The University Press Group

Popular Science

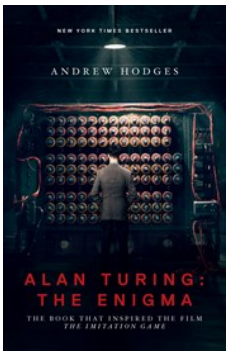
University of California Press

Columbia University Press

Princeton University Press

New and Best of Backlist

Autumn 2023



Alan Turing: The Enigma

Andrew Hodges
9780691164724
£14.99 • $17.95
Trade Paperback
Biography & Autobiography / Science & Technology
November 2014
Princeton University Press

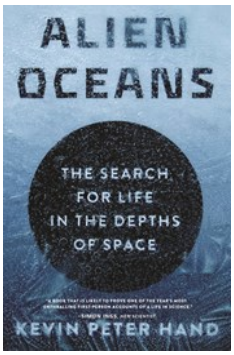
A *NEW YORK TIMES* BESTSELLER

The official book behind the Academy Award-winning film *The Imitation Game*, starring Benedict Cumberbatch and Keira Knightley

It is only a slight exaggeration to say that the British mathematician Alan Turing (1912-1954) saved the Allies from the Nazis, invented the computer and artificial intelligence, and anticipated gay liberation by decades--all before his suicide at age forty-one. This *New York Times*–bestselling biography of the founder of computer science, with a new preface by the author that addresses Turing's royal pardon in 2013, is the definitive account of an extraordinary mind and life.

Capturing both the inner and outer drama of Turing's life, Andrew Hodges tells how Turing's revolutionary idea of 1936--the concept of a universal machine--laid the foundation for the modern computer and how Turing brought the idea to practical realization in 1945 with his electronic design. The book also tells how this work was directly related to Turing's leading role in breaking the German Enigma ciphers during World War II, a scientific triumph that was critical to Allied victory in the Atlantic. At the same time, this is the tragic account of a man who, despite his wartime service, was eventually arrested, stripped of his security clearance, and forced to undergo a humiliating treatment program--all for trying to live honestly in a society that defined homosexuality as a crime.

The inspiration for a major motion picture starring Benedict Cumberbatch and Keira Knightley, *Alan Turing: The Enigma* is a gripping story of mathematics, computers, cryptography, and homosexual persecution.



Alien Oceans

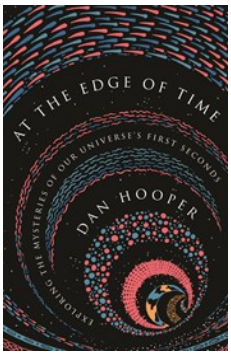
Kevin Hand
9780691227283
£16.99 • $19.95
Trade Paperback
Science / Space Science
September 2021
Princeton University Press

Inside the epic quest to find life on the water-rich moons at the outer reaches of the solar system

Where is the best place to find life beyond Earth? We often look to Mars as the most promising site in our solar system, but recent scientific missions have revealed that some of the most habitable real estate may actually lie farther away. Beneath the frozen crusts of several of the small, ice-covered moons of Jupiter and Saturn lurk vast oceans that may have existed for as long as Earth, and together may contain more than fifty times its total volume of liquid water. Could there be organisms living in their depths? *Alien Oceans* reveals the science behind the thrilling quest to find out.

Kevin Peter Hand is one of today's leading NASA scientists, and his pioneering research has taken him on expeditions around the world. In this captivating account of scientific discovery, he brings together insights from planetary science, biology, and the adventures of scientists like himself to explain how we know that oceans exist within moons of the outer solar system, like Europa, Titan, and Enceladus. He shows how the exploration of Earth's oceans is informing our understanding of the potential habitability of these icy moons, and draws lessons from what we have learned about the origins of life on our own planet to consider how life could arise on these distant worlds.

Alien Oceans describes what lies ahead in our search for life in our solar system and beyond, setting the stage for the transformative discoveries that may await us.

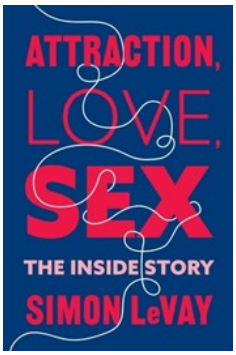


At the Edge of Time

Dan Hooper
9780691206424
£14.99 • $17.95
Trade Paperback
Science / Space Science / Cosmology
April 2021
Princeton University Press

A new look at the first few seconds after the Big Bang—and how research into these moments continues to revolutionize our understanding of our universe

Scientists in recent decades have made crucial discoveries about how our cosmos evolved over the past 13.8 billion years. But we still know little about what happened in the first seconds after the Big Bang. *At the Edge of Time* focuses on what we have learned and are striving to understand about this mysterious period at the beginning of cosmic history. Delving into the remarkable science of cosmology, Dan Hooper describes many of the extraordinary questions that scientists are asking about the origin and nature of our world. Hooper examines how the Large Hadron Collider and other experiments re-create the conditions of the Big Bang, how we may finally discover the way dark matter was formed during our universe's first moments, and how, with new telescopes, we are lifting the veil on the era of cosmic inflation. *At the Edge of Time* presents an accessible investigation of our universe and its birth.



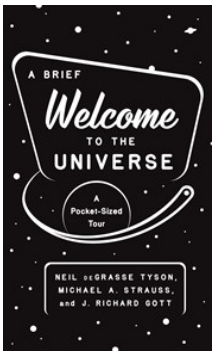
Attraction, Love, Sex

Simon LeVay
9780231204507
£28.00 • $32.00
Hardcover
Science / Life Sciences / Evolution
May 2023
Columbia University Press

Sex, after hunger, may be the most powerful motivating force in our lives. It drives us to seek intimate contact with others and to form relationships that may be fleeting or lifelong, blissful or troubled. Yet many mysteries surround sex and sexuality: Why don't we reproduce by virgin birth? Why does so much of our sexual behavior have nothing to do with reproduction? Why isn't everyone heterosexual? How does the brain create sexual arousal? How do sexual kinks develop? Is porn harmful? What is the relationship between sex and love?

In *Attraction, Love, Sex*, the renowned scholar Simon LeVay introduces readers to a memorable cast of researchers trying to answer these questions and many more. A biologist dredges a New Zealand lake for asexual mud snails. Psychologists measure whether eating a good meal changes a man's idea of female beauty. Physiologists probe orifices with miniature toilet plungers and place lovers in brain scanners. Geneticists reconstruct the sex crimes of Genghis Khan. Neuroscientists create mice whose sexual behavior can be switched on and off. A zoologist traps and releases 260,000 voles and launches a new science of love.

LeVay distills vast expertise on the biology and psychology of sex into an engaging and easy-to-understand survey with scientific acumen, a critical eye, and a sense of humor. This book reveals how scientists are unraveling the secrets of sex and, in the process, shattering many traditional ideas and prejudices.



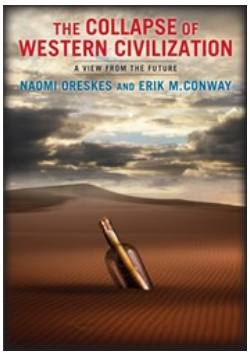
A Brief Welcome to the Universe

Neil deGrasse Tyson
9780691219943
£9.99 • $14.95
Trade Paperback
Science / Physics / Astrophysics
September 2021
Princeton University Press

A pocket-style edition based on the *New York Times* bestseller

A Brief Welcome to the Universe offers a breathtaking tour of the cosmos, from planets, stars, and galaxies to black holes and time loops. Bestselling authors and acclaimed astrophysicists Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott take readers on an unforgettable journey of exploration to reveal how our universe actually works.

Propelling you from our home solar system to the outermost frontiers of space, this book builds your cosmic insight and perspective through a marvelously entertaining narrative. How do stars live and die? What are the prospects of intelligent life elsewhere in the universe? How did the universe begin? Why is it expanding and accelerating? Is our universe alone or part of an infinite multiverse? Exploring these and many other questions, this pocket-friendly book is your passport into the wonders of our evolving cosmos.

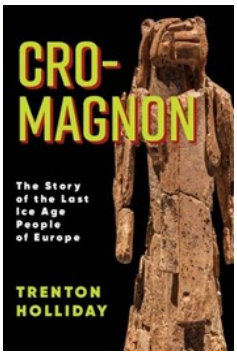


The Collapse of Western Civilization

Naomi Oreskes
9780231169547
£7.99 • $9.95
Trade Paperback
Science / Global Warming & Climate Change
July 2014
Columbia University Press

The year is 2393, and the world is almost unrecognizable. Clear warnings of climate catastrophe went ignored for decades, leading to soaring temperatures, rising sea levels, widespread drought and—finally—the disaster now known as the Great Collapse of 2093, when the disintegration of the West Antarctica Ice Sheet led to mass migration and a complete reshuffling of the global order. Writing from the Second People's Republic of China on the 300th anniversary of the Great Collapse, a senior scholar presents a gripping and deeply disturbing account of how the children of the Enlightenment—the political and economic elites of the so-called advanced industrial societies—failed to act, and so brought about the collapse of Western civilization.

In this haunting, provocative work of science-based fiction, Naomi Oreskes and Eric M. Conway imagine a world devastated by climate change. Dramatizing the science in ways traditional nonfiction cannot, the book reasserts the importance of scientists and the work they do and reveals the self-serving interests of the so called "carbon combustion complex" that have turned the practice of science into political fodder. Based on sound scholarship and yet unafraid to speak boldly, this book provides a welcome moment of clarity amid the cacophony of climate change literature.



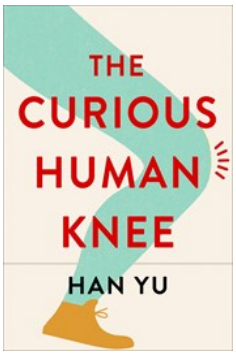
Cro-Magnon

Trenton W. Holliday
9780231204972
£25.00 • $30.00
Trade Paperback
Science / Paleontology
July 2023
Columbia University Press

During the Last Ice Age, Europe was a cold, dry place teeming with mammoths, woolly rhinoceroses, reindeer, bison, cave bears, cave hyenas, and cave lions. It was also the home of people physically indistinguishable from humans today, commonly known as the Cro-Magnons. Our knowledge of them comes from either their skeletons or the tools, art, and debris they left behind.

This book tells the story of these dynamic and resilient people in light of recent scientific advances. Trenton Holliday—a paleoanthropologist who has studied the Cro-Magnons for decades—explores questions such as: Where and when did anatomically modern humans first emerge? When did they reach Europe, and via what routes? How extensive or frequent were their interactions with Neandertals? What did Cro-Magnons look like? What did they eat, and how did they acquire their food? What can we learn about their lives from studying their skeletons? How did they deal with the glacial cold? What does their art tell us about them?

Holliday offers new insights into these ancient people from anthropological, archaeological, genetic, and geological perspectives. He also considers how the Cro-Magnons responded to Earth's postglacial warming almost 12,000 years ago, showing that how they dealt with climate change holds valuable lessons for us as we negotiate life on a rapidly warming planet.



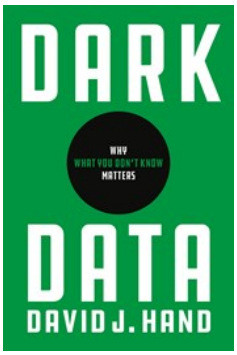
The Curious Human Knee

Han Yu
9780231207027
£25.00 • $29.95
Hardcover
Science / Life Sciences / Human Anatomy & Physiology
June 2023
Columbia University Press

Where would we be without the knee? This down-to-earth joint connecting the thigh and the lower leg doesn't receive the attention it deserves. Yet, as *The Curious Human Knee* reveals, it is crucial to countless facets of science, medicine, culture, and history—and even what makes us human.

The science writer Han Yu provides an informative, surprising, and entertaining exploration of the human knee across time and place. She begins with our earliest ancestors, emphasizing that walking upright separates us from the apes and bipedal knees appeared long before big brains and sophisticated tools. Yu considers the intricate anatomy of the knee, its evolutionary history, and the complexity of treating knee pain, including her own. She examines why women's knees might be more prone to damage than men's and addresses the roles of race and class in ailments such as osteoarthritis. This book gets knee-deep into an astonishing range of topics—fashion from flappers to miniskirts and ripped jeans, cultural practices spanning Japanese knee walking and Thai boxing, and more. Yu reflects on the symbolic power of kneeling from the imperial court in China to the football field in the United States and shows why the knee figures into so many social and political phenomena.

Distilling a vast amount of research in a style that is engaging, conversational, and even personal and witty, this book opens readers' eyes to the complexity and significance of the humble knee.



Dark Data

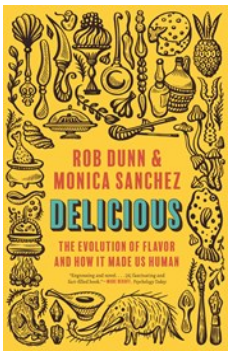
David J. Hand
9780691234465
£16.99 • $19.95
Trade Paperback
Computers / Data Science / Data Analytics
February 2022
Princeton University Press

A practical guide to making good decisions in a world of missing data

In the era of big data, it is easy to imagine that we have all the information we need to make good decisions. But in fact the data we have are never complete, and may be only the tip of the iceberg. Just as much of the universe is composed of dark matter, invisible to us but nonetheless present, the universe of information is full of dark data that we overlook at our peril. In *Dark Data*, data expert David Hand takes us on a fascinating and enlightening journey into the world of the data we *don't* see.

Dark Data explores the many ways in which we can be blind to missing data and how that can lead us to conclusions and actions that are mistaken, dangerous, or even disastrous. Examining a wealth of real-life examples, from the Challenger shuttle explosion to complex financial frauds, Hand gives us a practical taxonomy of the types of dark data that exist and the situations in which they can arise, so that we can learn to recognize and control for them. In doing so, he teaches us not only to be alert to the problems presented by the things we don't know, but also shows how dark data can be used to our advantage, leading to greater understanding and better decisions.

Today, we all make decisions using data. *Dark Data* shows us all how to reduce the risk of making bad ones.



Delicious

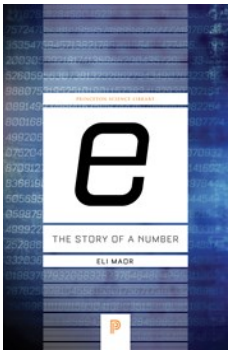
Rob Dunn
9780691242088
£16.99 • $19.95
Trade Paperback
Science / Life Sciences / Evolution
September 2022
Princeton University Press

A savory account of how the pursuit of delicious foods shaped human evolution

Nature, it has been said, invites us to eat by appetite and rewards by flavor. But what exactly are flavors? Why are some so pleasing while others are not? *Delicious* is a supremely entertaining foray into the heart of such questions.

With generous helpings of warmth and wit, Rob Dunn and Monica Sanchez offer bold new perspectives on why food is enjoyable and how the pursuit of delicious flavors has guided the course of human history. They consider the role that flavor may have played in the invention of the first tools, the extinction of giant mammals, the evolution of the world's most delicious and fatty fruits, the creation of beer, and our own sociality. Along the way, you will learn about the taste receptors you didn't even know you had, the best way to ferment a mastodon, the relationship between Paleolithic art and cheese, and much more.

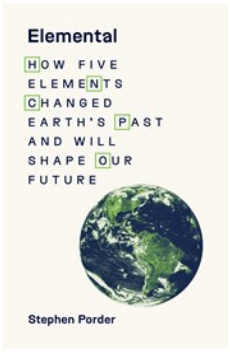
Blending irresistible storytelling with the latest science, *Delicious* is a deep history of flavor that will transform the way you think about human evolution and the gustatory pleasures of the foods we eat.



e: The Story of a Number

Eli Maor
9780691168487
£14.99 • $17.95
Trade Paperback
Mathematics / History & Philosophy
September 2015
Princeton University Press

The interest earned on a bank account, the arrangement of seeds in a sunflower, and the shape of the Gateway Arch in St. Louis are all intimately connected with the mysterious number *e*. In this informal and engaging history, Eli Maor portrays the curious characters and the elegant mathematics that lie behind the number. Designed for a reader with only a modest mathematical background, this biography brings out the central importance of *e* to mathematics and illuminates a golden era in the age of science.



Elemental

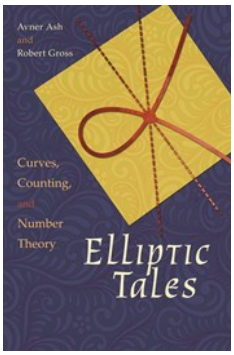
Stephen Porder
9780691177298
£22.00 • $27.95
Hardcover
Science / Environmental Science
September 2023
Princeton University Press

An ecologist explores how life itself shapes Earth using the elemental constituents we all share

It is rare for life to change Earth, yet three organisms have profoundly transformed our planet over the long course of its history. *Elemental* reveals how microbes, plants, and people used the fundamental building blocks of life to alter the climate, and with it, the trajectory of life on Earth in the past, present, and future.

Taking readers from the deep geologic past to our current era of human dominance, Stephen Porder focuses on five of life's essential elements—hydrogen, oxygen, carbon, nitrogen, and phosphorus. He describes how single-celled cyanobacteria and plants harnessed them to wildly proliferate across the oceans and the land, only to eventually precipitate environmental catastrophes. He then brings us to the present, and shows how these elements underpin the success of human civilization, and how their mismanagement threatens similarly catastrophic unintended consequences. But, Porder argues, if we can learn from our world-changing predecessors, we can construct a more sustainable future.

Blending conversational storytelling with the latest science, Porder takes us deep into the Amazon, across fresh lava flows in Hawaii, and to the cornfields of the American Midwest to illuminate a potential path to sustainability, informed by the constraints imposed by life's essential elements and the four-billion-year history of life on Earth.



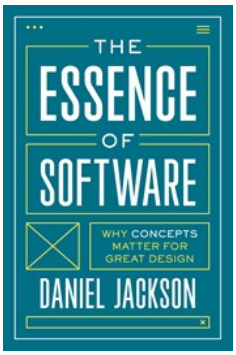
Elliptic Tales

Avner Ash
9780691163505
£13.99 • $16.95
Trade Paperback
Mathematics / History & Philosophy
October 2014
Princeton University Press

A look at one of the most exciting unsolved problems in mathematics today

Elliptic Tales describes the latest developments in number theory by looking at one of the most exciting unsolved problems in contemporary mathematics—the Birch and Swinnerton-Dyer Conjecture. In this book, Avner Ash and Robert Gross guide readers through the mathematics they need to understand this captivating problem.

The key to the conjecture lies in elliptic curves, which may appear simple, but arise from some very deep—and often very mystifying—mathematical ideas. Using only basic algebra and calculus while presenting numerous eye-opening examples, Ash and Gross make these ideas accessible to general readers, and, in the process, venture to the very frontiers of modern mathematics.



The Essence of Software

Daniel Jackson
9780691230832
£20.00 • $23.95
Trade Paperback
Computers / Computer Science
June 2023
Princeton University Press

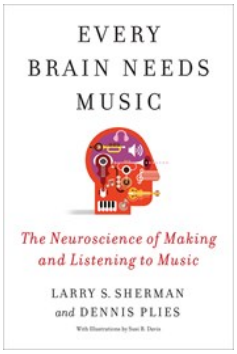
A revolutionary concept-based approach to thinking about, designing, and interacting with software

As our dependence on technology increases, the design of software matters more than ever before. Why then is so much software flawed? Why hasn't there been a systematic and scalable way to create software that is easy to use, robust, and secure?

Examining these issues in depth, *The Essence of Software* introduces a theory of software design that gives new answers to old questions. Daniel Jackson explains that a software system should be viewed as a collection of interacting concepts, breaking the functionality into manageable parts and providing a new framework for thinking about design. Through this radical and original perspective, Jackson lays out a practical and coherent path, accessible to anyone—from strategist and marketer to UX designer, architect, or programmer—for making software that is empowering, dependable, and a delight to use.

Jackson explores every aspect of concepts—what they are and aren't, how to identify them, how to define them, and more—and offers prescriptive principles and practical tips that can be applied cost-effectively in a wide range of domains. He applies these ideas to contemporary software designs, drawing examples from leading software manufacturers such as Adobe, Apple, Dropbox, Facebook, Google, Microsoft, Twitter, and others. Jackson shows how concepts let designers preserve and reuse design knowledge, rather than starting from scratch in every project.

An argument against the status quo and a guide to improvement for both working designers and novices to the field, *The Essence of Software* brings a fresh approach to software and its creation.



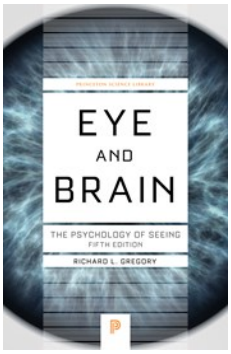
Every Brain Needs Music

Lawrence Sherman
9780231209106
£28.00 • $32.00
Hardcover
Science / Life Sciences / Neuroscience
May 2023
Columbia University Press

Whenever a person engages with music—when a piano student practices a scale, a jazz saxophonist riffs on a melody, a teenager sobs to a sad song, or a wedding guest gets down on the dance floor—countless neurons are firing. Playing an instrument requires all of the resources of the nervous system, including cognitive, sensory, and motor functions. Composition and improvisation are remarkable demonstrations of the brain's capacity for creativity. Something as seemingly simple as listening to a tune involves mental faculties most of us don't even realize we have.

Larry S. Sherman, a neuroscientist and lifelong musician, and Dennis Plies, a professional musician and teacher, collaborate to show how our brains and music work in harmony. They consider music in all the ways we encounter it—teaching, learning, practicing, listening, composing, improvising, and performing—in terms of neuroscience as well as music pedagogy, showing how the brain functions and even changes in the process. *Every Brain Needs Music* draws on leading behavioral, cellular, and molecular neuroscience research as well as surveys of more than a hundred musical people. It provides new perspectives on learning to play, teaching, how to practice and perform, the ways we react to music, and why the brain benefits from musical experiences.

Written for both musical and nonmusical people, including newcomers to brain science, this book is a lively and easy-to-read exploration of the neuroscience of music and its significance in our lives.

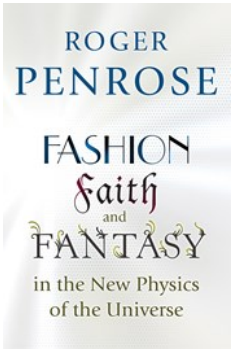


Eye and Brain

Richard L. Gregory
9780691165165
£17.99 • $20.95
Trade Paperback
Science / Physics / Optics & Light
September 2015
Princeton University Press

Since the publication of the first edition in 1966, *Eye and Brain* has established itself worldwide as an essential introduction to the basic phenomena of visual perception. Richard Gregory offers clear explanations of how we see brightness, movement, color, and objects, and he explores the phenomena of visual illusions to establish principles about how perception normally works and why it sometimes fails.

Illusion continues to be a major theme in the book, which provides a comprehensive classification system. There are also sections on what babies see and how they learn to see, on motion perception, the relationship between vision and consciousness, and on the impact of new brain imaging techniques.



Fashion, Faith, and Fantasy in the New Physics of the Universe

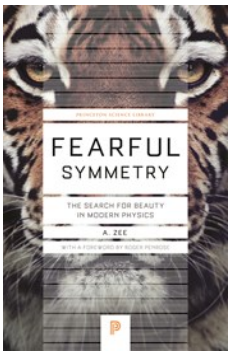
Roger Penrose
9780691178530
£15.99 • $18.95
Trade Paperback
Science / Philosophy & Social Aspects
September 2017
Princeton University Press

Nobel Prize–winning physicist Roger Penrose questions some of the most fashionable ideas in physics today, including string theory

What can fashionable ideas, blind faith, or pure fantasy possibly have to do with the scientific quest to understand the universe? Surely, theoretical physicists are immune to mere trends, dogmatic beliefs, or flights of fancy? In fact, acclaimed physicist and bestselling author Roger Penrose argues that researchers working at the extreme frontiers of physics are just as susceptible to these forces as anyone else. In this provocative book, he argues that fashion, faith, and fantasy, while sometimes productive and even essential in physics, may be leading today's researchers astray in three of the field's most important areas—string theory, quantum mechanics, and cosmology.

Arguing that string theory has veered away from physical reality by positing six extra hidden dimensions, Penrose cautions that the fashionable nature of a theory can cloud our judgment of its plausibility. In the case of quantum mechanics, its stunning success in explaining the atomic universe has led to an uncritical faith that it must also apply to reasonably massive objects, and Penrose responds by suggesting possible changes in quantum theory. Turning to cosmology, he argues that most of the current fantastical ideas about the origins of the universe cannot be true, but that an even wilder reality may lie behind them. Finally, Penrose describes how fashion, faith, and fantasy have ironically also shaped his own work, from twistor theory, a possible alternative to string theory that is beginning to acquire a fashionable status, to "conformal cyclic cosmology," an idea so fantastic that it could be called "conformal crazy cosmology."

The result is an important critique of some of the most significant developments in physics today from one of its most eminent figures.

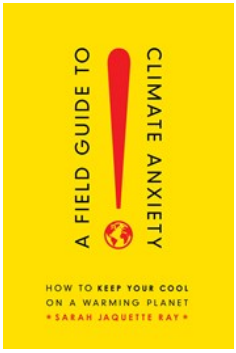


Fearful Symmetry

Anthony Zee
9780691173269
£18.99 • $22.95
Trade Paperback
Science / Physics
October 2016
Princeton University Press

An engaging exploration of beauty in physics, with a foreword by Nobel Prize–winning physicist Roger Penrose

The concept of symmetry has widespread manifestations and many diverse applications—from architecture to mathematics to science. Yet, as twentieth-century physics has revealed, symmetry has a special, central role in nature, one that is occasionally and enigmatically violated. *Fearful Symmetry* brings the incredible discoveries of the juxtaposition of symmetry and asymmetry in contemporary physics within everyone's grasp. A. Zee, a distinguished physicist and skillful expositor, tells the exciting story of how contemporary theoretical physicists are following Einstein in their search for the beauty and simplicity of Nature. Animated by a sense of reverence and whimsy, *Fearful Symmetry* describes the majestic sweep and accomplishments of twentieth-century physics—one of the greatest chapters in the intellectual history of humankind.



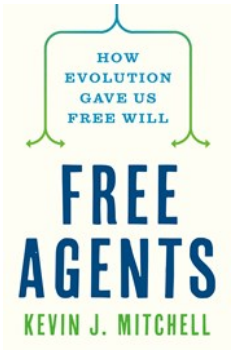
A Field Guide to Climate Anxiety

Sarah Jaquette Ray
9780520343306
£14.99 • $16.95
Trade Paperback
Science / Global Warming & Climate Change
April 2020
University of California Press

Gen Z's first "existential toolkit" for combating eco-guilt and burnout while advocating for climate justice.

A youth movement is reenergizing global environmental activism. The “climate generation”—late millennials and iGen, or Generation Z—is demanding that policy makers and government leaders take immediate action to address the dire outcomes predicted by climate science. Those inheriting our planet’s environmental problems expect to encounter challenges, but they may not have the skills to grapple with the feelings of powerlessness and despair that may arise when they confront this seemingly intractable situation.

Drawing on a decade of experience leading and teaching in college environmental studies programs, Sarah Jaquette Ray has created an “existential tool kit” for the climate generation. Combining insights from psychology, sociology, social movements, mindfulness, and the environmental humanities, Ray explains why and how we need to let go of eco-guilt, resist burnout, and cultivate resilience while advocating for climate justice. *A Field Guide to Climate Anxiety* is the essential guidebook for the climate generation—and perhaps the rest of us—as we confront the greatest environmental threat of our time.



Free Agents

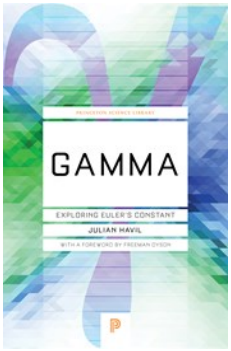
Kevin J. Mitchell
9780691226231
£25.00 • $29.95
Hardcover
Science / Life Sciences / Neuroscience
October 2023
Princeton University Press

An evolutionary case for the existence of free will

Scientists are learning more and more about how brain activity controls behavior and how neural circuits weigh alternatives and initiate actions. As we probe ever deeper into the mechanics of decision making, many conclude that agency—or free will—is an illusion. In *Free Agents*, leading neuroscientist Kevin Mitchell presents a wealth of evidence to the contrary, arguing that we are not mere machines responding to physical forces but agents acting with purpose.

Traversing billions of years of evolution, Mitchell tells the remarkable story of how living beings capable of choice arose from lifeless matter. He explains how the emergence of nervous systems provided a means to learn about the world, granting sentient animals the capacity to model, predict, and simulate. Mitchell reveals how these faculties reached their peak in humans with our abilities to imagine and to be introspective, to reason in the moment, and to shape our possible futures through the exercise of our individual agency. Mitchell’s argument has important implications—for how we understand decision making, for how our individual agency can be enhanced or infringed, for how we think about collective agency in the face of global crises, and for how we consider the limitations and future of artificial intelligence.

An astonishing journey of discovery, *Free Agents* offers a new framework for understanding how, across a billion years of Earth history, life evolved the power to choose, and why it matters.



Gamma

Julian Havil

9780691178103
£16.99 • $19.95
Trade Paperback
Mathematics / History & Philosophy
October 2017
Princeton University Press

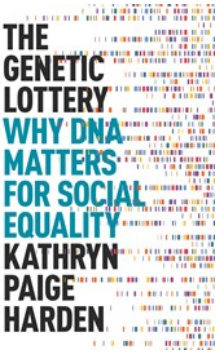
Among the many constants that appear in mathematics, π, e, and i are the most familiar. Following closely behind is y, or gamma, a constant that arises in many mathematical areas yet maintains a profound sense of mystery.

In a tantalizing blend of history and mathematics, Julian Havil takes the reader on a journey through logarithms and the harmonic series, the two defining elements of gamma, toward the first account of gamma's place in mathematics.

Introduced by the Swiss mathematician Leonhard Euler (1707-1783), who figures prominently in this book, gamma is defined as the limit of the sum of $1 + 1/2 + 1/3 + \ldots$ Up to $1/n$, minus the natural logarithm of n--the numerical value being 0.5772156. . . . But unlike its more celebrated colleagues π and e, the exact nature of gamma remains a mystery--we don't even know if gamma can be expressed as a fraction.

Among the numerous topics that arise during this historical odyssey into fundamental mathematical ideas are the Prime Number Theorem and the most important open problem in mathematics today--the Riemann Hypothesis (though no proof of either is offered!).

Sure to be popular with not only students and instructors but all math aficionados, *Gamma* takes us through countries, centuries, lives, and works, unfolding along the way the stories of some remarkable mathematics from some remarkable mathematicians.



The Genetic Lottery

Kathryn Paige Harden

9780691242101
£15.99 • $18.95
Trade Paperback
Science / Life Sciences / Genetics & Genomics
October 2022
Princeton University Press

A provocative and timely case for how the science of genetics can help create a more just and equal society

In recent years, scientists like Kathryn Paige Harden have shown that DNA makes us different, in our personalities and in our health—and in ways that matter for educational and economic success in our current society.

In *The Genetic Lottery*, Harden introduces readers to the latest genetic science, dismantling dangerous ideas about racial superiority and challenging us to grapple with what equality really means in a world where people are born different. Weaving together personal stories with scientific evidence, Harden shows why our refusal to recognize the power of DNA perpetuates the myth of meritocracy, and argues that we must acknowledge the role of genetic luck if we are ever to create a fair society.

Reclaiming genetic science from the legacy of eugenics, this groundbreaking book offers a bold new vision of society where everyone thrives, regardless of how one fares in the genetic lottery.

Geopedia

Marcia Bjornerud

9780691212579
£10.99 • $16.95
Hardcover
Science / Earth Sciences / Geology
May 2022
Princeton University Press

A garden of geologic delights for all Earthlings

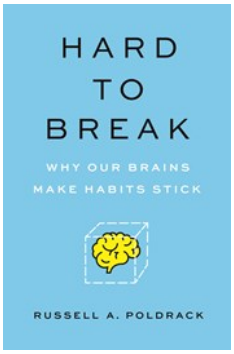
Geopedia is a trove of geologic wonders and the evocative terms that humans have devised to describe them. Featuring dozens of entries—from Acasta gneiss to Zircon—this illustrated compendium is brimming with lapidary and lexical insights that will delight rockhounds and word lovers alike.

Geoscientists are magpies for words, and with good reason. The sheer profusion of minerals, landforms, and geologic events produced by our creative planet demands an immense vocabulary to match. Marcia Bjornerud shows how this lexicon reflects not only the diversity of rocks and geologic processes but also the long history of human interactions with them.

With wit and warmth, she invites all readers to celebrate the geologic glossary—a gallimaufry of allusions to mythology, imports from diverse languages, embarrassing anachronisms, and recent neologisms. This captivating book includes cross-references at the end of each entry, inviting you to leave the alphabetic trail and meander through it like a river. Its pocket-friendly size makes it the perfect travel companion no matter where your own geologic forays may lead you.

With whimsical illustrations by Haley Hagerman, *Geopedia* is a mix of engaging and entertaining facts about how the earth works, how it has coevolved with life over billions of years, and how our understanding of the planet has deepened over time.

- Features a real cloth cover with an elaborate foil-stamped design



Hard to Break

Russell Poldrack

9780691241494
£15.99 • $18.95
Trade Paperback
Science / Life Sciences / Neuroscience
October 2022
Princeton University Press

The neuroscience of why bad habits are so hard to break—and how evidence-based strategies can help us change our behavior more effectively

We all have habits we'd like to break, but for many of us it can be nearly impossible to do so. There is a good reason for this: the brain is a habit-building machine. In *Hard to Break*, leading neuroscientist Russell Poldrack provides an engaging and authoritative account of the science of how habits are built in the brain, why they are so hard to break, and how evidence-based strategies may help us change unwanted behaviors.

Hard to Break offers a clear-eyed tour of what neuroscience tells us about habit change and debunks "easy fixes" that aren't backed by science. It explains how dopamine is essential for building habits and how the battle between habits and intentional goal-directed behaviors reflects a competition between different brain systems. Along the way, we learn how cues trigger habits; why we should make rules, not decisions; how the stimuli of the modern world hijack the brain's habit machinery and lead to drug abuse and other addictions; and how neuroscience may one day enable us to hack our habits. Shifting from the individual to society, the book also discusses the massive habit changes that will be needed to address the biggest challenges of our time.

Moving beyond the hype to offer a deeper understanding of the biology of habits in the brain, *Hard to Break* reveals how we might be able to make the changes we desire—and why we should have greater empathy with ourselves and others who struggle to do so.

How the Universe Got Its Spots

Janna Levin

9780691232270

£14.99 • $17.95

Trade Paperback

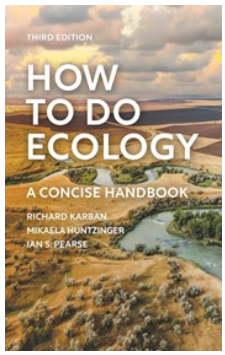
Science / Physics

January 2023

Princeton University Press

Mixing memoir and visionary science, a leading astrophysicist's groundbreaking personal account of her life and ideas

Is the universe infinite or just really big? With this question, cosmologist Janna Levin announces the central theme of this book, which established her as one of the most direct, unorthodox, and creative voices in contemporary science. As Levin sets out to determine how big "really big" may be, she offers a rare intimate look at the daily life of an innovative physicist, complete with jet lag and the tensions between personal relationships and the extreme demands of scientific exploration. Nimbly explaining geometry, topology, chaos, and string theory, Levin shows how the pattern of hot and cold spots left over from the big bang may one day reveal the size of the cosmos. The result is a thrilling story of cosmology by one of its leading thinkers.



How to Do Ecology

Richard Karban

9780691245751

£22.00 • $27.95

Trade Paperback

Science / Life Sciences / Ecology

August 2023

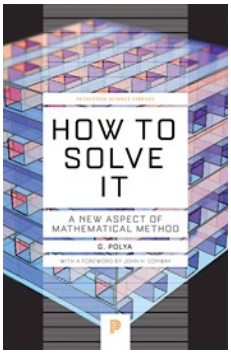
Princeton University Press

The essential insider's guide for ecologists at all career stages—now completely updated and expanded

Most books and courses in ecology focus on facts and concepts but do little to explain the process of research. *How to Do Ecology* provides nuts-and-bolts advice for organizing and conducting a successful research program. This fully updated and expanded edition explains how to ask and answer your own research questions using compelling study design and appropriate stats. Ecology doesn't take place exclusively outdoors, so the book shares invaluable insights on topics such as identifying your goals, developing professional relationships, reading efficiently, and organizing a field season. Because the currency in ecology is publications, it also suggests effective ways to communicate your ideas through journal articles, oral presentations, posters, and grant proposals. This incisive handbook makes explicit many of the unstated rules that ecologists follow and serves as a practical resource for meaningful conversations about ecology.

This new edition includes:

- Expanded emphasis on collecting and interpreting observational data
- An innovative new workshop for generating and evaluating creative research questions
- Helpful tips on developing the skills most important to students, navigating your career path, writing efficiently, and more



How to Solve It

John H. Conway

9780691164076

£16.99 • $19.95

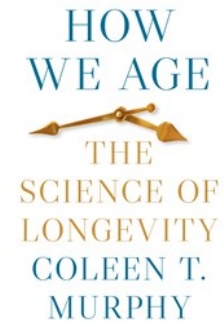
Trade Paperback

Mathematics / Logic

October 2014

Princeton University Press

A perennial bestseller by eminent mathematician G. Polya, *How to Solve It* will show anyone in any field how to think straight. In lucid and appealing prose, Polya reveals how the mathematical method of demonstrating a proof or finding an unknown can be of help in attacking any problem that can be "reasoned" out—from building a bridge to winning a game of anagrams. Generations of readers have relished Polya's deft—indeed, brilliant—instructions on stripping away irrelevancies and going straight to the heart of the problem.



How We Age

Coleen T. Murphy

9780691182636

£30.00 • $35.00

Hardcover

Science / Life Sciences / Biology

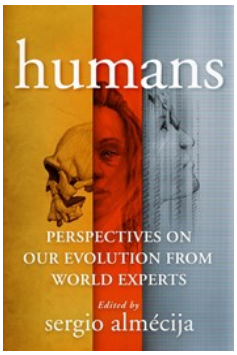
November 2023

Princeton University Press

How recent breakthroughs in longevity research offer clues about human aging

All of us would like to live longer, or to slow the debilitating effects of age. In *How We Age*, Coleen Murphy shows how recent research on longevity and aging may be bringing us closer to this goal. Murphy, a leading scholar of aging, explains that the study of model systems, particularly simple invertebrate animals, combined with breakthroughs in genomic methods, have allowed scientists to probe the molecular mechanisms of longevity and aging. Understanding the fundamental biological rules that govern aging in model systems provides clues about how we might slow human aging, which could lead in turn to new therapeutics and treatments for age-related disease.

Among other vivid examples, Murphy describes research that shows how changing a single gene in the nematode worm *C. elegans* doubles its lifespan, extending not only the end of life but also the youthful, healthy part of life. Drawing on work in her own lab as well as other recent research, Murphy chronicles the history and current state of the field, explaining longevity's links to reproduction and mating, sensory and cognitive function, inheritances from our ancestors, and the gut microbiome. Written with clarity and wit, *How We Age* provides a guide to the science: what we know about aging, how we know what we know, and what we can do with this new knowledge.



Humans

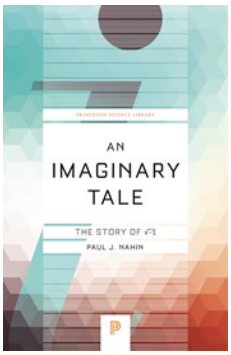
Sergio Almécija

9780231201216
£28.00 • $32.95
Trade Paperback
Science / Life Sciences / Evolution
May 2023
Columbia University Press

How did humanity evolve? And what does our evolutionary history tell us about what it means to be human? These questions are fundamental to our identity as individuals and as a species and to our relationship with the world. But there are almost as many answers to them as there are scientists who study these topics.

This book brings together more than one hundred top experts, who share their insights on the study of human evolution and what it means for understanding our past, present, and future. Sergio Almécija asks leading figures across paleontology, primatology, archaeology, genetics, and many other disciplines about their lives, their work, and the philosophical significance of human evolution. They reflect on questions that are both fun and profound: What set you down your career path? Are humans special? Where and when would you travel in a time machine? Does human evolution offer lessons for society? Is evolution compatible with spirituality and religion?

Humans features a remarkably accomplished cast of contributors, including Kay Behrensmeyer, Frans de Waal, Nina Jablonski, Richard Leakey, Robert Sapolsky, and Richard Wrangham. Together, they provide a refreshing, personable, engaging, cross-disciplinary, and thought-provoking exploration of different—even diametrically opposed—ideas about our nature and evolution, what makes humans unique, and what our future might hold. This book also offers practical suggestions for readers seeking to embark on a scientific career.



An Imaginary Tale

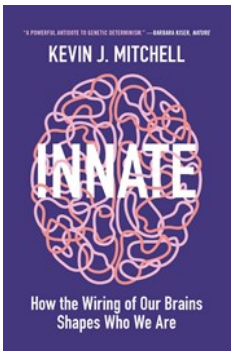
Paul J. Nahin

9780691169248
£13.99 • $16.95
Trade Paperback
Mathematics / History & Philosophy
March 2016
Princeton University Press

Today complex numbers have such widespread practical use--from electrical engineering to aeronautics--that few people would expect the story behind their derivation to be filled with adventure and enigma. In *An Imaginary Tale*, Paul Nahin tells the 2000-year-old history of one of mathematics' most elusive numbers, the square root of minus one, also known as *i*. He recreates the baffling mathematical problems that conjured it up, and the colorful characters who tried to solve them.

In 1878, when two brothers stole a mathematical papyrus from the ancient Egyptian burial site in the Valley of Kings, they led scholars to the earliest known occurrence of the square root of a negative number. The papyrus offered a specific numerical example of how to calculate the volume of a truncated square pyramid, which implied the need for *i*. In the first century, the mathematician-engineer Heron of Alexandria encountered *I* in a separate project, but fudged the arithmetic; medieval mathematicians stumbled upon the concept while grappling with the meaning of negative numbers, but dismissed their square roots as nonsense. By the time of Descartes, a theoretical use for these elusive square roots--now called "imaginary numbers"--was suspected, but efforts to solve them led to intense, bitter debates. The notorious *i* finally won acceptance and was put to use in complex analysis and theoretical physics in Napoleonic times.

Addressing readers with both a general and scholarly interest in mathematics, Nahin weaves into this narrative entertaining historical facts and mathematical discussions, including the application of complex numbers and functions to important problems, such as Kepler's laws of planetary motion and ac electrical circuits. This book can be read as an engaging history, almost a biography, of one of the most evasive and pervasive "numbers" in all of mathematics.



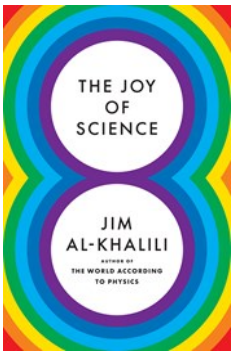
Innate

Kevin J. Mitchell

9780691204154
£15.99 • $18.95
Trade Paperback
Science / Life Sciences / Neuroscience
March 2020
Princeton University Press

A leading neuroscientist explains why your personal traits are more innate than you think

What makes you the way you are—and what makes each of us different from everyone else? In *Innate*, leading neuroscientist and popular science blogger Kevin Mitchell traces human diversity and individual differences to their deepest level: in the wiring of our brains. Deftly guiding us through important new research, including his own groundbreaking work, he explains how variations in the way our brains develop before birth strongly influence our psychology and behavior throughout our lives, shaping our personality, intelligence, sexuality, and even the way we perceive the world. Compelling and original, *Innate* will change the way you think about why and how we are who we are.



The Joy of Science

Jim Al-Khalili

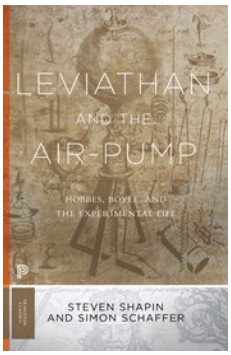
9780691211572
£12.99 • $16.95
Hardcover
Science / Philosophy & Social Aspects
April 2022
Princeton University Press

Quantum physicist, *New York Times* bestselling author, and BBC host Jim Al-Khalili reveals how 8 lessons from the heart of science can help you get the most out of life

Today's world is unpredictable and full of contradictions, and navigating its complexities while trying to make the best decisions is far from easy. *The Joy of Science* presents 8 short lessons on how to unlock the clarity, empowerment, and joy of thinking and living a little more scientifically.

In this brief guide to leading a more rational life, acclaimed physicist Jim Al-Khalili invites readers to engage with the world as scientists have been trained to do. The scientific method has served humankind well in its quest to see things as they really are, and underpinning the scientific method are core principles that can help us all navigate modern life more confidently. Discussing the nature of truth and uncertainty, the role of doubt, the pros and cons of simplification, the value of guarding against bias, the importance of evidence-based thinking, and more, Al-Khalili shows how the powerful ideas at the heart of the scientific method are deeply relevant to the complicated times we live in and the difficult choices we make.

Read this book and discover the joy of science. It will empower you to think more objectively, see through the fog of your own preexisting beliefs, and lead a more fulfilling life.

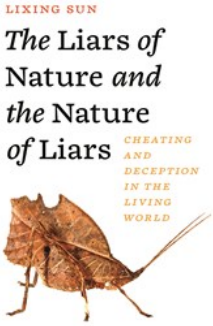


Leviathan and the Air-Pump

Steven Shapin
9780691178165
£20.00 • $23.95
Trade Paperback
Science / History
November 2017
Princeton University Press

Leviathan and the Air-Pump examines the conflicts over the value and propriety of experimental methods between two major seventeenth-century thinkers: Thomas Hobbes, author of the political treatise Leviathan and vehement critic of systematic experimentation in natural philosophy, and Robert Boyle, mechanical philosopher and owner of the newly invented air-pump. The issues at stake in their disputes ranged from the physical integrity of the air-pump to the intellectual integrity of the knowledge it might yield. Both Boyle and Hobbes were looking for ways of establishing knowledge that did not decay into ad hominem attacks and political division. Boyle proposed the experiment as cure. He argued that facts should be manufactured by machines like the air-pump so that gentlemen could witness the experiments and produce knowledge that everyone agreed on. Hobbes, by contrast, looked for natural law and viewed experiments as the artificial, unreliable products of an exclusive guild.

The new approaches taken in *Leviathan and the Air-Pump* have been enormously influential on historical studies of science. Shapin and Schaffer found a moment of scientific revolution and showed how key scientific givens--facts, interpretations, experiment, truth--were fundamental to a new political order. Shapin and Schaffer were also innovative in their ethnographic approach. Attempting to understand the work habits, rituals, and social structures of a remote, unfamiliar group, they argued that politics were tied up in what scientists did, rather than what they said. Steven Shapin and Simon Schaffer use the confrontation between Hobbes and Boyle as a way of understanding what was at stake in the early history of scientific experimentation. They describe the protagonists' divergent views of natural knowledge, and situate the Hobbes-Boyle disputes within contemporary debates over the role of intellectuals in public life and the problems of social order and assent in Restoration England. In a new introduction, the authors describe how science and its social context were understood when this book was first published, and how the study of the history of science has changed since then.



The Liars of Nature and the Nature of Liars

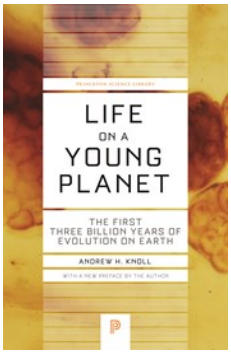
Lixing Sun
9780691198606
£25.00 • $29.95
Hardcover
Science / Life Sciences / Zoology / Ethology (Animal Behavior)
April 2023
Princeton University Press

A natural history of cheating from selfish genes to lying politicians

Nature is rife with cheating. Possums play possum, feigning death to cheat predators. Crows cry wolf to scare off rivals. Amphibians and reptiles are inveterate impostors. Even genes and cells cheat. *The Liars of Nature and the Nature of Liars* explores the evolution of cheating in the natural world, revealing how dishonesty has given rise to wondrous diversity.

Blending cutting-edge science with a wealth of illuminating examples—from microscopic organisms to highly intelligent birds and mammals—Lixing Sun shows how cheating in nature relies on two basic rules. One is lying, by which cheaters exploit honest messages in communication signals and use them to serve their own interests. The other is deceiving, by which cheaters exploit the biases and loopholes in the sensory systems of other creatures. Sun demonstrates that cheating serves as a potent catalyst in the evolutionary arms race between the cheating and the cheated, resulting in a biological world teeming with complexity and beauty.

Brimming with insight and humor, *The Liars of Nature and the Nature of Liars* also looks at the prevalence of cheating in human society, identifying the kinds of cheating that spur innovation and cultural vitality and laying down a blueprint for combatting malicious cheating such as fake news and disinformation.



Life on a Young Planet

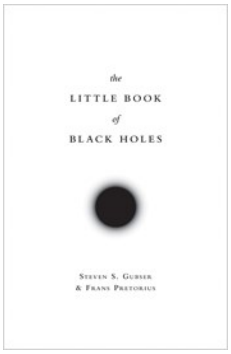
Andrew H. Knoll
9780691165530
£16.99 • $19.95
Trade Paperback
Science / Life Sciences / Evolution
March 2015
Princeton University Press

Australopithecines, dinosaurs, trilobites--such fossils conjure up images of lost worlds filled with vanished organisms. But in the full history of life, ancient animals, even the trilobites, form only the half-billion-year tip of a nearly four-billion-year iceberg. Andrew Knoll explores the deep history of life from its origins on a young planet to the incredible Cambrian explosion, presenting a compelling new explanation for the emergence of biological novelty.

The very latest discoveries in paleontology--many of them made by the author and his students--are integrated with emerging insights from molecular biology and earth system science to forge a broad understanding of how the biological diversity that surrounds us came to be. Moving from Siberia to Namibia to the Bahamas, Knoll shows how life and environment have evolved together through Earth's history. Innovations in biology have helped shape our air and oceans, and, just as surely, environmental change has influenced the course of evolution, repeatedly closing off opportunities for some species while opening avenues for others.

Readers go into the field to confront fossils, enter the lab to discern the inner workings of cells, and alight on Mars to ask how our terrestrial experience can guide exploration for life beyond our planet. Along the way, Knoll brings us up-to-date on some of science's hottest questions, from the oldest fossils and claims of life beyond the Earth to the hypothesis of global glaciation and Knoll's own unifying concept of "permissive ecology."

In laying bare Earth's deepest biological roots, *Life on a Young Planet* helps us understand our own place in the universe--and our responsibility as stewards of a world four billion years in the making.



The Little Book of Black Holes

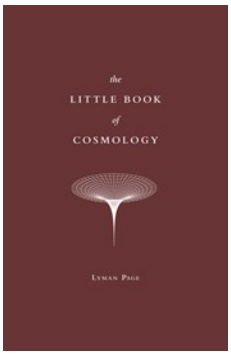
Steven S. Gubser
9780691163727
£16.99 • $19.95
Hardcover
Science / Physics / Astrophysics
October 2017
Princeton University Press

Dive into a mind-bending exploration of the physics of black holes

Black holes, predicted by Albert Einstein's general theory of relativity more than a century ago, have long intrigued scientists and the public with their bizarre and fantastical properties. Although Einstein understood that black holes were mathematical solutions to his equations, he never accepted their physical reality—a viewpoint many shared. This all changed in the 1960s and 1970s, when a deeper conceptual understanding of black holes developed just as new observations revealed the existence of quasars and X-ray binary star systems, whose mysterious properties could be explained by the presence of black holes. Black holes have since been the subject of intense research—and the physics governing how they behave and affect their surroundings is stranger and more mind-bending than any fiction.

After introducing the basics of the special and general theories of relativity, this book describes black holes both as astrophysical objects and theoretical "laboratories" in which physicists can test their understanding of gravitational, quantum, and thermal physics. From Schwarzschild black holes to rotating and colliding black holes, and from gravitational radiation to Hawking radiation and information loss, Steven Gubser and Frans Pretorius use creative thought experiments and analogies to explain their subject accessibly. They also describe the decades-long quest to observe the universe in gravitational waves, which recently resulted in the LIGO observatories' detection of the distinctive gravitational wave "chirp" of two colliding black holes—the first direct observation of black holes' existence.

The Little Book of Black Holes takes readers deep into the mysterious heart of the subject, offering rare clarity of insight into the physics that makes black holes simple yet destructive manifestations of geometric destiny.



The Little Book of Cosmology

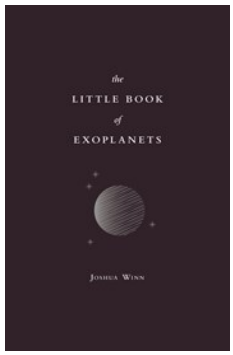
Lyman Page
9780691195780
£16.99 • $19.95
Hardcover
Science / Space Science / Cosmology
April 2020
Princeton University Press

The cutting-edge science that is taking the measure of the universe

The Little Book of Cosmology provides a breathtaking look at our universe on the grandest scales imaginable. Written by one of the world's leading experimental cosmologists, this short but deeply insightful book describes what scientists are revealing through precise measurements of the faint thermal afterglow of the Big Bang—known as the cosmic microwave background, or CMB—and how their findings are transforming our view of the cosmos.

Blending the latest findings in cosmology with essential concepts from physics, Lyman Page first helps readers to grasp the sheer enormity of the universe, explaining how to understand the history of its formation and evolution in space and time. Then he sheds light on how spatial variations in the CMB formed, how they reveal the age, size, and geometry of the universe, and how they offer a blueprint for the formation of cosmic structure.

Not only does Page explain current observations and measurements, he describes how they can be woven together into a unified picture to form the Standard Model of Cosmology. Yet much remains unknown, and this incisive book also describes the search for ever deeper knowledge at the field's frontiers—from quests to understand the nature of neutrinos and dark energy to investigations into the physics of the very early universe.



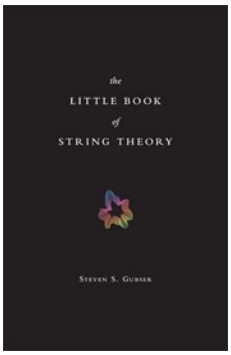
The Little Book of Exoplanets

Joshua N. Winn
9780691215471
£18.99 • $22.95
Hardcover
Science / Physics / Astrophysics
July 2023
Princeton University Press

A concise and accessible introduction to exoplanets that explains the cutting-edge science behind recent discoveries

For centuries, people have speculated about the possibility of planets orbiting distant stars, but only since the 1990s has technology allowed astronomers to detect them. At this point, more than five thousand such exoplanets have been identified, with the pace of discovery accelerating after the launch of NASA's Transiting Exoplanet Survey Satellite and the Webb Space Telescope. In *The Little Book of Exoplanets*, Princeton astrophysicist Joshua Winn offers a brief and engaging introduction to the search for exoplanets and the cutting-edge science behind recent findings. In doing so, he chronicles the dawn of a new age of discovery—one that has rapidly transformed astronomy and our broader understanding of the universe.

Scientists now know that many Sun-like stars host their own systems of planets, some of which may resemble our solar system and include planets similar to the Earth. But, Winn tells us, the most remarkable discoveries so far have been of planets with unexpected and decidedly un-Earth-like properties, which have upended what we thought we knew about the origins of planetary systems. Winn provides an inside view of the sophisticated detective work astronomers perform as they find and study exoplanets and describes the surprising—sometimes downright bizarre—planets and systems they have found. He explains how these discoveries are revolutionizing astronomy, and he explores the current status and possible future of the search for another Earth. Finally, drawing on his own and other scientists' work, he considers how the discovery of exoplanets and their faraway solar systems changes our perspectives on the universe and our place in it.



The Little Book of String Theory

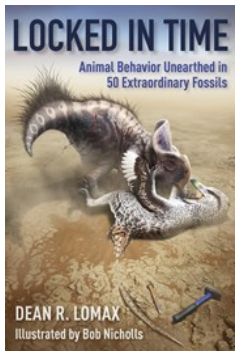
Steven S. Gubser
9780691142890
£16.99 • $19.95
Hardcover
Science / Physics
February 2010
Princeton University Press

The essential beginner's guide to string theory

The Little Book of String Theory offers a short, accessible, and entertaining introduction to one of the most talked-about areas of physics today. String theory has been called the "theory of everything." It seeks to describe all the fundamental forces of nature. It encompasses gravity and quantum mechanics in one unifying theory. But it is unproven and fraught with controversy. After reading this book, you'll be able to draw your own conclusions about string theory.

Steve Gubser begins by explaining Einstein's famous equation $E = mc2$, quantum mechanics, and black holes. He then gives readers a crash course in string theory and the core ideas behind it. In plain English and with a minimum of mathematics, Gubser covers strings, branes, string dualities, extra dimensions, curved spacetime, quantum fluctuations, symmetry, and supersymmetry. He describes efforts to link string theory to experimental physics and uses analogies that nonscientists can understand. How does Chopin's Fantasie-Impromptu relate to quantum mechanics? What would it be like to fall into a black hole? Why is dancing a waltz similar to contemplating a string duality? Find out in the pages of this book.

The Little Book of String Theory is the essential, most up-to-date beginner's guide to this elegant, multidimensional field of physics.

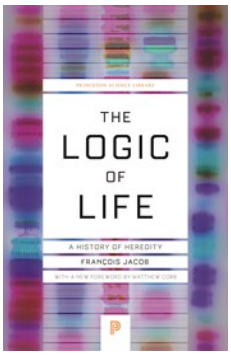


Locked in Time

Dean R. Lomax
9780231197298
£16.99 • $19.95
Trade Paperback
Science / Paleontology
October 2022
Columbia University Press

Fossils allow us to picture the forms of life that inhabited the earth eons ago. But we long to know more: how did these animals actually behave? We are fascinated by the daily lives of our fellow creatures—how they reproduce and raise their young, how they hunt their prey or elude their predators, and more. What would it be like to see prehistoric animals as they lived and breathed?

From dinosaurs fighting to their deaths to elephant-sized burrowing ground sloths, this book takes readers on a global journey deep into the earth's past. *Locked in Time* showcases fifty of the most astonishing fossils ever found, brought together in five fascinating chapters that offer an unprecedented glimpse at the real-life behaviors of prehistoric animals. Dean R. Lomax examines the extraordinary direct evidence of fossils captured in the midst of everyday action, such as dinosaurs sitting on their eggs like birds, Jurassic flies preserved while mating, a *T. rex* infected by parasites. Each fossil, he reveals, tells a unique story about prehistoric life. Many recall behaviors typical of animals familiar to us today, evoking the chain of evolution that links all living things to their distant ancestors. *Locked in Time* allows us to see that fossils are not just inanimate objects: they can record the life stories of creatures as fully alive as any today. Striking and scientifically rigorous illustrations by renowned paleoartist Bob Nicholls bring these breathtaking moments to life.

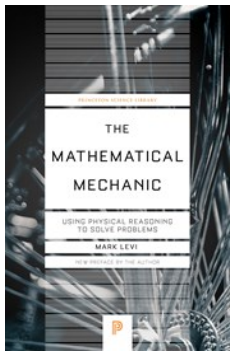


The Logic of Life

François Jacob
9780691182841
£16.99 • $19.95
Trade Paperback
Science / Life Sciences / Molecular Biology
August 2022
Princeton University Press

"The most remarkable history of biology that has ever been written."—Michel Foucault

Nobel Prize–winning scientist François Jacob's *The Logic of Life* is a landmark book in the history of biology and science. Focusing on heredity, which Jacob considers the fundamental feature of living things, he shows how, since the sixteenth century, the scientific understanding of inherited traits has moved not in a linear, progressive way, from error to truth, but instead through a series of frameworks. He reveals how these successive interpretive approaches—focusing on visible structures, internal structures (especially cells), evolution, genes, and DNA and other molecules—each have their own power but also limitations. Fundamentally challenging how the history of biology is told, much as Thomas Kuhn's *Structure of Scientific Revolutions* did for the history of science as a whole, *The Logic of Life* has greatly influenced the way scientists and historians view the past, present, and future of biology.



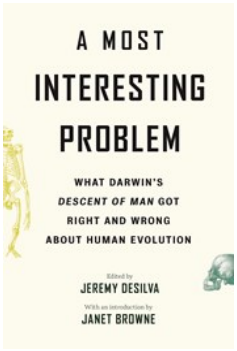
The Mathematical Mechanic

Mark Levi
9780691242057
£15.99 • $18.95
Trade Paperback
Mathematics
January 2023
Princeton University Press

Everybody knows that mathematics is indispensable to physics--imagine where we'd be today if Einstein and Newton didn't have the math to back up their ideas. But how many people realize that physics can be used to produce many astonishing and strikingly elegant solutions in mathematics? Mark Levi shows how in this delightful book, treating readers to a host of entertaining problems and mind-bending puzzlers that will amuse and inspire their inner physicist.

Levi turns math and physics upside down, revealing how physics can simplify proofs and lead to quicker solutions and new theorems, and how physical solutions can illustrate why results are true in ways lengthy mathematical calculations never can. Did you know it's possible to derive the Pythagorean theorem by spinning a fish tank filled with water? Or that soap film holds the key to determining the cheapest container for a given volume? Or that the line of best fit for a data set can be found using a mechanical contraption made from a rod and springs? Levi demonstrates how to use physical intuition to solve these and other fascinating math problems. More than half the problems can be tackled by anyone with precalculus and basic geometry, while the more challenging problems require some calculus. This one-of-a-kind book explains physics and math concepts where needed, and includes an informative appendix of physical principles.

The Mathematical Mechanic will appeal to anyone interested in the little-known connections between mathematics and physics and how both endeavors relate to the world around us.



A Most Interesting Problem

Jeremy DeSilva
9780691242064
£16.99 • $19.95
Trade Paperback
Science / Life Sciences / Evolution
November 2022
Princeton University Press

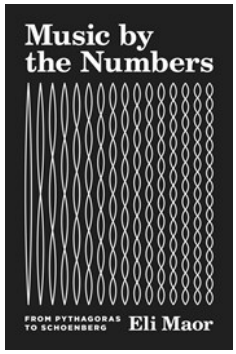
Leading scholars take stock of Darwin's ideas about human evolution in the light of modern science

In 1871, Charles Darwin published *The Descent of Man*, a companion to *Origin of Species* in which he attempted to explain human evolution, a topic he called "the highest and most interesting problem for the naturalist." *A Most Interesting Problem* brings together twelve world-class scholars and science communicators to investigate what Darwin got right—and what he got wrong—about the origin, history, and biological variation of humans.

Edited by Jeremy DeSilva and with an introduction by acclaimed Darwin biographer Janet Browne, *A Most Interesting Problem* draws on the latest discoveries in fields such as genetics, paleontology, bioarchaeology, anthropology, and primatology. This compelling and accessible book tackles the very subjects Darwin explores in *Descent*, including the evidence for human evolution, our place in the family tree, the origins of civilization, human races, and sex differences.

A Most Interesting Problem is a testament to how scientific ideas are tested and how evidence helps to structure our narratives about human origins, showing how some of Darwin's ideas have withstood more than a century of scrutiny while others have not.

A Most Interesting Problem features contributions by Janet Browne, Jeremy DeSilva, Holly Dunsworth, Agustín Fuentes, Ann Gibbons, Yohannes Haile-Selassie, Brian Hare, John Hawks, Suzana Herculano-Houzel, Kristina Killgrove, Alice Roberts, and Michael J. Ryan.

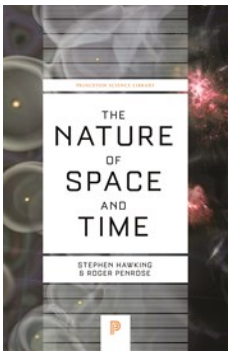


Music by the Numbers

Eli Maor
9780691202969
£14.99 • $17.95
Trade Paperback
Mathematics / History & Philosophy
March 2020
Princeton University Press

How music has influenced mathematics, physics, and astronomy from ancient Greece to the twentieth century

Music is filled with mathematical elements. The works of Bach are often said to possess a math-like logic, and Arnold Schoenberg, Iannis Xenakis, and Karlheinz Stockhausen wrote music explicitly based on mathematical principles. Yet Eli Maor argues that it is music that has had the greater influence on mathematics, not the other way around. Starting with Pythagoras, proceeding through Schoenberg, and bringing the story up to the present with contemporary string theory, *Music by the Numbers* tells a fascinating story of composers, scientists, inventors, and eccentrics who have played a role in the age-old relationship between music, mathematics, and the physical sciences. Weaving compelling stories of historical episodes with Maor's personal reflections as a mathematician and lover of classical music, this book will delight anyone who loves math and music.



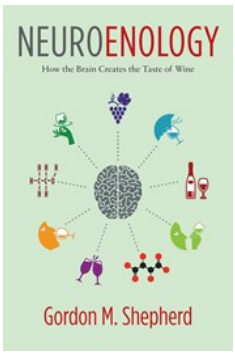
The Nature of Space and Time

Stephen Hawking
9780691168449
£12.99 • $15.95
Trade Paperback
Science / Physics
September 2015
Princeton University Press

From two of the world's great physicists—Stephen Hawking and Nobel laureate Roger Penrose—a lively debate about the nature of space and time

Einstein said that the most incomprehensible thing about the universe is that it is comprehensible. But was he right? Can the quantum theory of fields and Einstein's general theory of relativity, the two most accurate and successful theories in all of physics, be united into a single quantum theory of gravity? Can quantum and cosmos ever be combined? In *The Nature of Space and Time*, two of the world's most famous physicists—Stephen Hawking (*A Brief History of Time*) and Roger Penrose (*The Road to Reality*)—debate these questions.

The authors outline how their positions have further diverged on a number of key issues, including the spatial geometry of the universe, inflationary versus cyclic theories of the cosmos, and the black-hole information-loss paradox. Though much progress has been made, Hawking and Penrose stress that physicists still have further to go in their quest for a quantum theory of gravity.

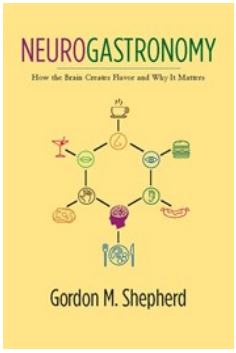


Neuroenology

Gordon Shepherd
9780231177009
£20.00 • $24.95
Hardcover
Science / Life Sciences / Neuroscience
November 2016
Columbia University Press

In his new book, Gordon M. Shepherd expands on the startling discovery that the brain creates the taste of wine. This approach to understanding wine's sensory experience draws on findings in neuroscience, biomechanics, human physiology, and traditional enology. Shepherd shows, just as he did in *Neurogastronomy: How the Brain Creates Flavor and Why It Matters*, that creating the taste of wine engages more of the brain than does any other human behavior. He clearly illustrates the scientific underpinnings of this process, along the way enhancing our enjoyment of wine.

Neuroenology is the first book on wine tasting by a neuroscientist. It begins with the movements of wine through the mouth and then consults recent research to explain the function of retronasal smell and its extraordinary power in creating wine taste. Shepherd comprehensively explains how the specific sensory pathways in the cerebral cortex create the memory of wine and how language is used to identify and imprint wine characteristics. Intended for a broad audience of readers—from amateur wine drinkers to sommeliers, from casual foodies to seasoned chefs—*Neuroenology* shows how the emotion of pleasure is the final judge of the wine experience. It includes practical tips for a scientifically informed wine tasting and closes with a delightful account of Shepherd's experience tasting classic Bordeaux vintages with French winemaker Jean-Claude Berrouet of the Chateau Petrus and Dominus Estate.



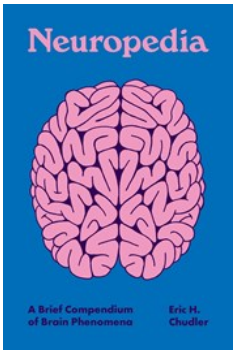
Neurogastronomy

Gordon Shepherd
9780231159111
£15.99 • $18.95
Trade Paperback
Science / Life Sciences / Neuroscience
July 2013
Columbia University Press

Leading neuroscientist Gordon M. Shepherd embarks on a paradigm-shifting trip through the "human brain flavor system," laying the foundations for a new scientific field: neurogastronomy. Challenging the belief that the sense of smell diminished during human evolution, Shepherd argues that this sense, which constitutes the main component of flavor, is far more powerful and essential than previously believed.

Shepherd begins *Neurogastronomy* with the mechanics of smell, particularly the way it stimulates the nose from the back of the mouth. As we eat, the brain conceptualizes smells as spatial patterns, and from these and the other senses it constructs the perception of flavor. Shepherd then considers the impact of the flavor system on contemporary social, behavioral, and medical issues. He analyzes flavor's engagement with the brain regions that control emotion, food preferences, and cravings, and he even devotes a section to food's role in drug addiction and, building on Marcel Proust's iconic tale of the madeleine, its ability to evoke deep memories.

Shepherd connects his research to trends in nutrition, dieting, and obesity, especially the challenges that many face in eating healthily. He concludes with human perceptions of smell and flavor and their relationship to the neural basis of consciousness. Everyone from casual diners and ardent foodies to wine critics, chefs, scholars, and researchers will delight in Shepherd's fascinating, scientific-gastronomic adventures.



Neuropedia

Eric H. Chudler
9780691213576
£10.99 • $16.95
Hardcover
Science / Life Sciences / Neuroscience
November 2022
Princeton University Press

A fun and fact-filled A–Z treasury for anyone with a head on their shoulders

Neuropedia journeys into the mysteries and marvels of the three pounds of tissue between your ears—the brain. Eric Chudler takes you on a breathtaking tour of the nervous system with dozens of entries that explore the structure and function of the brain and cover topics such as the spinal cord and nerve cells, the methods of neuroscientific research, and the visionary scientists who have dedicated their lives to understanding what makes each of us who we are.

The brain has fascinated and puzzled researchers, physicians, and philosophers for thousands of years and captivated us with each new discovery. This compendium of neuroscientific wonders is brimming with facts and insights, helping us to make sense of our current understanding of the nervous system while identifying the frontiers in our knowledge that remain unexplored. Chudler guides readers through a variety of rare and common neurological disorders such as alien hand disorder, Capgras syndrome, Alzheimer's disease, Parkinson's disease, and stroke, and discusses the latest brain-imaging methods used to diagnose them. He discusses neurochemicals, neurotoxins, and lifesaving drugs, and offers bold perspectives on human consciousness that enable us to better appreciate our place in nature.

With marvelous illustrations by Kelly Chudler, *Neuropedia* is an informative and entertaining trip into the inner world of the brain.

Note-by-Note Cooking

Hervé This
9780231164870
£13.99 • $16.95
Trade Paperback
Science / Chemistry
December 2016
Columbia University Press

Note-by-Note Cooking is a landmark in the annals of gastronomy, liberating cooks from the constraints of traditional ingredients and methods through the use of pure molecular compounds. 1-Octen-3-ol, which has a scent of wild mushrooms; limonene, a colorless liquid hydrocarbon that has the smell of citrus; sotolon, whose fragrance at high concentrations resembles curry and at low concentrations, maple syrup or sugar; tyrosine, an odorless but flavorful amino acid present in cheese—these and many other substances, some occurring in nature, some synthesized in the laboratory, make it possible to create novel tastes and flavors in the same way that elementary sound waves can be combined to create new sounds.

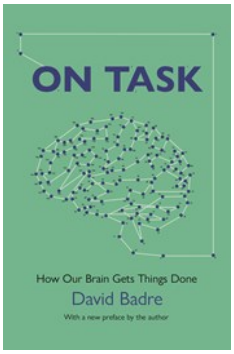
Note-by-note cooking promises to add unadulterated nutritional value to dishes of all kinds, actually improving upon the health benefits of so-called natural foods. Cooking with molecular compounds will be far more energy efficient and environmentally sustainable than traditional techniques of cooking. This new way of thinking about food heralds a phase of culinary evolution on which the long-term survival of a growing human population depends. Hervé This clearly explains the properties of naturally occurring and synthesized compounds, dispels a host of misconceptions about the place of chemistry in cooking, and shows why note-by-note cooking is an obvious—and inevitable—extension of his earlier pioneering work in molecular gastronomy. An appendix contains a representative selection of recipes, vividly illustrated in color.

On Gravity

Anthony Zee
9780691202662
£12.99 • $15.95
Trade Paperback
Science / Physics / Gravity
March 2020
Princeton University Press

A pithy yet deep introduction to Einstein's general theory of relativity

Of the four fundamental forces of nature, gravity might be the least understood and yet the one with which we are most intimate. *On Gravity* combines depth with accessibility to take us on a compelling tour of Einstein's general theory of relativity. A. Zee begins with the discovery of gravity waves, then explains how gravity can be understood in comparison to other classical field theories, presents the idea of curved spacetime, and explores black holes and Hawking radiation. Zee travels as far as the theory reaches, leaving us with tantalizing hints of the unknown, from the intransigence of quantum gravity to the mysteries of dark matter. Infused with Zee's signature warmth and fresh style, *On Gravity* opens a unique pathway to comprehending relativity, gravity, spacetime, and the workings of the universe.



On Task

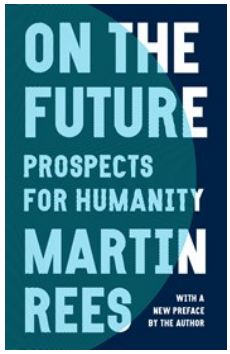
David Badre
9780691234700
£16.99 • $19.95
Trade Paperback
Science / Cognitive Science
February 2022
Princeton University Press

A look at the extraordinary ways the brain turns thoughts into actions—and how this shapes our everyday lives

Why is it hard to text and drive at the same time? How do you resist eating that extra piece of cake? Why does staring at a tax form feel mentally exhausting? Why can your child expertly fix the computer and yet still forget to put on a coat? From making a cup of coffee to buying a house to changing the world around them, humans are uniquely able to execute necessary actions. How do we do it? Or in other words, how do our brains get things done? In *On Task*, cognitive neuroscientist David Badre presents the first authoritative introduction to the neuroscience of cognitive control—the remarkable ways that our brains devise sophisticated actions to achieve our goals. We barely notice this routine part of our lives. Yet, cognitive control, also known as executive function, is an astonishing phenomenon that has a profound impact on our well-being.

Drawing on cutting-edge research, vivid clinical case studies, and examples from daily life, Badre sheds light on the evolution and inner workings of cognitive control. He examines issues from multitasking and willpower to habitual errors and bad decision making, as well as what happens as our brains develop in childhood and change as we age—and what happens when cognitive control breaks down. Ultimately, Badre shows that cognitive control affects just about everything we do.

A revelatory look at how billions of neurons collectively translate abstract ideas into concrete plans, *On Task* offers an eye-opening investigation into the brain's critical role in human behavior.



On the Future

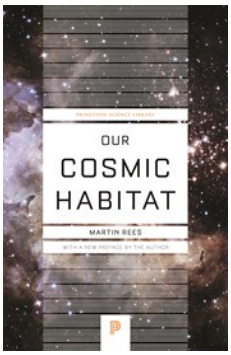
Martin Rees
9780691231068
£10.99 • $12.95
Trade Paperback
Science / Biotechnology
October 2021
Princeton University Press

A provocative and inspiring look at the future of humanity and science from world-renowned scientist and bestselling author Martin Rees

Humanity has reached a critical moment. Our world is unsettled and rapidly changing, and we face existential risks over the next century. Various outcomes—good and bad—are possible. Yet our approach to the future is characterized by short-term thinking, polarizing debates, alarmist rhetoric, and pessimism. In this short, exhilarating book, renowned scientist and bestselling author Martin Rees argues that humanity's prospects depend on our taking a very different approach to planning for tomorrow.

The future of humanity is bound to the future of science and hinges on how successfully we harness technological advances to address our challenges. If we are to use science to solve our problems while avoiding its dystopian risks, we must think rationally, globally, collectively, and optimistically about the long term. Advances in biotechnology, cybertechnology, robotics, and artificial intelligence—if pursued and applied wisely—could empower us to boost the developing and developed world and overcome the threats humanity faces on Earth, from climate change to nuclear war. At the same time, further advances in space science will allow humans to explore the solar system and beyond with robots and AI. But there is no "Plan B" for Earth—no viable alternative within reach if we do not care for our home planet.

Rich with fascinating insights into cutting-edge science and technology, this accessible book will captivate anyone who wants to understand the critical issues that will define the future of humanity on Earth and beyond.



Our Cosmic Habitat

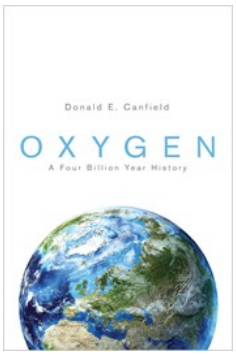
Martin Rees

9780691178097
£14.99 • $17.95
Trade Paperback
Science / Space Science / Cosmology
November 2017
Princeton University Press

Our universe seems strangely "biophilic," or hospitable to life. Is this happenstance, providence, or coincidence? According to cosmologist Martin Rees, the answer depends on the answer to another question, the one posed by Einstein's famous remark: "What interests me most is whether God could have made the world differently." This highly engaging book explores the fascinating consequences of the answer being "yes." Rees explores the notion that our universe is just a part of a vast "multiverse," or ensemble of universes, in which most of the other universes are lifeless. What we call the laws of nature would then be no more than local bylaws, imposed in the aftermath of our own Big Bang. In this scenario, our cosmic habitat would be a special, possibly unique universe where the prevailing laws of physics allowed life to emerge.

Rees begins by exploring the nature of our solar system and examining a range of related issues such as whether our universe is or isn't infinite. He asks, for example: How likely is life? How credible is the Big Bang theory? Rees then peers into the long-range cosmic future before tracing the causal chain backward to the beginning. He concludes by trying to untangle the paradoxical notion that our entire universe, stretching 10 billion light-years in all directions, emerged from an infinitesimal speck.

As Rees argues, we may already have intimations of other universes. But the fate of the multiverse concept depends on the still-unknown bedrock nature of space and time on scales a trillion trillion times smaller than atoms, in the realm governed by the quantum physics of gravity. Expanding our comprehension of the cosmos, Our Cosmic Habitat will be read and enjoyed by all those--scientists and nonscientists alike--who are as fascinated by the universe we inhabit as is the author himself.



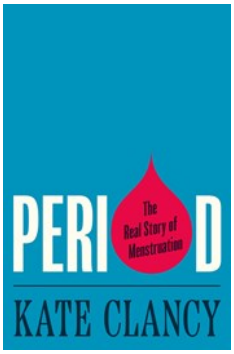
Oxygen

Donald E. Canfield

9780691168364
£15.99 • $18.95
Trade Paperback
Science / Earth Sciences
December 2015
Princeton University Press

The remarkable scientific story of how Earth became an oxygenated planet

The air we breathe is twenty-one percent oxygen, an amount higher than on any other known world. While we may take our air for granted, Earth was not always an oxygenated planet. How did it become this way? Donald Canfield—one of the world's leading authorities on geochemistry, earth history, and the early oceans—covers this vast history, emphasizing its relationship to the evolution of life and the evolving chemistry of the Earth. Canfield guides readers through the various lines of scientific evidence, considers some of the wrong turns and dead ends along the way, and highlights the scientists and researchers who have made key discoveries in the field. Showing how Earth's atmosphere developed over time, *Oxygen* takes readers on a remarkable journey through the history of the oxygenation of our planet.



Period

Kate Clancy

9780691191317
£22.00 • $27.95
Hardcover
Science / Life Sciences / Biology
April 2023
Princeton University Press

A bold and revolutionary perspective on the science and cultural history of menstruation

Menstruation is something half the world does for a week at a time, for months and years on end, yet it remains largely misunderstood. Scientists once thought of an individual's period as useless, and some doctors still believe it's unsafe for a menstruating person to swim in the ocean wearing a tampon. *Period* counters the false theories that have long defined the study of the uterus, exposing the eugenic history of gynecology while providing an intersectional feminist perspective on menstruation science.

Blending interviews and personal experience with engaging stories from her own pioneering research, Kate Clancy challenges a host of myths and false assumptions. There is no such a thing as a "normal" menstrual cycle. In fact, menstrual cycles are incredibly variable and highly responsive to environmental and psychological stressors. Clancy takes up a host of timely issues surrounding menstruation, from bodily autonomy, menstrual hygiene, and the COVID-19 vaccine to the ways racism, sexism, and medical betrayal warp public perceptions of menstruation and erase it from public life.

Offering a revelatory new perspective on one of the most captivating biological processes in the human body, *Period* will change the way you think about the past, present, and future of periods.

Philosophy of Biology

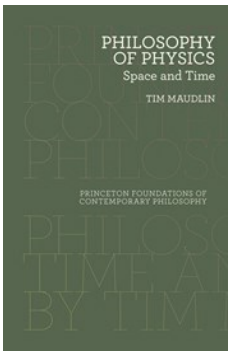
Peter Godfrey-Smith

9780691174679
£20.00 • $24.95
Trade Paperback
Philosophy
September 2016
Princeton University Press

An essential introduction to the philosophy of biology

This is a concise, comprehensive, and accessible introduction to the philosophy of biology written by a leading authority on the subject. Geared to philosophers, biologists, and students of both, the book provides sophisticated and innovative coverage of the central topics and many of the latest developments in the field. Emphasizing connections between biological theories and other areas of philosophy, and carefully explaining both philosophical and biological terms, Peter Godfrey-Smith discusses the relation between philosophy and science; examines the role of laws, mechanistic explanation, and idealized models in biological theories; describes evolution by natural selection; and assesses attempts to extend Darwin's mechanism to explain changes in ideas, culture, and other phenomena. Further topics include functions and teleology, individuality and organisms, species, the tree of life, and human nature. The book closes with detailed, cutting-edge treatments of the evolution of cooperation, of information in biology, and of the role of communication in living systems at all scales.

Authoritative and up-to-date, this is an essential guide for anyone interested in the important philosophical issues raised by the biological sciences.



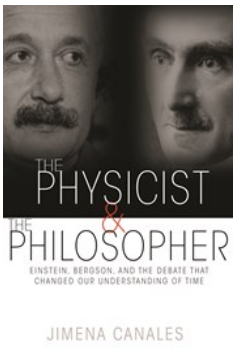
Philosophy of Physics

Tim Maudlin
9780691165714
£20.00 • $24.95
Trade Paperback
Science / Philosophy & Social Aspects
May 2015
Princeton University Press

Philosophical foundations of the physics of space-time

This concise book introduces nonphysicists to the core philosophical issues surrounding the nature and structure of space and time, and is also an ideal resource for physicists interested in the conceptual foundations of space-time theory. Tim Maudlin's broad historical overview examines Aristotelian and Newtonian accounts of space and time, and traces how Galileo's conceptions of relativity and space-time led to Einstein's special and general theories of relativity. Maudlin explains special relativity with enough detail to solve concrete physical problems while presenting general relativity in more qualitative terms. Additional topics include the Twins Paradox, the physical aspects of the Lorentz-FitzGerald contraction, the constancy of the speed of light, time travel, the direction of time, and more.

- Introduces nonphysicists to the philosophical foundations of space-time theory
- Provides a broad historical overview, from Aristotle to Einstein
- Explains special relativity geometrically, emphasizing the intrinsic structure of space-time
- Covers the Twins Paradox, Galilean relativity, time travel, and more
- Requires only basic algebra and no formal knowledge of physics



The Physicist and the Philosopher

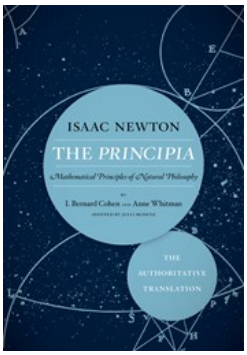
Jimena Canales
9780691173177
£22.00 • $26.95
Trade Paperback
Science / History
October 2016
Princeton University Press

The explosive debate that transformed our views about time and scientific truth

On April 6, 1922, in Paris, Albert Einstein and Henri Bergson publicly debated the nature of time. Einstein considered Bergson's theory of time to be a soft, psychological notion, irreconcilable with the quantitative realities of physics. Bergson, who gained fame as a philosopher by arguing that time should not be understood exclusively through the lens of science, criticized Einstein's theory of time for being a metaphysics grafted on to science, one that ignored the intuitive aspects of time. *The Physicist and the Philosopher* tells the remarkable story of how this explosive debate transformed our understanding of time and drove a rift between science and the humanities that persists today.

Jimena Canales introduces readers to the revolutionary ideas of Einstein and Bergson, describes how they dramatically collided in Paris, and traces how this clash of worldviews reverberated across the twentieth century. She shows how it provoked responses from figures such as Bertrand Russell and Martin Heidegger, and carried repercussions for American pragmatism, logical positivism, phenomenology, and quantum mechanics. Canales explains how the new technologies of the period—such as wristwatches, radio, and film—helped to shape people's conceptions of time and further polarized the public debate. She also discusses how Bergson and Einstein, toward the end of their lives, each reflected on his rival's legacy—Bergson during the Nazi occupation of Paris and Einstein in the context of the first hydrogen bomb explosion.

The Physicist and the Philosopher is a magisterial and revealing account that shows how scientific truth was placed on trial in a divided century marked by a new sense of time.



The Principia: The Authoritative Translation

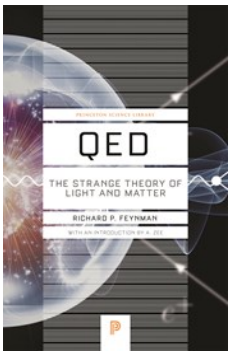
Isaac Newton
9780520290747
£16.99 • $19.95
Trade Paperback
Science / Physics / Mathematical & Computational
February 2016
University of California Press

In his monumental 1687 work, *Philosophiae Naturalis Principia Mathematica*, known familiarly as the *Principia*, Isaac Newton laid out in mathematical terms the principles of time, force, and motion that have guided the development of modern physical science. Even after more than three centuries and the revolutions of Einsteinian relativity and quantum mechanics, Newtonian physics continues to account for many of the phenomena of the observed world, and Newtonian celestial dynamics is used to determine the orbits of our space vehicles.

This authoritative, modern translation by I. Bernard Cohen and Anne Whitman, the first in more than 285 years, is based on the 1726 edition, the final revised version approved by Newton; it includes extracts from the earlier editions, corrects errors found in earlier versions, and replaces archaic English with contemporary prose and up-to-date mathematical forms.

Newton's principles describe acceleration, deceleration, and inertial movement; fluid dynamics; and the motions of the earth, moon, planets, and comets. A great work in itself, the *Principia* also revolutionized the methods of scientific investigation. It set forth the fundamental three laws of motion and the law of universal gravity, the physical principles that account for the Copernican system of the world as emended by Kepler, thus effectively ending controversy concerning the Copernican planetary system.

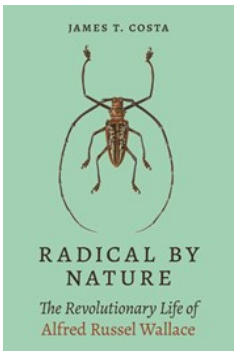
The translation-only edition of this preeminent work is truly accessible for today's scientists, scholars, and students.



QED

Richard P. Feynman
9780691164090
£16.99 • $19.95
Trade Paperback
Science / Physics / Quantum Theory
October 2014
Princeton University Press

Celebrated for his brilliantly quirky insights into the physical world, Nobel laureate Richard Feynman also possessed an extraordinary talent for explaining difficult concepts to the general public. Here Feynman provides a classic and definitive introduction to QED (namely, quantum electrodynamics), that part of quantum field theory describing the interactions of light with charged particles. Using everyday language, spatial concepts, visualizations, and his renowned "Feynman diagrams" instead of advanced mathematics, Feynman clearly and humorously communicates both the substance and spirit of QED to the layperson. A. Zee's introduction places Feynman's book and his seminal contribution to QED in historical context and further highlights Feynman's uniquely appealing and illuminating style.



Radical by Nature

James T. Costa
9780691233796
£35.00 • $39.95
Hardcover
Biography & Autobiography / Science & Technology
March 2023
Princeton University Press

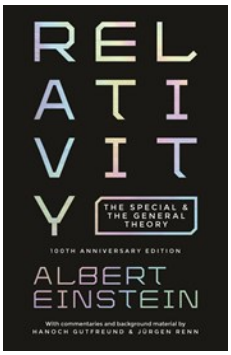
A major new biography of the brilliant naturalist, traveler, humanitarian, and codiscoverer of natural selection

Alfred Russel Wallace (1823–1913) was perhaps the most famed naturalist of the Victorian age. His expeditions to remote Amazonia and southeast Asia were the stuff of legend. A collector of thousands of species new to science, he shared in the discovery of natural selection and founded the discipline of evolutionary biogeography.

Radical by Nature tells the story of Wallace's epic life and achievements, from his stellar rise from humble origins to his complicated friendship with Charles Darwin and other leading scientific lights of Britain to his devotion to social causes and movements that threatened to alienate him from scientific society.

James Costa draws on letters, notebooks, and journals to provide a multifaceted account of a revolutionary life in science as well as Wallace's family life. He shows how the self-taught Wallace doggedly pursued bold, even radical ideas that caused a seismic shift in the natural sciences, and how he also courted controversy with nonscientific pursuits such as spiritualism and socialism. Costa describes Wallace's courageous social advocacy of women's rights, labor reform, and other important issues. He also sheds light on Wallace's complex relationship with Darwin, describing how Wallace graciously applauded his friend and rival, becoming one of his most ardent defenders.

Weaving a revelatory narrative with the latest scholarship, *Radical by Nature* paints a mesmerizing portrait of a multifaceted thinker driven by a singular passion for science, a commitment to social justice, and a lifelong sense of wonder.

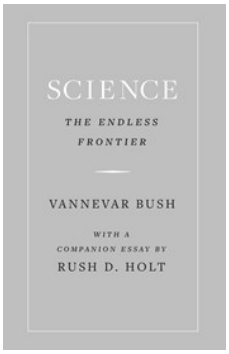


Relativity

Albert Einstein
9780691191812
£14.99 • $17.95
Trade Paperback
Science / Physics / Relativity
March 2019
Princeton University Press

A handsome annotated edition of Einstein's celebrated book on relativity

After completing the final version of his general theory of relativity in November 1915, Albert Einstein wrote *Relativity*. Intended for a popular audience, the book remains one of the most lucid explanations of the special and general theories ever written. This edition of Einstein's celebrated book features an authoritative English translation of the text along with commentaries by Hanoch Gutfreund and Jürgen Renn that examine the evolution of Einstein's thinking and cast his ideas in a modern context. Providing invaluable insight into one of the greatest scientific minds of all time, the book also includes a unique survey of the introductions from past editions, covers from selected early editions, a letter from Walther Rathenau to Einstein discussing the book, and a revealing sample from Einstein's original handwritten manuscript.



Science, the Endless Frontier

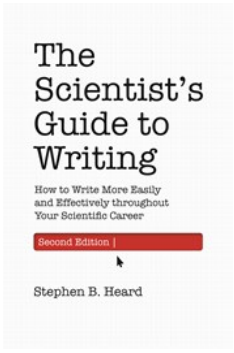
Vannevar Bush
9780691186627
£10.99 • $12.95
Hardcover
Science / Philosophy & Social Aspects
February 2021
Princeton University Press

The classic case for why government must support science—with a new essay by physicist and former congressman Rush Holt on what democracy needs from science today

Science, the Endless Frontier is recognized as the landmark argument for the essential role of science in society and government's responsibility to support scientific endeavors. First issued when Vannevar Bush was the director of the US Office of Scientific Research and Development during the Second World War, this classic remains vital in making the case that scientific progress is necessary to a nation's health, security, and prosperity. Bush's vision set the course for US science policy for more than half a century, building the world's most productive scientific enterprise. Today, amid a changing funding landscape and challenges to science's very credibility, *Science, the Endless Frontier* resonates as a powerful reminder that scientific progress and public well-being alike depend on the successful symbiosis between science and government.

This timely new edition presents this iconic text alongside a new companion essay from scientist and former congressman Rush Holt, who offers a brief introduction and consideration of what society needs most from science now. Reflecting on the report's legacy and relevance along with its limitations, Holt contends that the public's ability to cope with today's issues—such as public health, the changing climate and environment, and challenging technologies in modern society—requires a more capacious understanding of what science can contribute. Holt considers how scientists should think of their obligation to society and what the public should demand from science, and he calls for a renewed understanding of science's value for democracy and society at large.

A touchstone for concerned citizens, scientists, and policymakers, *Science, the Endless Frontier* endures as a passionate articulation of the power and potential of science.



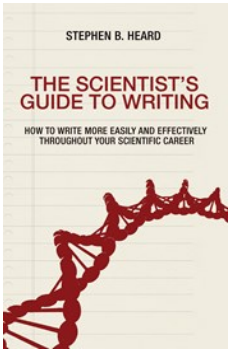
The Scientist's Guide to Writing, 2nd Edition

Stephen B. Heard
9780691219189
£22.00 • $26.95
Trade Paperback
Science / Reference
February 2022
Princeton University Press

An updated and expanded edition of the acclaimed writing guide for scientists

The Scientist's Guide to Writing explains the essential techniques that students, postdocs, and early-career scientists need to write more clearly, efficiently, and easily. Now fully updated and expanded, this incisive primer offers practical advice on such topics as generating and maintaining writing momentum, structuring a scientific paper, revising a first draft, handling citations, responding to peer reviews, managing coauthorships, and more. The ability to write clearly is critical to any scientific career. *The Scientist's Guide to Writing* shows scientists how to become better writers so that their ideas have the greatest possible impact.

- New chapters discuss effective reading, choosing the right journal for your research, and the advantages and disadvantages of posting preprints
- Provides additional advice on reporting statistical results, dealing with conflicting peer reviews, managing coauthorships, writing with English as an additional language, and more
- Emphasizes writing as a process, not just a product
- Encourages habits that improve motivation and productivity
- Offers detailed guidance on submission, review, revision, and publication
- Includes a wealth of new exercises



The Scientist's Guide to Writing

Stephen B. Heard

9780691170220
£17.99 • $21.95
Trade Paperback
Science / Reference
April 2016
Princeton University Press

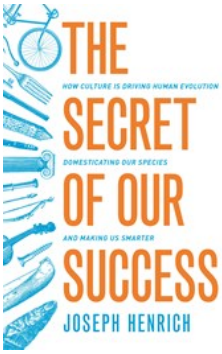
A concise and accessible primer on the scientific writer's craft

The ability to write clearly is critical to any scientific career. *The Scientist's Guide to Writing* provides practical advice to help scientists become more effective writers so that their ideas have the greatest possible impact.

Drawing on his own experience as a scientist, graduate adviser, and editor, Stephen Heard emphasizes that the goal of all scientific writing should be absolute clarity; that good writing takes deliberate practice; and that what many scientists need are not long lists of prescriptive rules but rather direct engagement with their behaviors and attitudes when they write. He combines advice on such topics as how to generate and maintain writing momentum with practical tips on structuring a scientific paper, revising a first draft, handling citations, responding to peer reviews, managing coauthorships, and more.

In an accessible, informal tone, *The Scientist's Guide to Writing* explains essential techniques that students, postdoctoral researchers, and early-career scientists need to write more clearly, efficiently, and easily.

- Emphasizes writing as a process, not just a product
- Encourages habits that improve motivation and productivity
- Explains the structure of the scientific paper and the function of each part
- Provides detailed guidance on submission, review, revision, and publication
- Addresses issues related to coauthorship, English as a second language, and more



The Secret of Our Success

Joseph Henrich

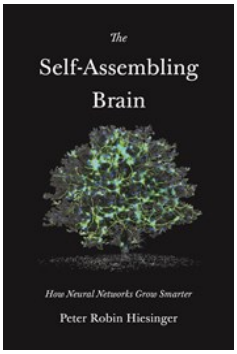
9780691178431
£16.99 • $19.95
Trade Paperback
Science / Cognitive Science
October 2017
Princeton University Press

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 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.



The Self-Assembling Brain

Peter Robin Hiesinger

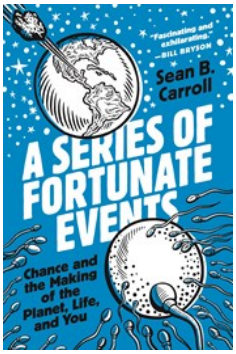
9780691241692
£20.00 • $24.95
Trade Paperback
Science / Life Sciences / Neuroscience
December 2022
Princeton University Press

What neurobiology and artificial intelligence tell us about how the brain builds itself

How does a neural network become a brain? While neurobiologists investigate how nature accomplishes this feat, computer scientists interested in artificial intelligence strive to achieve this through technology. *The Self-Assembling Brain* tells the stories of both fields, exploring the historical and modern approaches taken by the scientists pursuing answers to the quandary: What information is necessary to make an intelligent neural network?

As Peter Robin Hiesinger argues, "the information problem" underlies both fields, motivating the questions driving forward the frontiers of research. How does genetic information unfold during the years-long process of human brain development—and is there a quicker path to creating human-level artificial intelligence? Is the biological brain just messy hardware, which scientists can improve upon by running learning algorithms on computers? Can AI bypass the evolutionary programming of "grown" networks? Through a series of fictional discussions between researchers across disciplines, complemented by in-depth seminars, Hiesinger explores these tightly linked questions, highlighting the challenges facing scientists, their different disciplinary perspectives and approaches, as well as the common ground shared by those interested in the development of biological brains and AI systems. In the end, Hiesinger contends that the information content of biological and artificial neural networks must unfold in an algorithmic process requiring time and energy. There is no genome and no blueprint that depicts the final product. The self-assembling brain knows no shortcuts.

Written for readers interested in advances in neuroscience and artificial intelligence, *The Self-Assembling Brain* looks at how neural networks grow smarter.



A Series of Fortunate Events

Sean B. Carroll

9780691234694
£12.99 • $15.95
Trade Paperback
Science / Life Sciences / Evolution
March 2022
Princeton University Press

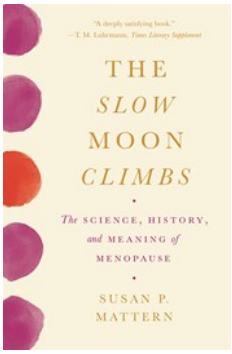
"Fascinating and exhilarating—Sean B. Carroll at his very best."—Bill Bryson, author of *The Body: A Guide for Occupants*

From acclaimed writer and biologist Sean B. Carroll, a rollicking, awe-inspiring story of the surprising power of chance in our lives and the world

Why is the world the way it is? How did we get here? Does everything happen for a reason or are some things left to chance? Philosophers and theologians have pondered these questions for millennia, but startling scientific discoveries over the past half century are revealing that we live in a world driven by chance. *A Series of Fortunate Events* tells the story of the awesome power of chance and how it is the surprising source of all the beauty and diversity in the living world.

Like every other species, we humans are here by accident. But it is shocking just how many things—any of which might never have occurred—had to happen in certain ways for any of us to exist. From an extremely improbable asteroid impact, to the wild gyrations of the Ice Age, to invisible accidents in our parents' gonads, we are all here through an astonishing series of fortunate events. And chance continues to reign every day over the razor-thin line between our life and death.

This is a relatively small book about a really big idea. It is also a spirited tale. Drawing inspiration from Monty Python, Kurt Vonnegut, and other great thinkers, and crafted by one of today's most accomplished science storytellers, *A Series of Fortunate Events* is an irresistibly entertaining and thought-provoking account of one of the most important but least appreciated facts of life.

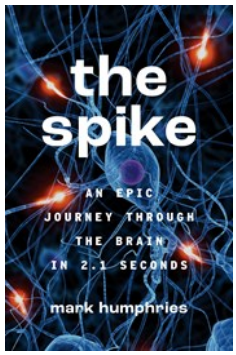


The Slow Moon Climbs

Susan Mattern
9780691216720
£16.99 • $19.95
Trade Paperback
Science / History
March 2021
Princeton University Press

A surprising look at the role of menopause in human history—and why we should change the ways we think about it

Are the ways we look at menopause all wrong? Susan Mattern says yes and, in *The Slow Moon Climbs*, reveals just how wrong we have been. From the rainforests of Paraguay to the streets of Tokyo, Mattern draws on historical, scientific, and cultural research to show how perceptions of menopause developed from prehistory to today. Introducing new ways of understanding life beyond fertility, Mattern examines the fascinating "Grandmother Hypothesis," looks at agricultural communities where households relied on postreproductive women for the family's survival, and explores the emergence of menopause as a medical condition in the Western world. *The Slow Moon Climbs* casts menopause in the positive light it deserves—as an essential juncture and a key factor in human flourishing.



The Spike

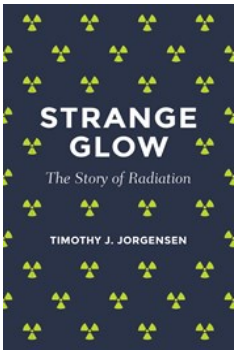
Mark Humphries
9780691241487
£15.99 • $18.95
Trade Paperback
Science / Life Sciences / Neuroscience
January 2023
Princeton University Press

The story of a neural impulse and what it reveals about how our brains work

We see the last cookie in the box and think, can I take that? We reach a hand out. In the 2.1 seconds that this impulse travels through our brain, billions of neurons communicate with one another, sending blips of voltage through our sensory and motor regions. Neuroscientists call these blips "spikes." Spikes enable us to do everything: talk, eat, run, see, plan, and decide. In *The Spike*, Mark Humphries takes readers on the epic journey of a spike through a single, brief reaction. In vivid language, Humphries tells the story of what happens in our brain, what we know about spikes, and what we still have left to understand about them.

Drawing on decades of research in neuroscience, Humphries explores how spikes are born, how they are transmitted, and how they lead us to action. He dives into previously unanswered mysteries: Why are most neurons silent? What causes neurons to fire spikes spontaneously, without input from other neurons or the outside world? Why do most spikes fail to reach any destination? Humphries presents a new vision of the brain, one where fundamental computations are carried out by spontaneous spikes that predict what will happen in the world, helping us to perceive, decide, and react quickly enough for our survival.

Traversing neuroscience's expansive terrain, *The Spike* follows a single electrical response to illuminate how our extraordinary brains work.



Strange Glow

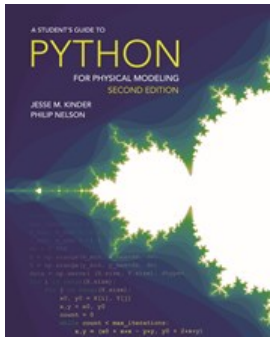
Timothy J. Jorgensen
9780691178349
£17.99 • $20.95
Trade Paperback
Science / Radiation
August 2017
Princeton University Press

The fascinating science and history of radiation

More than ever before, radiation is a part of our modern daily lives. We own radiation-emitting phones, regularly get diagnostic x-rays, such as mammograms, and submit to full-body security scans at airports. We worry and debate about the proliferation of nuclear weapons and the safety of nuclear power plants. But how much do we really know about radiation? And what are its actual dangers? An accessible blend of narrative history and science, *Strange Glow* describes mankind's extraordinary, thorny relationship with radiation, including the hard-won lessons of how radiation helps and harms our health. Timothy Jorgensen explores how our knowledge of and experiences with radiation in the last century can lead us to smarter personal decisions about radiation exposures today.

Jorgensen introduces key figures in the story of radiation—from Wilhelm Roentgen, the discoverer of x-rays, and pioneering radioactivity researchers Marie and Pierre Curie, to Thomas Edison and the victims of the recent Fukushima Daiichi nuclear power plant accident. Tracing the most important events in the evolution of radiation, Jorgensen explains exactly what radiation is, how it produces certain health consequences, and how we can protect ourselves from harm. He also considers a range of practical scenarios such as the risks of radon in our basements, radiation levels in the fish we eat, questions about cell-phone use, and radiation's link to cancer. Jorgensen empowers us to make informed choices while offering a clearer understanding of broader societal issues.

Investigating radiation's benefits and risks, *Strange Glow* takes a remarkable look at how, for better or worse, radiation has transformed our society.



A Student's Guide to Python for Physical Modeling

Jesse M. Kinder
9780691223650
£22.00 • $26.95
Trade Paperback
Science / Physics
August 2021
Princeton University Press

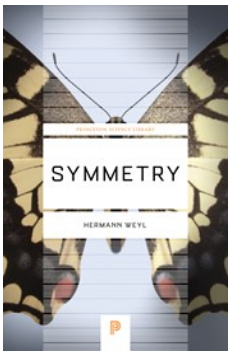
A fully updated tutorial on the basics of the Python programming language for science students

Python is a computer programming language that has gained popularity throughout the sciences. This fully updated second edition of *A Student's Guide to Python for Physical Modeling* aims to help you, the student, teach yourself enough of the Python programming language to get started with physical modeling. You will learn how to install an open-source Python programming environment and use it to accomplish many common scientific computing tasks: importing, exporting, and visualizing data; numerical analysis; and simulation. No prior programming experience is assumed.

This guide introduces a wide range of useful tools, including:

- Basic Python programming and scripting
- Numerical arrays
- Two- and three-dimensional graphics
- Animation
- Monte Carlo simulations
- Numerical methods, including solving ordinary differential equations
- Image processing

Numerous code samples and exercises—with solutions—illustrate new ideas as they are introduced. This guide also includes supplemental online resources: code samples, data sets, tutorials, and more. This edition includes new material on symbolic calculations with SymPy, an introduction to Python libraries for data science and machine learning (pandas and sklearn), and a primer on Python classes and object-oriented programming. A new appendix also introduces command line tools and version control with Git.

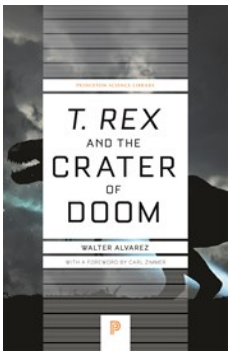


Symmetry

Hermann Weyl

9780691173252
£14.99 • $17.95
Trade Paperback
Mathematics
October 2016
Princeton University Press

Symmetry is a classic study of symmetry in mathematics, the sciences, nature, and art from one of the twentieth century's greatest mathematicians. Hermann Weyl explores the concept of symmetry beginning with the idea that it represents a harmony of proportions, and gradually departs to examine its more abstract varieties and manifestations—as bilateral, translatory, rotational, ornamental, and crystallographic. Weyl investigates the general abstract mathematical idea underlying all these special forms, using a wealth of illustrations as support. *Symmetry* is a work of seminal relevance that explores the great variety of applications and importance of symmetry.



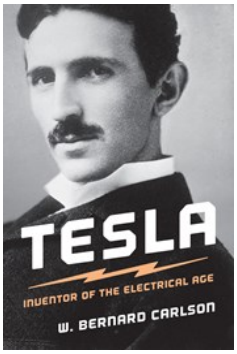
T. rex and the Crater of Doom

Walter Alvarez

9780691169668
£16.99 • $19.95
Trade Paperback
Science / Paleontology
September 2015
Princeton University Press

Sixty-five million years ago, a comet or asteroid larger than Mount Everest slammed into the Earth, inducing an explosion equivalent to the detonation of a hundred million hydrogen bombs. Vaporized detritus blasted through the atmosphere upon impact, falling back to Earth around the globe. Disastrous environmental consequences ensued: a giant tsunami, continent-scale wildfires, darkness, and cold, followed by sweltering greenhouse heat. When conditions returned to normal, half the plant and animal genera on Earth had perished.

This horrific chain of events is now widely accepted as the solution to a great scientific mystery: what caused the extinction of the dinosaurs? Walter Alvarez, one of the Berkeley scientists who discovered evidence of the impact, tells the story behind the development of the initially controversial theory. It is a saga of high adventure in remote locations, of arduous data collection and intellectual struggle, of long periods of frustration ended by sudden breakthroughs, of friendships made and lost, and of the exhilaration of discovery that forever altered our understanding of Earth's geological history.



Tesla

W. Bernard Carlson

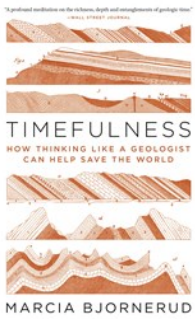
9780691165615
£17.99 • $20.95
Trade Paperback
Biography & Autobiography / Science & Technology
April 2015
Princeton University Press

The definitive account of Tesla's life and work

Nikola Tesla was a major contributor to the electrical revolution that transformed daily life at the turn of the twentieth century. His inventions, patents, and theoretical work formed the basis of modern AC electricity, and contributed to the development of radio and television. Like his competitor Thomas Edison, Tesla was one of America's first celebrity scientists, enjoying the company of New York high society and dazzling the likes of Mark Twain with his electrical demonstrations. An astute self-promoter and gifted showman, he cultivated a public image of the eccentric genius. Even at the end of his life when he was living in poverty, Tesla still attracted reporters to his annual birthday interview, regaling them with claims that he had invented a particle-beam weapon capable of bringing down enemy aircraft.

Plenty of biographies glamorize Tesla and his eccentricities, but until now none has carefully examined what, how, and why he invented. In this groundbreaking book, W. Bernard Carlson demystifies the legendary inventor, placing him within the cultural and technological context of his time, and focusing on his inventions themselves as well as the creation and maintenance of his celebrity. Drawing on original documents from Tesla's private and public life, Carlson shows how he was an "idealist" inventor who sought the perfect experimental realization of a great idea or principle, and who skillfully sold his inventions to the public through mythmaking and illusion.

This major biography sheds new light on Tesla's visionary approach to invention and the business strategies behind his most important technological breakthroughs.



Timefulness

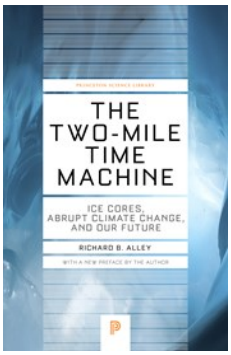
Marcia Bjornerud

9780691202631
£13.99 • $16.95
Trade Paperback
Science / Earth Sciences / Geology
February 2020
Princeton University Press

Why an awareness of Earth's temporal rhythms is critical to our planetary survival

Few of us have any conception of the enormous timescales of our planet's long history, and this narrow perspective underlies many of the environmental problems we are creating. The lifespan of Earth can seem unfathomable compared to the brevity of human existence, but this view of time denies our deep roots in Earth's history—and the magnitude of our effects on the planet. *Timefulness* reveals how knowing the rhythms of Earth's deep past and conceiving of time as a geologist does can give us the perspective we need for a more sustainable future. Featuring illustrations by Haley Hagerman, this compelling book offers a new way of thinking about our place in time, showing how our everyday lives are shaped by processes that vastly predate us, and how our actions today will in turn have consequences that will outlast us by generations.

This edition includes discussion questions for reading groups.

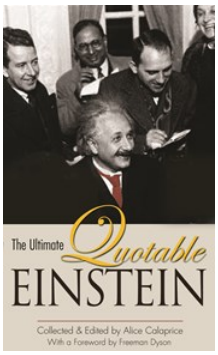


The Two-Mile Time Machine

Richard B. Alley
9780691160832
£14.99 • $17.95
Trade Paperback
Science / Earth Sciences
October 2014
Princeton University Press

In the 1990s Richard B. Alley and his colleagues made headlines with the discovery that the last ice age came to an abrupt end over a period of only three years. In *The Two-Mile Time Machine*, Alley tells the fascinating history of global climate changes as revealed by reading the annual rings of ice from cores drilled in Greenland. He explains that humans have experienced an unusually temperate climate compared to the wild fluctuations that characterized most of prehistory. He warns that our comfortable environment could come to an end in a matter of years and tells us what we need to know in order to understand and perhaps overcome climate changes in the future.

In a new preface, the author weighs in on whether our understanding of global climate change has altered in the years since the book was first published, what the latest research tells us, and what he is working on next.



The Ultimate Quotable Einstein

Albert Einstein
9780691160146
£14.99 • $17.95
Trade Paperback
Science / Physics
September 2013
Princeton University Press

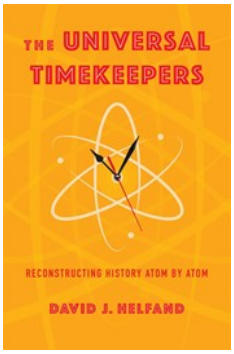
The most comprehensive collection of Einstein quotations ever published

Here is the definitive new edition of the hugely popular collection of Einstein quotations that has sold tens of thousands of copies worldwide and been translated into twenty-five languages.

The Ultimate Quotable Einstein features 400 additional quotes, bringing the total to roughly 1,600 in all. This ultimate edition includes new sections—"On and to Children," "On Race and Prejudice," and "Einstein's Verses: A Small Selection"—as well as a chronology of Einstein's life and accomplishments, Freeman Dyson's authoritative foreword, and new commentary by Alice Calaprice.

In *The Ultimate Quotable Einstein*, readers will also find quotes by others about Einstein along with quotes attributed to him. Every quotation in this informative and entertaining collection is fully documented, and Calaprice has carefully selected new photographs and cartoons to introduce each section.

- Features 400 additional quotations
- Contains roughly 1,600 quotations in all
- Includes new sections on children, race and prejudice, and Einstein's poetry
- Provides new commentary
- Beautifully illustrated
- The most comprehensive collection of Einstein quotes ever published



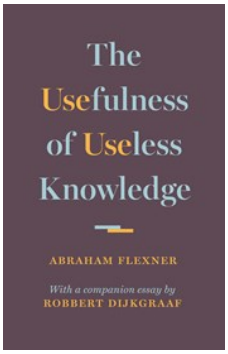
The Universal Timekeepers

David Helfand
9780231210980
£20.00 • $24.95
Hardcover
Science / Physics / Atomic & Molecular
September 2023
Columbia University Press

Atoms are unfathomably tiny. It takes fifteen million trillion of them to make up a single poppy seed—give or take a few billion. And there's hardly anything to them: atoms are more than 99.9999999999 percent empty space. Yet scientists have learned to count these slivers of near nothingness with precision and to peer into their internal states. In looking so closely, we have learned that atoms, because of their inimitable signatures and imperturbable internal clocks, are little archives holding the secrets of the past.

David J. Helfand reconstructs the history of the universe—back to its first microsecond 13.8 billion years ago—with the help of atoms. He shows how, by using detectors and reactors, microscopes and telescopes, we can decode the tales these infinitesimal particles tell, answering questions such as: Is a medieval illustrated prayer book real or forged? How did maize cultivation spread from the highlands of central Mexico to New England? What was Earth's climate like before humans emerged? Where can we find clues to identify the culprit in the demise of the dinosaurs? When did our planet and solar system form? Can we trace the births of atoms in the cores of massive stars or even glimpse the origins of the universe itself?

A lively and inviting introduction to the building blocks of everything we know, *The Universal Timekeepers* demonstrates the power of science to unveil the mysteries of unreachably remote times and places.



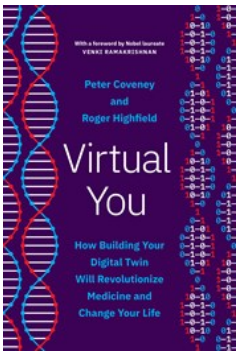
The Usefulness of Useless Knowledge

Abraham Flexner
9780691174761
£8.99 • $10.95
Hardcover
Science / Philosophy & Social Aspects
February 2017
Princeton University Press

A short, provocative book about why "useless" science often leads to humanity's greatest technological breakthroughs

A forty-year tightening of funding for scientific research has meant that resources are increasingly directed toward applied or practical outcomes, with the intent of creating products of immediate value. In such a scenario, it makes sense to focus on the most identifiable and urgent problems, right? Actually, it doesn't. In his classic essay "The Usefulness of Useless Knowledge," Abraham Flexner, the founding director of the Institute for Advanced Study in Princeton and the man who helped bring Albert Einstein to the United States, describes a great paradox of scientific research. The search for answers to deep questions, motivated solely by curiosity and without concern for applications, often leads not only to the greatest scientific discoveries but also to the most revolutionary technological breakthroughs. In short, no quantum mechanics, no computer chips.

This brief book includes Flexner's timeless 1939 essay alongside a new companion essay by Robbert Dijkgraaf, the Institute's current director, in which he shows that Flexner's defense of the value of "the unobstructed pursuit of useless knowledge" may be even more relevant today than it was in the early twentieth century. Dijkgraaf describes how basic research has led to major transformations in the past century and explains why it is an essential precondition of innovation and the first step in social and cultural change. He makes the case that society can achieve deeper understanding and practical progress today and tomorrow only by truly valuing and substantially funding the curiosity-driven "pursuit of useless knowledge" in both the sciences and the humanities.



Virtual You

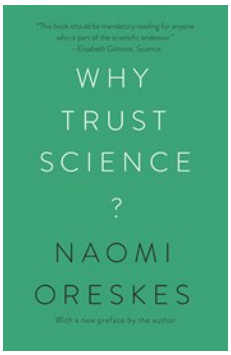
Peter Coveney
9780691223278
£25.00 • $29.95
Hardcover
Science / Life Sciences / Biology
March 2023
Princeton University Press

The visionary science behind the digital human twins that will enhance our health and our future

Virtual You is a panoramic account of efforts by scientists around the world to build digital twins of human beings, from cells and tissues to organs and whole bodies. These virtual copies will usher in a new era of personalized medicine, one in which your digital twin can help predict your risk of disease, participate in virtual drug trials, shed light on the diet and lifestyle changes that are best for you, and help identify therapies to enhance your well-being and extend your lifespan—but thorny challenges remain.

In this deeply illuminating book, Peter Coveney and Roger Highfield reveal what it will take to build a virtual, functional copy of a person in five steps. Along the way, they take you on a fantastic voyage through the complexity of the human body, describing the latest scientific and technological advances —from multiscale modeling to extraordinary new forms of computing—that will make "virtual you" a reality, while also considering the ethical questions inherent to realizing truly predictive medicine.

With an incisive foreword by Nobel Prize–winning biologist Venki Ramakrishnan, *Virtual You* is science at its most astounding, showing how our virtual twins and even whole populations of virtual humans promise to transform our health and our lives in the coming decades.

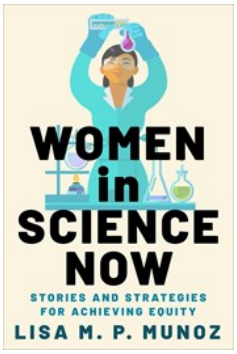


Why Trust Science?

Naomi Oreskes
9780691212265
£15.99 • $18.95
Trade Paperback
Science / Philosophy & Social Aspects
April 2021
Princeton University Press

Why the social character of scientific knowledge makes it trustworthy

Are doctors right when they tell us vaccines are safe? Should we take climate experts at their word when they warn us about the perils of global warming? Why should we trust science when so many of our political leaders don't? Naomi Oreskes offers a bold and compelling defense of science, revealing why the social character of scientific knowledge is its greatest strength—and the greatest reason we can trust it. Tracing the history and philosophy of science from the late nineteenth century to today, this timely and provocative book features a new preface by Oreskes and critical responses by climate experts Ottmar Edenhofer and Martin Kowarsch, political scientist Jon Krosnick, philosopher of science Marc Lange, and science historian Susan Lindee, as well as a foreword by political theorist Stephen Macedo.



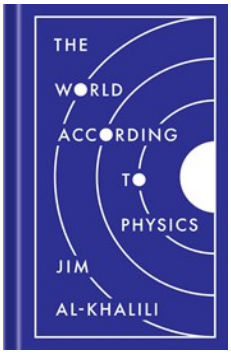
Women in Science Now

Lisa M. P. Munoz
9780231206143
£20.00 • $24.95
Hardcover
Science / Philosophy & Social Aspects
October 2023
Columbia University Press

Women working in the sciences face obstacles at virtually every step along their career paths. From subtle slights to blatant biases, deep systemic problems block women from advancing or push them out of science and technology entirely.

Women in Science Now examines solutions to this persistent gender gap, offering new perspectives on how to make science more equitable and inclusive for all. This book shares stories and insights of women from a range of backgrounds working in various disciplines, illustrating the journeys that brought them to the sciences, the challenges they faced along the way, and the important contributions they have made to their fields. Lisa M. P. Munoz combines these narratives with a wealth of data to illuminate the size and scope of the challenges women scientists face, while highlighting research-based solutions to help overcome these obstacles. She presents groundbreaking studies in social psychology and organizational behavior that are informing novel approaches for combating historic and ongoing inequities.

Through a combined focus on personal experiences and social-science research, this timely book provides both a path toward greater gender equity and an inspiring vision of science and scientists.



The World According to Physics

Jim Al-Khalili
9780691182308
£12.99 • $17.95
Hardcover
Science / Physics
March 2020
Princeton University Press

Quantum physicist, *New York Times* bestselling author, and BBC host Jim Al-Khalili offers a fascinating and illuminating look at what physics reveals about the world

Shining a light on the most profound insights revealed by modern physics, Jim Al-Khalili invites us all to understand what this crucially important science tells us about the universe and the nature of reality itself.

Al-Khalili begins by introducing the fundamental concepts of space, time, energy, and matter, and then describes the three pillars of modern physics—quantum theory, relativity, and thermodynamics—showing how all three must come together if we are ever to have a full understanding of reality. Using wonderful examples and thought-provoking analogies, Al-Khalili illuminates the physics of the extreme cosmic and quantum scales, the speculative frontiers of the field, and the physics that underpins our everyday experiences and technologies, bringing the reader up to speed with the biggest ideas in physics in just a few sittings. Physics is revealed as an intrepid human quest for ever more foundational principles that accurately explain the natural world we see around us, an undertaking guided by core values such as honesty and doubt. The knowledge discovered by physics both empowers and humbles us, and still, physics continues to delve valiantly into the unknown.

Making even the most enigmatic scientific ideas accessible and captivating, this deeply insightful book illuminates why physics matters to everyone and calls one and all to share in the profound adventure of seeking truth in the world around us.