *Telemedicine: A Guide to Assessing Telecommunications for Health Care*. In that report, the IOM Committee on Evaluating Clinical Applications of Telemedicine found telemedicine is similar in most respects to other technologies for which better evidence of effectiveness is also being demanded. Telemedicine, however, has some special characteristics—shared with information technologies generally—that warrant particular notice from evaluators and decision makers. Since that time, attention to telehealth has continued to grow in both the public and private sectors. Peer-reviewed journals and professional societies are devoted to telehealth, the federal government provides grant funding to promote the use of telehealth, and the private technology industry continues to develop new applications for telehealth. However, barriers remain to the use of telehealth modalities, including issues related to reimbursement, licensure, workforce, and costs. Also, some areas of telehealth have developed a stronger evidence base than others. The Health Resources and Service Administration (HRSA) sponsored the IOM in holding a workshop in Washington, DC, on August 8-9 2012, to examine how the use of telehealth technology can fit into the U.S. health care system. HRSA asked the IOM to focus on the potential for telehealth to serve geographically isolated individuals and extend the reach of scarce resources while also emphasizing the quality and value in the delivery of health care services. This workshop summary discusses the evolution of telehealth since 1996, including the increasing role of the private sector, policies that have promoted or delayed the use of telehealth, and consumer acceptance of telehealth. *The Role of Telehealth in an Evolving Health Care Environment: Workshop Summary* discusses the current evidence base for telehealth, including available data and gaps in data; discuss how technological developments, including mobile telehealth, electronic intensive care units, remote monitoring, social networking, and wearable devices, in conjunction with the push for electronic health records, is changing the delivery of health care in rural and urban environments. This report also summarizes actions that the U.S. Department of Health and Human Services (HHS) can undertake to further the use of telehealth to improve health care outcomes while controlling costs in the current health care environment.

A provocative exploration of the tension between our evolutionary history and our modern woes—and what we can do about it. We are living through the most prosperous age in all of human history, yet we are listless, divided, and miserable. Wealth and comfort are unparalleled, but our political landscape is unmoored, and rates of suicide, loneliness, and chronic illness continue to skyrocket. How do we explain the gap between these truths? And how should we respond? For evolutionary biologists Heather Heying and Bret Weinstein, the cause of our troubles is clear: the accelerating rate of change in the modern world has outstripped the capacity of our brains and bodies to adapt. We evolved to live in clans, but today many people don't even know their neighbors' names. In our haste to discard outdated gender roles, we increasingly deny the flesh-and-blood realities of sex—and its ancient roots. The cognitive dissonance spawned by trying to live in a society we are not built for is killing us. In this book, Heying and Weinstein draw on decades of their work teaching in college classrooms and exploring Earth's most biodiverse ecosystems to confront today's pressing social ills—from widespread sleep deprivation and dangerous diets to damaging parenting styles and backward education practices. Asking the questions many modern people are afraid to ask, *A Hunter-Gatherer's Guide to the 21st Century* outlines a science-based worldview that will empower you to live a better, wiser life.

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How people judge humans and machines differently, in scenarios involving natural disasters, labor displacement, policing, privacy, algorithmic bias, and more. How would you feel about losing your job to a machine? How about a tsunami alert system that fails? Would you react differently to acts of discrimination depending on whether they were carried out by a machine or by a human? What about public surveillance? How Humans Judge Machines compares people's reactions to actions performed by humans and machines. Using data collected in dozens of experiments, this book reveals the biases that permeate human-machine interactions. Are there conditions in which we judge machines unfairly? Is our judgment of machines affected by the moral dimensions of a scenario? Is our judgment of machine correlated with demographic factors such as education or gender? César Hidalgo and colleagues use hard science to take on these pressing technological questions. Using randomized experiments, they create revealing counterfactuals and build statistical models to explain how people judge artificial intelligence and whether they do it fairly. Through original research, How Humans Judge Machines bring us one step closer tounderstanding the ethical consequences of AI.

Why Information GrowsThe Evolution of Order, from Atoms to EconomiesWhy Information GrowsThe Evolution of Order, from Atoms to EconomiesBasic Books

A famed political scientist's classic argument for a more cooperative world We assume that, in a world ruled by natural selection, selfishness pays. So why cooperate? In The Evolution of Cooperation, political scientist Robert Axelrod seeks to answer this question. In 1980, he organized the famed Computer Prisoners Dilemma Tournament, which sought to find the optimal strategy for survival in a particular game. Over and over, the simplest strategy, a cooperative program called Tit for Tat, shut out the competition. In other words, cooperation, not unfettered competition, turns out to be our best chance for survival. A vital book for leaders and decision makers, The Evolution of Cooperation reveals how cooperative principles help us think better about everything from military strategy, to political elections, to family dynamics.

From the author of the New York Times bestseller The Inevitable—a sweeping vision of technology as a living force that can expand our individual potential In this provocative book, one of today's most respected thinkers turns the conversation about technology on its head by viewing technology as a natural system, an extension of biological evolution. By mapping the behavior of life, we paradoxically get a glimpse at where technology is headed-or "what it wants." Kevin Kelly offers a dozen trajectories in the coming decades for this near-living system. And as we align ourselves with technology's agenda, we can capture its colossal potential. This visionary and optimistic book explores how technology gives our lives greater meaning and is a must-read for anyone curious about the future.

A fascinating deep dive on innovation from the New York Times bestselling author of How We Got To Now and Unexpected Life The printing press, the pencil, the flush toilet, the battery--these are all great ideas. But where do they come from? What kind of environment breeds them? What sparks the flash of brilliance? How do we generate the breakthrough technologies that push forward our lives, our society, our culture? Steven Johnson's answers are revelatory as he identifies the seven key patterns behind genuine innovation, and traces them across time and disciplines. From Darwin and Freud to the halls of Google and Apple, Johnson investigates the innovation hubs throughout modern time and pulls out the approaches and commonalities that seem to appear at moments of originality.

"As someone who has spent forty years in psychology with a long-standing interest in evolution, I'll just assimilate Howard Bloom's accomplishment and my amazement."-DAVID SMILLIE, Visiting Professor of Zoology, Duke University

In this extraordinary follow-up to the critically acclaimed *The Lucifer Principle*, Howard Bloom—one of today's preeminent thinkers—offers us a bold rewrite of the evolutionary saga. He shows how plants and animals (including humans) have evolved together as components of a worldwide learning machine. He describes the network of life on Earth as one that is, in fact, a "complex adaptive system," a global brain in which each of us plays a sometimes conscious, sometimes unknowing role. And he reveals that the World Wide Web is just the latest step in the development of this brain. These are theories as important as they are radical. Informed by twenty years of interdisciplinary research, Bloom takes us on a spellbinding journey back to the big bang to let us see how its fires forged primordial sociality. As he brings us back via surprising routes, we see how our earliest bacterial ancestors built multitrillion-member research and development teams a full 3.5 billion years ago. We watch him unravel the previously unrecognized strands of interconnectedness woven by crowds of trilobites, hunting packs of dinosaurs, feathered flying lizards gathered in flocks, troops of baboons making communal decisions, and adventurous tribes of protohumans spreading across continents but still linked by primitive forms of information networking. We soon find ourselves reconsidering our place in the world. Along the way, Bloom offers us exhilarating insights into the strange tricks of body and mind that have organized a variety of life forms: spiny lobsters, which, during the Paleozoic age, participated in communal marching rituals; and bees, which, during the age of dinosaurs, conducted collective brainwork. This fascinating tour continues on to the sometimes brutal subculture wars that have spurred the growth of human civilization since the Stone Age. Bloom shows us how culture shapes our infant brains, immersing us in a matrix of truth and mass delusion that we think of as reality. *Global Brain* is more than just a brilliantly original contribution to the ongoing debate on the inner workings of evolution. It is a "grand vision," says the eminent evolutionary biologist David Sloan Wilson, a work that transforms our very view of who we are and why.

The brain ... There is no other part of the human anatomy that is so intriguing. How does it develop and function and why does it sometimes, tragically, degenerate? The answers are complex. In *Discovering the Brain*, science writer Sandra Ackerman cuts through the complexity to bring this vital topic to the public. The 1990s were declared the "Decade of the Brain" by former President Bush, and the neuroscience community responded with a host of new investigations and conferences. *Discovering the Brain* is based on the Institute of Medicine conference, *Decade of the Brain: Frontiers in Neuroscience and Brain Research*. *Discovering the Brain* is a "field guide" to the brain—an easy-to-read discussion of the brain's physical structure and where functions such as language and music appreciation lie. Ackerman examines how electrical and chemical signals are conveyed in the brain. The mechanisms by which we see, hear, think, and pay attention—and how a "gut feeling" actually originates in the brain. Learning and memory retention, including parallels to computer memory and what they might tell us about our own mental capacity. Development of the brain throughout the

life span, with a look at the aging brain. Ackerman provides an enlightening chapter on the connection between the brain's physical condition and various mental disorders and notes what progress can realistically be made toward the prevention and treatment of stroke and other ailments. Finally, she explores the potential for major advances during the "Decade of the Brain," with a look at medical imaging techniques--what various technologies can and cannot tell us--and how the public and private sectors can contribute to continued advances in neuroscience. This highly readable volume will provide the public and policymakers--and many scientists as well--with a helpful guide to understanding the many discoveries that are sure to be announced throughout the "Decade of the Brain."

Ray Kurzweil is the inventor of the most innovative and compelling technology of our era, an international authority on artificial intelligence, and one of our greatest living visionaries. Now he offers a framework for envisioning the twenty-first century--an age in which the marriage of human sensitivity and artificial intelligence fundamentally alters and improves the way we live. Kurzweil's prophetic blueprint for the future takes us through the advances that inexorably result in computers exceeding the memory capacity and computational ability of the human brain by the year 2020 (with human-level capabilities not far behind); in relationships with automated personalities who will be our teachers, companions, and lovers; and in information fed straight into our brains along direct neural pathways. Optimistic and challenging, thought-provoking and engaging, *The Age of Spiritual Machines* is the ultimate guide on our road into the next century.

The challenges to humanity posed by the digital future, the first detailed examination of the unprecedented form of power called "surveillance capitalism," and the quest by powerful corporations to predict and control our behavior. In this masterwork of original thinking and research, Shoshana Zuboff provides startling insights into the phenomenon that she has named surveillance capitalism. The stakes could not be higher: a global architecture of behavior modification threatens human nature in the twenty-first century just as industrial capitalism disfigured the natural world in the twentieth. Zuboff vividly brings to life the consequences as surveillance capitalism advances from Silicon Valley into every economic sector. Vast wealth and power are accumulated in ominous new "behavioral futures markets," where predictions about our behavior are bought and sold, and the production of goods and services is subordinated to a new "means of behavioral modification." The threat has shifted from a totalitarian Big Brother state to a ubiquitous digital architecture: a "Big Other" operating in the interests of surveillance capital. Here is the crucible of an unprecedented form of power marked by extreme concentrations of knowledge and free from democratic oversight. Zuboff's comprehensive and moving analysis lays bare the threats to twenty-first century society: a controlled "hive" of total connection that seduces with promises of total certainty for maximum profit -- at the expense of democracy, freedom, and our human future. With little resistance from law or society, surveillance capitalism is on the verge of dominating the social order and

shaping the digital future -- if we let it.

Maps capture data expressing the economic complexity of countries from Albania to Zimbabwe, offering current economic measures and as well as a guide to achieving prosperity Why do some countries grow and others do not? The authors of The Atlas of Economic Complexity offer readers an explanation based on "Economic Complexity," a measure of a society's productive knowledge. Prosperous societies are those that have the knowledge to make a larger variety of more complex products. The Atlas of Economic Complexity attempts to measure the amount of productive knowledge countries hold and how they can move to accumulate more of it by making more complex products. Through the graphical representation of the "Product Space," the authors are able to identify each country's "adjacent possible," or potential new products, making it easier to find paths to economic diversification and growth. In addition, they argue that a country's economic complexity and its position in the product space are better predictors of economic growth than many other well-known development indicators, including measures of competitiveness, governance, finance, and schooling. Using innovative visualizations, the book locates each country in the product space, provides complexity and growth potential rankings for 128 countries, and offers individual country pages with detailed information about a country's current capabilities and its diversification options. The maps and visualizations included in the Atlas can be used to find more viable paths to greater productive knowledge and prosperity.

In Why Information Grows, rising star César Hidalgo offers a radical interpretation of global economics While economists often turn to measures like GDP or per-capita income, César Hidalgo turns to information theory to explain the success or failure of a country's economic performance. Through a radical rethinking of what the economy is, Hidalgo shows that natural constraints in our ability to accumulate knowledge, knowhow and information explain the evolution of social and economic complexity. This is a rare tour de force, linking economics, sociology, physics, biology and information theory, to explain the evolution of social and economic systems as a consequence of the physical embodiment of information in a world where knowledge is quite literally power. César Hidalgo leads the Macro Connections group at the MIT Media Lab. A trained statistical physicist and an expert on Networks and Complex Systems, he also has extensive experience in the field of economic development and has pioneered research on how big data impacts economic decision-making. From the legendary former Fed Chairman and the acclaimed Economist writer and historian, the full, epic story of America's evolution from a small patchwork of threadbare colonies to the most powerful engine of wealth and innovation the world has ever seen. Shortlisted for the 2018 Financial Times and McKinsey Business Book of the Year Award From even the start of his fabled career, Alan Greenspan was duly famous for his deep understanding of even the most arcane corners of the American economy, and his restless curiosity to know even more. To the extent possible, he has made a

science of understanding how the US economy works almost as a living organism--how it grows and changes, surges and stalls. He has made a particular study of the question of productivity growth, at the heart of which is the riddle of innovation. Where does innovation come from, and how does it spread through a society? And why do some eras see the fruits of innovation spread more democratically, and others, including our own, see the opposite? In *Capitalism in America*, Greenspan distills a lifetime of grappling with these questions into a thrilling and profound master reckoning with the decisive drivers of the US economy over the course of its history. In partnership with the celebrated Economist journalist and historian Adrian Wooldridge, he unfolds a tale involving vast landscapes, titanic figures, triumphant breakthroughs, enlightenment ideals as well as terrible moral failings. Every crucial debate is here--from the role of slavery in the antebellum Southern economy to the real impact of FDR's New Deal to America's violent mood swings in its openness to global trade and its impact. But to read *Capitalism in America* is above all to be stirred deeply by the extraordinary productive energies unleashed by millions of ordinary Americans that have driven this country to unprecedented heights of power and prosperity. At heart, the authors argue, America's genius has been its unique tolerance for the effects of creative destruction, the ceaseless churn of the old giving way to the new, driven by new people and new ideas. Often messy and painful, creative destruction has also lifted almost all Americans to standards of living unimaginable to even the wealthiest citizens of the world a few generations past. A sense of justice and human decency demands that those who bear the brunt of the pain of change be protected, but America has always accepted more pain for more gain, and its vaunted rise cannot otherwise be understood, or its challenges faced, without recognizing this legacy. For now, in our time, productivity growth has stalled again, stirring up the populist furies. There's no better moment to apply the lessons of history to the most pressing question we face, that of whether the United States will preserve its preeminence, or see its leadership pass to other, inevitably less democratic powers.

Reveals how recurring patterns in nature are accounted for by a single governing principle of physics, explaining how all designs in the world from biological life to inanimate systems evolve in a sequence of ever-improving designs that facilitate flow.

Tyler Cowen's controversial New York Times bestseller—the book heard round the world that ignited a firestorm of debate and redefined the nature of America's economic malaise. America has been through the biggest financial crisis since the great Depression, unemployment numbers are frightening, media wages have been flat since the 1970s, and it is common to expect that things will get worse before they get better. Certainly, the multidecade stagnation is not yet over. How will we get out of this mess? One political party tries to increase government spending even when we have no good plan for paying for ballooning programs like Medicare and Social Security. The other party seems to think tax cuts

will raise revenue and has a record of creating bigger fiscal disasters than the first. Where does this madness come from? As Cowen argues, our economy has enjoyed low-hanging fruit since the seventeenth century: free land, immigrant labor, and powerful new technologies. But during the last forty years, the low-hanging fruit started disappearing, and we started pretending it was still there. We have failed to recognize that we are at a technological plateau. The fruit trees are barer than we want to believe. That's it. That is what has gone wrong and that is why our politics is crazy. In *The Great Stagnation*, Cowen reveals the underlying causes of our past prosperity and how we will generate it again. This is a passionate call for a new respect of scientific innovations that benefit not only the powerful elites, but humanity as a whole.

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 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 global tour of energy--the builder of human civilization and also its greatest threat. Energy is humanity's single most important resource. In fact, as energy expert Michael E. Webber argues in *Power Trip*, the story of how societies rise can be told largely as the story of how they manage energy sources through time. In 2019, as we face down growing demand

for and accumulating environmental impacts from energy, we are at a crossroads and the stakes are high. But history shows us that energy's great value is that it allows societies to reinvent themselves. Power Trip explores how energy has transformed societies of the past and offers wisdom for today's looming energy crisis. There is no magic bullet; energy advances always come with costs. Scientific innovation needs public support. Energy initiatives need to be tailored to individual societies. We must look for long-term solutions. Our current energy crisis is real, but it is solvable. We have the power.

An award-winning professor of economics at MIT and a Harvard University political scientist and economist evaluate the reasons that some nations are poor while others succeed, outlining provocative perspectives that support theories about the importance of institutions.

The technological revolution has reached around the world, with important consequences for business, government, and the labor market. Computer-aided design, telecommunications, and other developments are allowing small players to compete with traditional giants in manufacturing and other fields. In this volume, 16 engineering and industrial experts representing eight countries discuss the growth of technological advances and their impact on specific industries and regions of the world. From various perspectives, these distinguished commentators describe the practical aspects of technology's reach into business and trade.

A revolutionary examination of why we age, what it means for our health, and how we just might be able to fight it. In *Cracking the Aging Code*, theoretical biologist Josh Mitteldorf and award-winning writer and ecological philosopher Dorion Sagan reveal that evolution and aging are even more complex and breathtaking than we originally thought. Using meticulous multidisciplinary science, as well as reviewing the history of our understanding about evolution, this book makes the case that aging is not something that "just happens," nor is it the result of wear and tear or a genetic inevitability. Rather, aging has a fascinating evolutionary purpose: to stabilize populations and ecosystems, which are ever-threatened by cyclic swings that can lead to extinction. When a population grows too fast it can put itself at risk of a wholesale wipeout. Aging has evolved to help us adjust our growth in a sustainable fashion as well as prevent an ecological crisis from starvation, predation, pollution, or infection. This dynamic new understanding of aging is provocative, entertaining, and pioneering, and will challenge the way we understand aging, death, and just what makes us human.

"[An] account of the great transformations in the history of life on Earth--a new view of the evolution of human and animal life that explains how the incredible diversity of life on our planet came to be"--

From the bestselling author of the acclaimed *Chaos and Genius* comes a thoughtful and provocative exploration of the

big ideas of the modern era: Information, communication, and information theory. Acclaimed science writer James Gleick presents an eye-opening vision of how our relationship to information has transformed the very nature of human consciousness. A fascinating intellectual journey through the history of communication and information, from the language of Africa's talking drums to the invention of written alphabets; from the electronic transmission of code to the origins of information theory, into the new information age and the current deluge of news, tweets, images, and blogs. Along the way, Gleick profiles key innovators, including Charles Babbage, Ada Lovelace, Samuel Morse, and Claude Shannon, and reveals how our understanding of information is transforming not only how we look at the world, but how we live. A New York Times Notable Book A Los Angeles Times and Cleveland Plain Dealer Best Book of the Year Winner of the PEN/E. O. Wilson Literary Science Writing Award

Future economic growth lies in the value of experiences and transformations--good and services are no longer enough. We are on the threshold, say authors Pine and Gilmore, of the Experience Economy, a new economic era in which all businesses must orchestrate memorable events for their customers. The Experience Economy offers a creative, highly original, and yet eminently practical strategy for companies to script and stage the experiences that will transform the value of what they produce. From America Online to Walt Disney, the authors draw from a rich and varied mix of examples that showcase businesses in the midst of creating personal experiences for both consumers and businesses. The authors urge managers to look beyond traditional pricing factors like time and cost, and consider charging for the value of the transformation that an experience offers. Goods and services, say Pine and Gilmore, are no longer enough. Experiences and transformations are the basis for future economic growth, and The Experience Economy is the script from which managers can begin to direct their own transformations.

The Book of Knowledge and Wonder is a memoir about claiming a legacy of wonder from knowledge of a devastating event. In some ways it has the feel of a detective story in which Steven Harvey pieces together the life of his mother, Roberta Reinhardt Harvey, who committed suicide when he was eleven, out of the 406 letters she left behind. Before he read the letters his mother had become little more than her death to him, but while writing her story he discovered a woman who, despite her vulnerability to depression, had a large capacity for wonder and a love of familiar things, legacies that she passed on to him. The book tackles subjects of recent fascination in American culture: corporate life and sexism in the fifties, mental illness and its influence on families, and art and learning as a consolation for life's woes, but in the end it is the perennial theme of abiding love despite the odds that fuels the tale. As the memoir unfolds, his mother changes and grows, darkens and retreats as she gives up her chance at a career in nursing, struggles with her position as a housewife, harbors paranoid delusions of having contracted syphilis at childbirth, succumbs to a mysterious,

psychic link with her melancholic father, and fights back against depression with counseling, medicine, art, and learning. Harvey charts the way, after his mother's death, that he blotted out her memory almost completely in his new family where his mother was rarely talked about, a protective process of letting go that he did not resist and in a way welcomed, but the book grows out of a nagging longing that never went away, a sense of being haunted that caused the writer to seek out places alone-dribbling a basketball on a lonely court, going on long solitary bicycle rides, walking away from his family to the edge of a mountain overlook, and working daily at his writing desk-where he might feel her presence. In the end, the loss cannot be repaired. Her death, like a camera flash in the dark, blotted out all but a few lingering memories of her in his mind, but the triumph of the book is in the creative collaboration between the dead mother, speaking to her son in letters, and the writer piecing together the story from photographs, snatches of memory, and her words so that he can, for the first time, know her and miss her, not some made up idea of her. The letters do not bring her back-he knows the loss is irrevocable-but as he shaped them into art, the pain, that had been nothing more than a dull throb, changed in character, becoming more diffuse and ardent, like heartache.

The bird book for birders and nonbirders alike that will excite and inspire by providing a new and deeper understanding of what common, mostly backyard, birds are doing—and why: "Can birds smell?"; "Is this the same cardinal that was at my feeder last year?"; "Do robins 'hear' worms?" "The book's beauty mirrors the beauty of birds it describes so marvelously." —NPR In *What It's Like to Be a Bird*, David Sibley answers the most frequently asked questions about the birds we see most often. This special, large-format volume is geared as much to nonbirders as it is to the out-and-out obsessed, covering more than two hundred species and including more than 330 new illustrations by the author. While its focus is on familiar backyard birds—blue jays, nuthatches, chickadees—it also examines certain species that can be fairly easily observed, such as the seashore-dwelling Atlantic puffin. David Sibley's exacting artwork and wide-ranging expertise bring observed behaviors vividly to life. (For most species, the primary illustration is reproduced life-sized.) And while the text is aimed at adults—including fascinating new scientific research on the myriad ways birds have adapted to environmental changes—it is nontechnical, making it the perfect occasion for parents and grandparents to share their love of birds with young children, who will delight in the big, full-color illustrations of birds in action. Unlike any other book he has written, *What It's Like to Be a Bird* is poised to bring a whole new audience to David Sibley's world of birds.

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A wide-ranging argument by a renowned anthropologist that the capacity to believe is what makes us human Why are so many humans religious? Why do we daydream, imagine, and hope? Philosophers, theologians, social scientists, and historians have offered explanations for centuries, but their accounts often ignore or even avoid human evolution.

Evolutionary scientists answer with proposals for why ritual, religion, and faith make sense as adaptations to past challenges or as by-products of our hyper-complex cognitive capacities. But what if the focus on religion is too narrow? Renowned anthropologist Agustín Fuentes argues that the capacity to be religious is actually a small part of a larger and deeper human capacity to believe. Why believe in religion, economies, love? A fascinating intervention into some of the most common misconceptions about human nature, this book employs evolutionary, neurobiological, and anthropological evidence to argue that belief—the ability to commit passionately and wholeheartedly to an idea—is central to the human way of being in the world.

"Hidalgo has made a bold attempt to synthesize a large body of cutting-edge work into a readable, slender volume. This is the future of growth theory." -- Financial Times

What is economic growth? And why, historically, has it occurred in only a few places? Previous efforts to answer these questions have focused on institutions, geography, finances, and psychology. But according to MIT's antidisiplinarian Cér Hidalgo, understanding the nature of economic growth demands transcending the social sciences and including the natural sciences of information, networks, and complexity. To understand the growth of economies, Hidalgo argues, we first need to understand the growth of order. At first glance, the universe seems hostile to order. Thermodynamics dictates that over time, order-or information-disappears. Whispers vanish in the wind just like the beauty of swirling cigarette smoke collapses into disorderly clouds. But thermodynamics also has loopholes that promote the growth of information in pockets. Although cities are all pockets where information grows, they are not all the same. For every Silicon Valley, Tokyo, and Paris, there are dozens of places with economies that accomplish little more than pulling rocks out of the ground. So, why does the US economy outstrip Brazil's, and Brazil's that of Chad? Why did the technology corridor along Boston's Route 128 languish while Silicon Valley blossomed? In each case, the key is how people, firms, and the networks they form make use of information. Seen from Hidalgo's vantage, economies become distributed computers, made of networks of people, and the problem of economic development becomes the problem of making these computers more powerful. By uncovering the mechanisms that enable the growth of information in nature and society, *Why Information Grows* lays bear the origins of physical order and economic growth. Situated at the nexus of information theory, physics, sociology, and economics, this book propounds a new theory of how economies can do not just more things, but more interesting things.

In this New York Times bestseller and longlist nominee for the National Book Award, “our greatest living chronicler of the natural world” (The New York Times), David Quammen explains how recent discoveries in molecular biology affect our understanding of evolution and life’s history. In the mid-1970s, scientists began using DNA sequences to reexamine the history of all life. Perhaps the most startling discovery to come out of this new field—the study of life’s diversity and

relatedness at the molecular level—is horizontal gene transfer (HGT), or the movement of genes across species lines. It turns out that HGT has been widespread and important; we now know that roughly eight percent of the human genome arrived sideways by viral infection—a type of HGT. In *The Tangled Tree*, “the grandest tale in biology....David Quammen presents the science—and the scientists involved—with patience, candor, and flair” (*Nature*). We learn about the major players, such as Carl Woese, the most important little-known biologist of the twentieth century; Lynn Margulis, the notorious maverick whose wild ideas about “mosaic” creatures proved to be true; and Tsutomu Wantanabe, who discovered that the scourge of antibiotic-resistant bacteria is a direct result of horizontal gene transfer, bringing the deep study of genome histories to bear on a global crisis in public health. “David Quammen proves to be an immensely well-informed guide to a complex story” (*The Wall Street Journal*). In *The Tangled Tree*, he explains how molecular studies of evolution have brought startling recognitions about the tangled tree of life—including where we humans fit upon it. Thanks to new technologies, we now have the ability to alter even our genetic composition—through sideways insertions, as nature has long been doing. “*The Tangled Tree* is a source of wonder....Quammen has written a deep and daring intellectual adventure” (*The Boston Globe*).

A revelatory exploration of the hottest trend in technology and the dramatic impact it will have on the economy, science, and society at large. Which paint color is most likely to tell you that a used car is in good shape? How can officials identify the most dangerous New York City manholes before they explode? And how did Google searches predict the spread of the H1N1 flu outbreak? The key to answering these questions, and many more, is big data. “Big data” refers to our burgeoning ability to crunch vast collections of information, analyze it instantly, and draw sometimes profoundly surprising conclusions from it. This emerging science can translate myriad phenomena—from the price of airline tickets to the text of millions of books—into searchable form, and uses our increasing computing power to unearth epiphanies that we never could have seen before. A revolution on par with the Internet or perhaps even the printing press, big data will change the way we think about business, health, politics, education, and innovation in the years to come. It also poses fresh threats, from the inevitable end of privacy as we know it to the prospect of being penalized for things we haven’t even done yet, based on big data’s ability to predict our future behavior. In this brilliantly clear, often surprising work, two leading experts explain what big data is, how it will change our lives, and what we can do to protect ourselves from its hazards. *Big Data* is the first big book about the next big thing. www.big-data-book.com

Donald R. Prothero’s *Evolution* is an entertaining and rigorous history of the transitional forms and series found in the fossil record. Its engaging narrative of scientific discovery and well-grounded analysis has led to the book’s widespread adoption in courses that teach the nature and value of fossil evidence for evolution. *Evolution* tackles systematics and

cladistics, rock dating, neo-Darwinism, and macroevolution. It includes extensive coverage of the primordial soup, invertebrate transitions, the development of the backbone, the reign of the dinosaurs, and the transformation from early hominid to modern human. The book also details the many alleged “missing links” in the fossil record, including some of the most recent discoveries that flesh out the fossil timeline and the evolutionary process. In this second edition, Prothero describes new transitional fossils from various periods, vividly depicting such bizarre creatures as the *Odontochelys*, or the “turtle on the half shell”; fossil snakes with legs; and the “Frogamander,” a new example of amphibian transition. Prothero’s discussion of intelligent design arguments includes more historical examples and careful examination of the “experiments” and observations that are exploited by creationists seeking to undermine sound science education. With new perspectives, Prothero reframes creationism as a case study in denialism and pseudoscience rather than a field with its own intellectual dynamism. The first edition was hailed as an exemplary exploration of the fossil evidence for evolution, and this second edition will be welcome in the libraries of scholars, teachers, and general readers who stand up for sound science in this post-truth era.

A practical guide to the new economy that is transforming the way we live, work, and play. Uber. Airbnb. Amazon. Apple. PayPal. All of these companies disrupted their markets when they launched. Today they are industry leaders. What’s the secret to their success? These cutting-edge businesses are built on platforms: two-sided markets that are revolutionizing the way we do business. Written by three of the most sought-after experts on platform businesses, *Platform Revolution* is the first authoritative, fact-based book on platform models. Whether platforms are connecting sellers and buyers, hosts and visitors, or drivers with people who need a ride, Geoffrey G. Parker, Marshall W. Van Alstyne, and Sangeet Paul Choudary reveal the what, how, and why of this revolution and provide the first “owner’s manual” for creating a successful platform business. *Platform Revolution* teaches newcomers how to start and run a successful platform business, explaining ways to identify prime markets and monetize networks. Addressing current business leaders, the authors reveal strategies behind some of today’s up-and-coming platforms, such as Tinder and SkillShare, and explain how traditional companies can adapt in a changing marketplace. The authors also cover essential issues concerning security, regulation, and consumer trust, while examining markets that may be ripe for a platform revolution, including healthcare, education, and energy. As digital networks increase in ubiquity, businesses that do a better job of harnessing the power of the platform will win. An indispensable guide, *Platform Revolution* charts out the brilliant future of platforms and reveals how they will irrevocably alter the lives and careers of millions.

We know that our world is undergoing seismic change—but how can we emerge from the crisis a fairer, more equal society? Over the past two centuries or so, capitalism has undergone profound changes—economic cycles that veer from

boom to bust—from which it has always emerged transformed and strengthened. Surveying this turbulent history, Paul Mason's *Postcapitalism* argues that we are on the brink of a change so big and so profound that this time capitalism itself, the immensely complex system within which entire societies function, will mutate into something wholly new. At the heart of this change is information technology, a revolution that is driven by capitalism but, with its tendency to push the value of much of what we make toward zero, has the potential to destroy an economy based on markets, wages, and private ownership. Almost unnoticed, in the niches and hollows of the market system, swaths of economic life are beginning to move to a different rhythm. Vast numbers of people are changing how they behave and live, in ways contrary to the current system of state-backed corporate capitalism. And as the terrain changes, new paths open. In this bold and prophetic book, Mason shows how, from the ashes of the crisis, we have the chance to create a more socially just and sustainable economy. Although the dangers ahead are profound, he argues that there is cause for hope. This is the first time in human history in which, equipped with an understanding of what is happening around us, we can predict and shape the future.

The main driver of inequality—returns on capital that exceed the rate of economic growth—is again threatening to generate extreme discontent and undermine democratic values. Thomas Piketty's findings in this ambitious, original, rigorous work will transform debate and set the agenda for the next generation of thought about wealth and inequality.

“Startling in scope and bravado.” —Janet Maslin, *The New York Times* “Artfully envisions a breathtakingly better world.” —*Los Angeles Times* “Elaborate, smart and persuasive.” —*The Boston Globe* “A pleasure to read.” —*The Wall Street Journal* One of CBS News's Best Fall Books of 2005 • Among *St Louis Post-Dispatch's* Best Nonfiction Books of 2005 • One of Amazon.com's Best Science Books of 2005 A radical and optimistic view of the future course of human development from the bestselling author of *How to Create a Mind* and *The Singularity is Nearer* who Bill Gates calls “the best person I know at predicting the future of artificial intelligence” For over three decades, Ray Kurzweil has been one of the most respected and provocative advocates of the role of technology in our future. In his classic *The Age of Spiritual Machines*, he argued that computers would soon rival the full range of human intelligence at its best. Now he examines the next step in this inexorable evolutionary process: the union of human and machine, in which the knowledge and skills embedded in our brains will be combined with the vastly greater capacity, speed, and knowledge-sharing ability of our creations.

The Complete Book of Ferns is filled with botanical information, indoor and outdoor growing and care information, details on propagation, display ideas, and even craft projects. This gorgeous book is authored by Mobe Weinstein, the Foreman of Gardeners at the New York Botanical Garden in the Bronx and a veteran guest on the *Martha Stewart Living*

TV show and other media outlets. Houseplants in general are in ascendance, but no category is hotter than ferns. From the otherworldly Staghorns—mounted like antler trophies in homes throughout the world—to the classic Boston Ferns and newer varieties like Crispy Wave, ferns are definitely back in fashion. And to no one's surprise. After all, ferns are among the very oldest plants on the planet, with a long and storied history. There are tens of thousands of known varieties of ferns. In the Victorian Era, ferns created an absolute craze for more than 50 years. They re-emerged as integral home décor accessories in the '50s and '60s, and who didn't spend time in a "Fern Bar" back in the '80s? And they are back again. This comprehensive reference starts its examination of ferns 400 million years ago, when the first species of this group of spore-reproducing plants appeared on Earth, exploring their evolution and eventual incorporation into human culture, including the powers associated with them and their practical and ornamental uses. Then, after an exploration of fern botany—its parts, how it grows, its variability in size and form, habitats, propagation, etc.—you'll learn how to green your indoor and outdoor environments with ferns. Every aspect of fern care is covered: potting/planting, watering, fertilizing, pest and disease control, and more. With this knowledge absorbed, explore creative planting projects, like terrariums, vertical gardens (living walls), mixed tabletop gardens, and moss baskets. To make your survey of ferns complete, create pressed fern art, fabric wall hangings with chlorophyll-stained designs, cyanotypes, and hand-made fern-decorated paper. In the end, you will understand why this ancient plant class continues to be all the rage.

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