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The Faber Book of Science introduces hunting spiders and black holes, gorillas and stardust, protons, photons and neutrinos. In his acclaimed anthology, John Carey plots the development of modern science from Leonardo da Vinci to Chaos Theory. The emphasis is on the scientists themselves and their own accounts of their breakthroughs and achievements. The classic science-writers are included - Darwin, T.H. Huxley and Jean Henri Fabre tracking insects through the Provencal countryside. So too are today's experts - Steve Jones on the Human Genome Project, Richard Dawkins on DNA and many other representatives of the contemporary genre of popular science-writing which, John Carey argues, challenges modern poetry and fiction in its imaginative power. A new model for the relationship between science and democracy that spans policymaking, the funding and conduct of research, and our approach to new technologies Our ability to act on some of the most pressing issues of our time, from pandemics and climate change to artificial intelligence and nuclear weapons, depends on knowledge provided by scientists and other experts. Meanwhile, contemporary political life is increasingly characterized by problematic responses to expertise, with denials

of science on the one hand and complaints about the ignorance of the citizenry on the other. Politics and Expertise offers a new model for the relationship between science and democracy, rooted in the ways in which scientific knowledge and the political context of its use are imperfect. Zeynep Pamuk starts from the fact that science is uncertain, incomplete, and contested, and shows how scientists' judgments about what is significant and useful shape the agenda and framing of political decisions. The challenge, Pamuk argues, is to ensure that democracies can expose and contest the assumptions and omissions of scientists, instead of choosing between wholesale acceptance or rejection of expertise. To this end, she argues for institutions that support scientific dissent, proposes an adversarial "science court" to facilitate the public scrutiny of science, reimagines structures for funding scientific research, and provocatively suggests restricting research into dangerous new technologies. Through rigorous philosophical analysis and fascinating examples, Politics and Expertise moves the conversation beyond the dichotomy between technocracy and populism and develops a better answer for how to govern and use science democratically. A short and accessible introduction to philosophy of science for students and researchers across the life sciences. The first serious, extended effort to use a human rights-based approach to address the scientific issues affecting society and the often-neglected human right to science. Bloomsbury Scientists is the story of the network of scientists and artists living in a square mile of London before and after the First World War. This inspired group of men and women viewed creativity and freedom as the driving force behind nature, and each strove to understand this in their own inventive way. Their collective energy changed the social mood of the era and brought a new synthesis of knowledge to ideas in science and art. Class barriers were threatened as power shifted from the landed oligarchy to those with talent and the will to make a difference. This is the first comprehensive overview of the exciting field of

the 'science of science'. With anecdotes and detailed, easy-to-follow explanations of the research, this book is accessible to all scientists, policy makers, and administrators with an interest in the wider scientific enterprise. The U.S. scientific community has long led the world in research on such areas as public health, environmental science, and issues affecting quality of life. These scientists have produced landmark studies on the dangers of DDT, tobacco smoke, acid rain, and global warming. But at the same time, a small yet potent subset of this community leads the world in vehement denial of these dangers. Merchants of Doubt tells the story of how a loose-knit group of high-level scientists and scientific advisers, with deep connections in politics and industry, ran effective campaigns to mislead the public and deny well-established scientific knowledge over four decades. Remarkably, the same individuals surface repeatedly-some of the same figures who have claimed that the science of global warming is "not settled" denied the truth of studies linking smoking to lung cancer, coal smoke to acid rain, and CFCs to the ozone hole. "Doubt is our product," wrote one tobacco executive. These "experts" supplied it. Naomi Oreskes and Erik M. Conway, historians of science, roll back the rug on this dark corner of the American scientific community, showing how ideology and corporate interests, aided by a too-compliant media, have skewed public understanding of some of the most pressing issues of our era. Did the Universe start with a Big Bang? Is light a wave, a particle - or both? Are we the cause of global warming? Science has made it possible to comprehend the world we live in and the theoretical multiverses beyond, offering technological advances and extending the frontiers of knowledge. Written in plain English, The Science Book presents 80 of the most trailblazing ideas in physics, chemistry, and biology. It is packed with short, pithy explanations that cut through the jargon, step-by-step diagrams that untangle knotty theories, classic quotes that make scientific discoveries memorable, and witty illustrations that

enhance and play with our understanding of science. Whatever your grasp of the subject, whether you're a keen student or an armchair expert, you'll find plenty to stimulate you within this book. Part of the popular "Big Ideas" series, The Science Book is the perfect way to explore this fascinating subject. This volume sheds light on still unexplored issues and raises new questions in the main areas addressed by the philosophy of science. Bringing together selected papers from three main events, the book presents the most advanced scientific results in the field and suggests innovative lines for further investigation. It explores how discussions on several notions of the philosophy of science can help different scientific disciplines in learning from each other. Finally, it focuses on the relationship between Cambridge and Vienna in twentieth century philosophy of science. The areas examined in the book are: formal methods, the philosophy of the natural and life sciences, the cultural and social sciences, the physical sciences and the history of the philosophy of science. An introduction to physics, chemistry and biology, including experiments, puzzles and games to reinforce the theories that are presented. Selected and introduced by Richard Dawkins, The Oxford Book of Modern Science Writing is a celebration of the finest writing by scientists for a wider audience - revealing that many of the best scientists have displayed as much imagination and skill with the pen as they have in the laboratory.This is a rich and vibrant collection that captures the poetry and excitement of communicating scientific understanding and scientific effort from 1900 to the present day. Professor Dawkins has included writing from a diverse range of scientists, some of whom need no introduction, and some of whoseworks have become modern classics, while others may be less familiar - but all convey the passion of great scientists writing about their science. "In The Joy of Science, Jim Al-Khalili presents eight lessons that serve as a guide to thinking and living life a little more scientifically. It is a gentle entrâee to the conceptual core of what science is and the

spirit of how it is practiced, which will help any reader understand how to live a more rational life and benefit from doing so. The book will connect the lay public with what science fundamentally is - not knowledge per se, but rather a way of thinking, which gives us the power to turn encounters with the unknown into greater insights into the true nature of reality. In an engaging, conversational tone, and writing from the perspective of a practitioner of science, Al- Khalili invites readers to engage with the world in a new way and to think as scientists are trained to do about unsolved mysteries; the nature of truth, uncertainty, and the role of doubt; the value and dangers of simplification; the challenges of complexity or too little information; the importance of evidence-based thinking; the value of guarding against bias (in oneself and others); the importance of being able to change one's mind, and more. By the end, the reader will come away with a clear sense of how the ideas at the heart of the scientific method are deeply relevant to our current times, lives, and personal decision making. Knowing how to think and live more scientifically can make our all of our lives better, and this short book gives non-specialists a welcoming introduction to this knowledge, sharing 'the joy' that science can bring."-- This volume provides a history of the concepts, practices, institutions, and ideologies of social sciences (including behavioural and economic sciences) since the eighteenth century. It offers original, synthetic accounts of the historical development of social knowledge, including its philosophical assumptions, its social and intellectual organization, and its relations to science, medicine, politics, bureaucracy, philosophy, religion, and the professions. Its forty-two chapters include inquiries into the genres and traditions that formed social science, the careers of the main social disciplines (psychology, economics, sociology, anthropology, political science, geography, history, and statistics), and international essays on social science in Eastern Europe, Asia, Africa, and Latin America. It also includes essays that examine the involvement of

the social sciences in government, business, education, culture, and social policy. This is a broad cultural history of social science, which analyzes from a variety of perspectives its participation in the making of the modern world. The well-known "a bee in a cathedral" analogy describes the size of an atom and its nucleus in understandable terms. The analogy goes that if an atom were expanded to the size of a cathedral, the nucleus would be only about the size of a bee. The Big Book of Science uses analogies to demonstrate 100 basic scientific truths and principles in new and exciting ways, describing the unbelievably massive, the inconceivably tiny and the unfathomably complex in everyday terms. Readers will be drawn to the book by its combination of intuitive reasoning and a highly visual presentation style. It's bursting with facts, figures, diagrams, charts, and illustrations. Each page helps readers understand fundamental scientific principles and theories by using analogies that describe abstract ideas using everyday objects. Each analogy is explained in direct terms and clearly illustrated. A range of facts and figures -- presented in uniquely accessible "infographics" -- complements the analogies. The book covers a wide array of scientific topics: physics, chemistry, astronomy, biology, earth sciences, anatomy and technology. The analogies include: If an atomic nucleus expanded to the size of a marble, it would weigh about 100 million tons, or roughly the equivalent of 16 Great Pyramids of Egypt. It would take a human heart less than 18 days to fill an Olympic-sized swimming pool. The volcanic blast of Mount St. Helens released thermal energy 1,600 times the size of Hiroshima. Krakatoa's 1883 eruption was roughly 13,000 times as powerful as that same bomb. Informative and engaging, The Big Book of Science gives readers a deeper appreciation of the forces and facts that govern the universe and everything in it. In the decades following World War II, American scientists were celebrated for their contributions to social and technological progress. They were also widely criticized for their increasingly

close ties to military and governmental power--not only by outside activists but from among the ranks of scientists themselves. Disrupting Science tells the story of how scientists formed new protest organizations that democratized science and made its pursuit more transparent. The book explores how scientists weakened their own authority even as they invented new forms of political action. Drawing extensively from archival sources and in-depth interviews, Kelly Moore examines the features of American science that made it an attractive target for protesters in the early cold war and Vietnam eras, including scientists' work in military research and activities perceived as environmentally harmful. She describes the intellectual traditions that protesters drew from--liberalism, moral individualism, and the New Left--and traces the rise and influence of scientist-led protest organizations such as Science for the People and the Union of Concerned Scientists. Moore shows how scientist protest activities disrupted basic assumptions about science and the ways scientific knowledge should be produced, and recast scientists' relationships to political and military institutions. Disrupting Science reveals how the scientific community cumulatively worked to unbind its own scientific authority and change how science and scientists are perceived. In doing so, the book redefines our understanding of social movements and the power of insider-led protest. Female scientists, doctors, and engineers experienced independence and responsibility during the First World War. Suffragists including Virginia Woolf's sister, Ray Strachey, aligned themselves with scientific and technological progress, and mobilized women to enter conventionally male domains such as engineering and medicine. Profiles include mental health pioneer Isabel Emslie, chemist and co-inventor of tear gas Martha Whiteley, Scottish army doctor Mona Geddes, and botanist Helen Gwynne Vaughan. Though suffragist Millicent Fawcett declared triumphantly that "the war revolutionized the industrial position of women. It found them serfs, and left them

free," the truth was very different. Although women had helped the country to victory and won the vote for those over thirty, they had lost the battle for equality. Men returning from the Front reclaimed their jobs, and conventional hierarchies were re-established. Fara examines how these pioneers, temporarily allowed into an exclusive world before the door slammed shut again, paved the way for today's women scientists.-- Models of Science Dynamics aims to capture the structure and evolution of science, the emerging arena in which scholars, science and the communication of science become themselves the basic objects of research. In order to capture the essence of phenomena as diverse as the structure of co-authorship networks or the evolution of citation diffusion patterns, such models can be represented by conceptual models based on historical and ethnographic observations, mathematical descriptions of measurable phenomena, or computational algorithms. Despite its evident importance, the mathematical modeling of science still lacks a unifying framework and a comprehensive study of the topic. This volume fills this gap, reviewing and describing major threads in the mathematical modeling of science dynamics for a wider academic and professional audience. The model classes presented cover stochastic and statistical models, system-dynamics approaches, agent-based simulations, population-dynamics models, and complex-network models. The book comprises an introduction and a foundational chapter that defines and operationalizes terminology used in the study of science, as well as a review chapter that discusses the history of mathematical approaches to modeling science from an algorithmic-historiography perspective. It concludes with a survey of remaining challenges for future science models and their relevance for science and science policy. Prompted by the ongoing debate among science educators over ‘nature of science’, and its importance in school and university curricula, this book is a clarion call for a broad re-conceptualizing of nature of science

in science education. The authors draw on the 'family resemblance' approach popularized by Wittgenstein, defining science as a cognitive-epistemic and social-institutional system whose heterogeneous characteristics and influences should be more thoroughly reflected in science education. They seek wherever possible to clarify their developing thesis with visual tools that illustrate how their ideas can be practically applied in science education. The volume's holistic representation of science, which includes the aims and values, knowledge, practices, techniques, and methodological rules (as well as science's social and institutional contexts), mirrors its core aim to synthesize perspectives from the fields of philosophy of science and science education. The authors believe that this more integrated conception of nature of science in science education is both innovative and beneficial. They discuss in detail the implications for curriculum content, pedagogy, and learning outcomes, deploy numerous real-life examples, and detail the links between their ideas and curriculum policy more generally. The relationship between science and belief has been a prominent subject of public debate for many years, covering everything from science communication, health and education to immigration and national values. Yet, sociological analysis of these subjects remains surprisingly scarce. This wide-ranging book critically reviews the ways in which religious and non-religious belief systems interact with scientific methods, traditions and theories. Contributors explore how, for some secularists, 'science' forms an important part of social identity. Others examine how many contemporary religious movements justify their beliefs by making a claim upon science. Moving beyond the traditional focus on the United States, the book shows how debates about science and belief are firmly embedded in political conflict, class, community and culture. Built between 1855 and 1860, Oxford University Museum of Natural History is the extraordinary result of close collaboration between artists and scientists. Inspired by John

Ruskin, the architect Benjamin Woodward and the Oxford scientists worked with leading Pre-Raphaelite artists on the design and decoration of the building. The decorative art was modelled on the Pre-Raphaelite principle of meticulous observation of nature, itself indebted to science, while individual artists designed architectural details and carved portrait statues of influential scientists. The entire structure was an experiment in using architecture and art to communicate natural history, modern science and natural theology. 'Temple of Science' sets out the history of the campaign to build the museum before taking the reader on a tour of art in the museum itself. It looks at the façade and the central court, with their beautiful natural history carvings and marble columns illustrating different geological strata, and at the pantheon of scientists. Together they form the world's finest collection of Pre-Raphaelite sculpture. The story of one of the most remarkable collaborations between scientists and artists in European art is told here with lavish illustrations. A spirited volume on the great adventures of science throughout history, for curious readers of all ages A beautifully illustrated celebration of science from the clever people who bring you AQUILA magazine. Ideas are important. They change things. A single idea can start a war, save billions of lives, even rearrange whole planetary systems, or simply make a person giggle until they pee a little bit. They can be totally wrong but widely believed, or undoubtedly right and completely ignored. What's more, they're free, and anyone can have one-including you! The Book of Big Science Ideas looks at 15 brilliant science ideas and more than 50 ingenious thinkers who have helped shape our understanding of the world - whether they were right or wrong! Thinkers include, Wang Zhenyi, Louis Pasteur, Marie Curie, James Joule, Rosalind Franklin, Charles Darwin, Aristotle, Edith Clarke, Isaac Newton, Grace Hopper, Alan Turing, Ada Lovelace and many, many more! From established ideas like atoms, electricity and the solar system, and ideas that are still evolving

such as gravity, energy and classification, right up to recent discoveries like AI and genetics - this jam-packed book takes a fresh approach to science. A revealing and provocative look at the current state of global science We take the advance of science as given. But how does science really work? Is it truly as healthy as we tend to think? How does the system itself shape what scientists do? The Secret Life of Science takes a clear-eyed and provocative look at the current state of global science, shedding light on a cutthroat and tightly tensioned enterprise that even scientists themselves often don't fully understand. The Secret Life of Science is a dispatch from the front lines of modern science. It paints a startling picture of a complex scientific ecosystem that has become the most competitive free-market environment on the planet. It reveals how big this ecosystem really is, what motivates its participants, and who reaps the rewards. Are there too few scientists in the world or too many? Are some fields expanding at the expense of others? What science is shared or published, and who determines what the public gets to hear about? What is the future of science? Answering these and other questions, this controversial book explains why globalization is not necessarily good for science, nor is the continued growth in the number of scientists. It portrays a scientific community engaged in a race for limited resources that determines whether careers are lost or won, whose research visions become the mainstream, and whose vested interests end up in control. The Secret Life of Science explains why this hypercompetitive environment is stifling the diversity of research and the resiliency of science itself, and why new ideas are needed to ensure that the scientific enterprise remains healthy and vibrant. A path-breaking study of national, imperial and indigenous interests at stake in a controversial German expedition to British India. This book explores evidence-based practice in college science teaching. It is grounded in disciplinary education research by practicing scientists who have chosen to take Wieman’s (2014) challenge seriously, and to

investigate claims about the efficacy of alternative strategies in college science teaching. In editing this book, we have chosen to showcase outstanding cases of exemplary practice supported by solid evidence, and to include practitioners who offer models of teaching and learning that meet the high standards of the scientific disciplines. Our intention is to let these distinguished scientists speak for themselves and to offer authentic guidance to those who seek models of excellence. Our primary audience consists of the thousands of dedicated faculty and graduate students who teach undergraduate science at community and technical colleges, 4-year liberal arts institutions, comprehensive regional campuses, and flagship research universities. In keeping with Wieman's challenge, our primary focus has been on identifying classroom practices that encourage and support meaningful learning and conceptual understanding in the natural sciences. The content is structured as follows: after an Introduction based on Constructivist Learning Theory (Section I), the practices we explore are Eliciting Ideas and Encouraging Reflection (Section II); Using Clickers to Engage Students (Section III); Supporting Peer Interaction through Small Group Activities (Section IV); Restructuring Curriculum and Instruction (Section V); Rethinking the Physical Environment (Section VI); Enhancing Understanding with Technology (Section VII), and Assessing Understanding (Section VIII). The book's final section (IX) is devoted to Professional Issues facing college and university faculty who choose to adopt active learning in their courses. The common feature underlying all of the strategies described in this book is their emphasis on actively engaging students who seek to make sense of natural objects and events. Many of the strategies we highlight emerge from a constructivist view of learning that has gained widespread acceptance in recent years. In this view, learners make sense of the world by forging connections between new ideas and those that are part of their existing knowledge base. For most students, that knowledge base is riddled with a

host of naïve notions, misconceptions and alternative conceptions they have acquired throughout their lives. To a considerable extent, the job of the teacher is to coax out these ideas; to help students understand how their ideas differ from the scientifically accepted view; to assist as students restructure and reconcile their newly acquired knowledge; and to provide opportunities for students to evaluate what they have learned and apply it in novel circumstances. Clearly, this prescription demands far more than most college and university scientists have been prepared for. Adressing a range of issues and debates in the natural and social sciences, this work provides a sociological analysis of science which enables readers to understand the social mechanisms which shape scientific practice. The explosion of scientific information is exacerbating the information gap between richer/poorer, educated/less-educated publics. The proliferation of media technology and the popularity of the Internet help some keep up with these developments but also make it more likely others fall further behind. This is taking place in a globalizing economy and society that further complicates the division between information haves and have-nots and compounds the challenge of communicating about emerging science and technology to increasingly diverse audiences. Journalism about science and technology must fill this gap, yet journalists and journalism students themselves struggle to keep abreast of contemporary scientific developments. Scientist - aided by public relations and public information professionals - must get their stories out, not only to other scientists but also to broader public audiences. Funding agencies increasingly expect their grantees to engage in outreach and education, and such activity can be seen as both a survival strategy and an ethical imperative for taxpayer-supported, university-based research. Science communication, often in new forms, must expand to meet all these needs. Providing a comprehensive introduction to students, professionals and scholars in this area is a unique challenge because

practitioners in these fields must grasp both the principles of science and the principles of science communication while understanding the social contexts of each. For this reason, science journalism and science communication are often addressed only in advanced undergraduate or graduate specialty courses rather than covered exhaustively in lower-division courses. Even so, those entering the field rarely will have a comprehensive background in both science and communication studies. This circumstance underscores the importance of compiling useful reference materials. The Encyclopedia of Science and Technology Communication presents resources and strategies for science communicators, including theoretical material and background on recent controversies and key institutional actors and sources. Science communicators need to understand more than how to interpret scientific facts and conclusions; they need to understand basic elements of the politics, sociology, and philosophy of science, as well as relevant media and communication theory, principles of risk communication, new trends, and how to evaluate the effectiveness of science communication programmes, to mention just a few of the major challenges. This work will help to develop and enhance such understanding as it addresses these challenges and more. Topics covered include: advocacy, policy, and research organizations environmental and health communication philosophy of science media theory and science communication informal science education science journalism as a profession risk communication theory public understanding of science pseudo-science in the news special problems in reporting science and technology science communication ethics. The first half of the nineteenth century witnessed an extraordinary transformation in British political, literary, and intellectual life. There was widespread social unrest, and debates raged regarding education, the lives of the working class, and the new industrial, machine-governed world. At the same time, modern science emerged in

Europe in more or less its current form, as new disciplines and revolutionary concepts, including evolution and the vastness of geologic time, began to take shape. In Visions of Science, James A. Secord offers a new way to capture this unique moment of change. He explores seven key books—among them Charles Babbage's Reflections on the Decline of Science, Charles Lyell's Principles ofGeology, Mary Somerville's Connexion of the Physical Sciences, and Thomas Carlyle's Sartor Resartus—and shows how literature that reflects on the wider meaning of science can be revelatory when granted the kind of close reading usually reserved for fiction and poetry. These books considered the meanings of science and its place in modern life, looking to the future, coordinating and connecting the sciences, and forging knowledge that would be appropriate for the new age. Their aim was often philosophical, but Secord shows it was just as often imaginative, projective, and practical: to suggest not only how to think about the natural world but also to indicate modes of action and potential consequences in an era of unparalleled change. Visions of Science opens our eyes to how genteel ladies, working men, and the literary elite responded to these remarkable works. It reveals the importance of understanding the physical qualities of books and the key role of printers and publishers, from factories pouring out cheap compendia to fashionable publishing houses in London's West End. Secord's vivid account takes us to the heart of an information revolution that was to have profound consequences for the making of the modern world. Citizen science, the active participation of the public in scientific research projects, is a rapidly expanding field in open science and open innovation. It provides an integrated model of public knowledge production and engagement with science. As a growing worldwide phenomenon, it is invigorated by evolving new technologies that connect people easily and effectively with the scientific community. Catalysed by citizens' wishes to be actively involved in scientific processes, as a result of recent societal

trends, it also offers contributions to the rise in tertiary education. In addition, citizen science provides a valuable tool for citizens to play a more active role in sustainable development. This book identifies and explains the role of citizen science within innovation in science and society, and as a vibrant and productive science-policy interface. The scope of this volume is global, geared towards identifying solutions and lessons to be applied across science, practice and policy. The chapters consider the role of citizen science in the context of the wider agenda of open science and open innovation, and discuss progress towards responsible research and innovation, two of the most critical aspects of science today. This open access book provides an overview of issues of scientific responsibility. The volume comprises three types of contributions: first, analyses of the responsibility of science; second, analyses of the structural conditions for science and its responsibility; and third, normative versions of scientific responsibility. The questions and problems dealt with include science as a profession, ambivalence of research and dual-use, innovation vs. precaution, notions of responsibility, the role of science within society and its relation to human rights, as well as scientific and public discourses. The book addresses scholars in the fields of Science Studies and Research Policy. This is an open access book. This book describes the development of the scientific article from its modest beginnings to the global phenomenon that it has become today. Their analysis of a large sample of texts in French, English, and German focuses on the changes in the style, organization, and argumentative structure of scientific communication over time. They also speculate on the future currency of the scientific article, as it enters the era of the World Wide Web. This book is an outstanding resource text in the rhetoric of science, and will stand as the definitive study on the topic. As staff writer for Scientific American, John Horgan has a window on contemporary science unsurpassed in all the world. Who else routinely

interviews the likes of Lynn Margulis, Roger Penrose, Francis Crick, Richard Dawkins, Freeman Dyson, Murray Gell-Mann, Stephen Jay Gould, Stephen Hawking, Thomas Kuhn, Chris Langton, Karl Popper, Stephen Weinberg, and E.O. Wilson, with the freedom to probe their innermost thoughts? In The End Of Science, Horgan displays his genius for getting these larger-than-life figures to be simply human, and scientists, he writes, "are rarely so human . . . so at there mercy of their fears and desires, as when they are confronting the limits of knowledge."This is the secret fear that Horgan pursues throughout this remarkable book: Have the big questions all been answered? Has all the knowledge worth pursuing become known? Will there be a final "theory of everything" that signals the end? Is the age of great discoverers behind us? Is science today reduced to mere puzzle solving and adding detains to existing theories? Horgan extracts surprisingly candid answers to there and other delicate questions as he discusses God, Star Trek, superstrings, quarks, plectics, consciousness, Neural Darwinism, Marx's view of progress, Kuhn's view of revolutions, cellular automata, robots, and the Omega Point, with Fred Hoyle, Noam Chomsky, John Wheeler, Clifford Geertz, and dozens of other eminent scholars. The resulting narrative will both infuriate and delight as it mindless Horgan's smart, contrarian argument for "endism" with a witty, thoughtful, even profound overview of the entire scientific enterprise. Scientists have always set themselves apart from other scholars in the belief that they do not construct the truth, they discover it. Their work is not interpretation but simple revelation of what exists in the empirical universe. But science itself keeps imposing limits on its own power. Special relativity prohibits the transmission of matter or information as speeds faster than that of light; quantum mechanics dictates uncertainty; and chaos theory confirms the impossibility of complete prediction. Meanwhile, the very idea of scientific rationality is under fire from Neo-Luddites, animal-rights activists, religious

fundamentalists, and New Agers alike. As Horgan makes clear, perhaps the greatest threat to science may come from losing its special place in the hierarchy of disciplines, being reduced to something more akin to literaty criticism as more and more theoreticians engage in the theory twiddling he calls "ironic science." Still, while Horgan offers his critique, grounded in the thinking of the world's leading researchers, he offers homage too. If science is ending, he maintains, it is only because it has done its work so well. This work has been selected by scholars as being culturally important, and is part of the knowledge base of civilization as we know it. This work was reproduced from the original artifact, and remains as true to the original work as possible. Therefore, you will see the original copyright references, library stamps (as most of these works have been housed in our most important libraries around the world), and other notations in the work. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. As a reproduction of a historical artifact, this work may contain missing or blurred pages, poor pictures, errant marks, etc. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant. Since the discovery of the structure of DNA and the birth of the genetic age, a powerful vocabulary has emerged to express science’s growing command over the matter of life. Armed with knowledge of the code that governs all living things, biology and biotechnology are poised to edit, even rewrite, the texts of life to correct nature’s mistakes. Yet, how far should the capacity to manipulate what life is at the molecular level authorize science to define what life is for? This book looks at flash points in law, politics, ethics, and

culture to argue that science’s promises of perfectibility have gone too far. Science may have editorial control over the material elements of life, but it does not supersede the languages of sense-making that have helped define human values across millennia: the meanings of autonomy, integrity, and privacy; the bonds of kinship, family, and society; and the place of humans in nature. This open access book discusses how the involvement of citizens into scientific endeavors is expected to contribute to solve the big challenges of our time, such as climate change and the loss of biodiversity, growing inequalities within and between societies, and the sustainability turn. The field of citizen science has been growing in recent decades. Many different stakeholders from scientists to citizens and from policy makers to environmental organisations have been involved in its practice. In addition, many scientists also study citizen science as a research approach and as a way for science and society to interact and collaborate. This book provides a representation of the practices as well as scientific and societal outcomes in different disciplines. It reflects the contribution of citizen science to societal development, education, or innovation and provides and overview of the field of actors as well as on tools and guidelines. It serves as an introduction for anyone who wants to get involved in and learn more about the science of citizen science. This book shows that many of our understandings about scientific thought can be corrected once we realise just how "unnatural" science actually is. Quoting scientists from Aristotle to Einstein, the author argues that scientific ideas are, with rare exceptions, counter-intuitive and that common sense often makes no sense at all. A passionate advocate of the beauty and importance of science, the author examines a range of issues, including why science and technology are quite different, why psychoanalysis is not properly scientific and why philosophers and sociologists have made so little contribution to understanding science's true nature. He demonstrates the folly of holding scientists responsible for many

of society's problems, and the equal folly of looking to science for a miracle cure.

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