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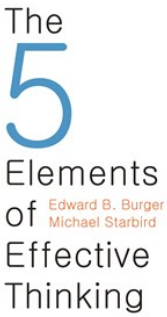
New and Best of Backlist

Spring 2023



The 5 Elements of Effective Thinking

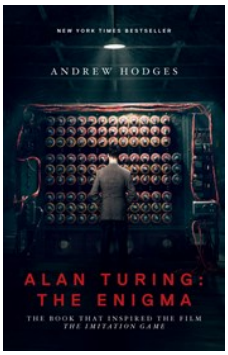
Edward B. Burger
9780691156668
£16.99
Hardcover
Self-Help
August 2012
Princeton University Press

Simple but powerful strategies for increasing your success by improving your thinking

The 5 Elements of Effective Thinking presents practical, lively, and inspiring ways for you to become more successful through better thinking. The idea is simple: You can learn how to think far better by adopting specific strategies. Brilliant people aren't a special breed—they just use their minds differently. By using the straightforward and thought-provoking techniques in *The 5 Elements of Effective Thinking*, you will regularly find imaginative solutions to difficult challenges, and you will discover new ways of looking at your world and yourself—revealing previously hidden opportunities.

The book offers real-life stories, explicit action items, and concrete methods that allow you to attain a deeper understanding of any issue, exploit the power of failure as a step toward success, develop a habit of creating probing questions, see the world of ideas as an ever-flowing stream of thought, and embrace the uplifting reality that we are all capable of change. No matter who you are, the practical mind-sets introduced in the book will empower you to realize any goal in a more creative, intelligent, and effective manner. Filled with engaging examples that unlock truths about thinking in every walk of life, *The 5 Elements of Effective Thinking* is written for all who want to reach their fullest potential—including students, parents, teachers, businesspeople, professionals, athletes, artists, leaders, and lifelong learners.

Whenever you are stuck, need a new idea, or want to learn and grow, *The 5 Elements of Effective Thinking* will inspire and guide you on your way.



Alan Turing: The Enigma

Andrew Hodges
9780691164724
£13.99
Trade Paperback
Biography & Autobiography / Science & Technology
November 2014
Princeton University Press

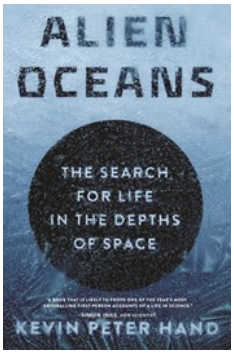
A *NEW YORK TIMES* BESTSELLER

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

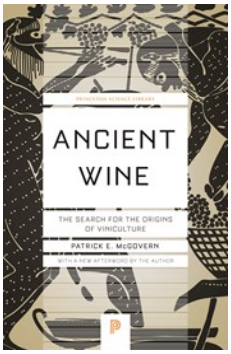
Kevin Hand
9780691227283
£15.99
Trade Paperback
Science / Space Science
September 2021
Princeton University Press

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.

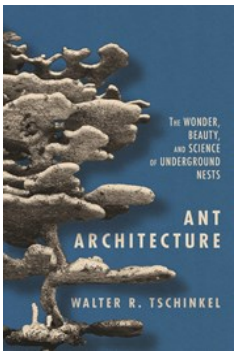


Ancient Wine

Patrick E. Mcgovern
9780691197203
£14.99
Trade Paperback
Social Science / Archaeology
October 2019
Princeton University Press

A richly illustrated account of the story of ancient viniculture

The history of civilization is, in many ways, the history of wine. This book is the first comprehensive account of the earliest stages of the history and prehistory of viniculture, which extends back into the Neolithic period and beyond. Elegantly written and richly illustrated, *Ancient Wine* opens up whole new chapters in the fascinating story of wine by drawing on recent archaeological discoveries, molecular and DNA sleuthing, and the writings and art of ancient peoples. In a new afterword, the author discusses exciting recent developments in the understanding of ancient wine, including a new theory of how viniculture came to central and northern Europe.



Ant Architecture

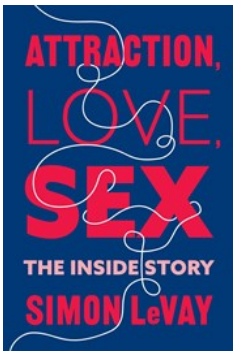
Walter R. Tschinkel
9780691179315
£25.00
Hardcover
Nature / Animals / Insects & Spiders
June 2021
Princeton University Press

An unprecedented look at the complex and beautiful world of underground ant architecture

Walter Tschinkel has spent much of his career investigating the hidden subterranean realm of ant nests. This wonderfully illustrated book takes you inside an unseen world where thousands of ants build intricate homes in the soil beneath our feet.

Tschinkel describes the ingenious methods he has devised to study ant nests, showing how he fills a nest with plaster, molten metal, or wax and painstakingly excavates the cast. He guides you through living ant nests chamber by chamber, revealing how nests are created and how colonies function. How does nest architecture vary across species? Do ants have "architectural plans"? How do nests affect our environment? As he delves into these and other questions, Tschinkel provides a one-of-a-kind natural history of the planet's most successful creatures and a compelling firsthand account of a life of scientific discovery.

Offering a unique look at how simple methods can lead to pioneering science, *Ant Architecture* addresses the unsolved mysteries of underground ant nests while charting new directions for tomorrow's research, and reflects on the role of beauty in nature and the joys of shoestring science.



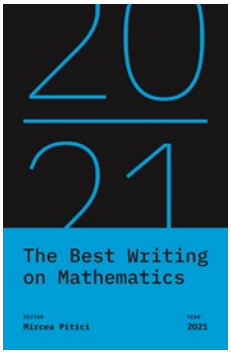
Attraction, Love, Sex

Simon LeVay
9780231204507
£25.00
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.



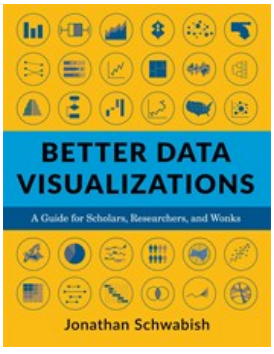
The Best Writing on Mathematics 2021

Mircea Pitici
9780691225708
£20.00
Trade Paperbback
Mathematics
July 2022
Princeton University Press

The year's finest mathematical writing from around the world

This annual anthology brings together the year's finest mathematics writing from around the world—and you don't need to be a mathematician to enjoy the pieces collected here. These essays—from leading names and fresh new voices—delve into the history, philosophy, teaching, and everyday aspects of math, offering surprising insights into its nature, meaning, and practice, and taking readers behind the scenes of today's hottest mathematical debates.

Here, Viktor Blåsjö gives a brief history of "lockdown mathematics"; Yelda Nasifoglu decodes the politics of a seventeenth-century play in which the characters are geometric shapes; and Andrew Lewis-Pye explains the basic algorithmic rules and computational procedures behind cryptocurrencies. In other essays, Terence Tao candidly recalls the adventures and misadventures of growing up to become a leading mathematician; Natalie Wolchover shows how old math gives new clues about whether time really flows; and David Hand discusses the problem of "dark data"—information that is missing or ignored. And there is much, much more.

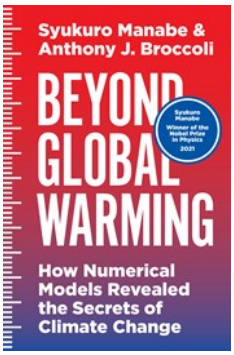


Better Data Visualizations

Jonathan Schwabish
9780231193115
£22.00
Trade Paperback
Computers / Data Science / Data Visualization
February 2021
Columbia University Press

Now more than ever, content must be visual if it is to travel far. Readers everywhere are overwhelmed with a flow of data, news, and text. Visuals can cut through the noise and make it easier for readers to recognize and recall information. Yet many researchers were never taught how to present their work visually.

This book details essential strategies to create more effective data visualizations. Jonathan Schwabish walks readers through the steps of creating better graphs and how to move beyond simple line, bar, and pie charts. Through more than five hundred examples, he demonstrates the do's and don'ts of data visualization, the principles of visual perception, and how to make subjective style decisions around a chart's design. Schwabish surveys more than eighty visualization types, from histograms to horizon charts, ridgeline plots to choropleth maps, and explains how each has its place in the visual toolkit. It might seem intimidating, but everyone can learn how to create compelling, effective data visualizations. This book will guide you as you define your audience and goals, choose the graph that best fits for your data, and clearly communicate your message.



Beyond Global Warming

Syukuro Manabe
9780691058863
£35.00
Hardcover
Science / Global Warming & Climate Change
January 2020
Princeton University Press

From Nobel Prize winner Syukuro Manabe and Anthony Broccoli, a definitive account of how we have come to understand the fundamental processes behind global warming

Syukuro Manabe is perhaps the leading pioneer of modern climate modeling. *Beyond Global Warming* is his compelling firsthand account of how the scientific community came to understand the human causes of climate change, and how numerical models using the world's most powerful computers have been instrumental to these vital discoveries.

Joined by atmospheric scientist Anthony Broccoli, Manabe shows how climate models have been used as virtual laboratories for examining the complex planetary interactions of atmosphere, ocean, and land. Manabe and Broccoli use these studies as the basis for a broader discussion of human-induced global warming—and what the future may hold for a warming planet. They tell the stories of early trailblazers such as Svante Arrhenius, the legendary Swedish scientist who created the first climate model of Earth more than a century ago, and they provide rare insights into Manabe's own groundbreaking work over the past five decades. Expertly walking readers through key breakthroughs, they explain why increasing atmospheric carbon dioxide has caused temperatures to rise in the troposphere yet fall in the stratosphere, why the warming of the planet's surface differs by hemisphere, why drought is becoming more frequent in arid regions despite the global increase in precipitation, and much more.

Authoritative and illuminating, *Beyond Global Warming* is an invaluable insider's look at some of today's most cutting-edge Earth science, and a rare window into a brilliant scientific mind.

Birdpedia

Christopher W. Leahy
9780691209661
£9.99
Hardcover
Nature / Animals / Birds
July 2021
Princeton University Press

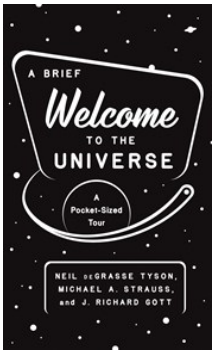
A captivating A–Z treasury about birds and birding

Birdpedia is an engaging illustrated compendium of bird facts and birding lore. Featuring nearly 200 entries—on topics ranging from plumage and migration to birds in art, literature, and folklore—this enticing collection is brimming with wisdom and wit about all things avian.

Christopher Leahy sheds light on "hawk-watching," "twitching," and other rituals from the sometimes mystifying world of birding that entail a good deal more than their names imply. He explains what kind of bird's nests you can eat, why mocking birds mock, and many other curiosities that have induced otherwise sane people to peer into treetops using outrageously expensive optical equipment. Leahy shares illuminating insights about pioneering ornithologists such as John James Audubon and Florence Bailey, and describes unique bird behaviors such as anting, caching, duetting, and mobbing. He discusses avian fossils, the colloquial naming of birds, the science and history of ornithology, and more. The book's convenient size makes it the perfect traveling companion to take along on your own avian adventures.

With charming illustrations by Abby McBride, *Birdpedia* is a marvelous mix of fact and fancy that is certain to delight seasoned birders and armchair naturalists alike.

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



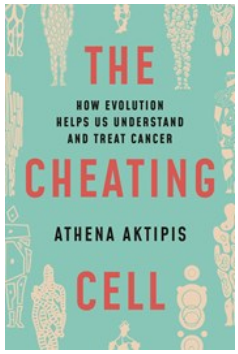
A Brief Welcome to the Universe

Neil deGrasse Tyson
9780691219943
£9.99
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 Cheating Cell

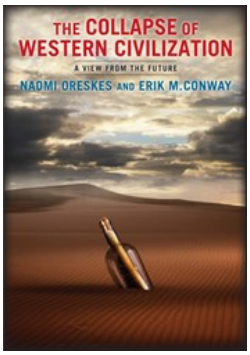
Athena Aktipis
9780691212197
£14.99
Trade Paperback
Medical / Oncology
September 2021
Princeton University Press

A fundamental and groundbreaking reassessment of how we view and manage cancer

When we think of the forces driving cancer, we don't necessarily think of evolution. But evolution and cancer are closely linked because the historical processes that created life also created cancer. *The Cheating Cell* delves into this extraordinary relationship, and shows that by understanding cancer's evolutionary origins, researchers can come up with more effective, revolutionary treatments.

Athena Aktipis goes back billions of years to explore when unicellular forms became multicellular organisms. Within these bodies of cooperating cells, cheating ones arose, overusing resources and replicating out of control, giving rise to cancer. Aktipis illustrates how evolution has paved the way for cancer's ubiquity, and why it will exist as long as multicellular life does. Even so, she argues, this doesn't mean we should give up on treating cancer—in fact, evolutionary approaches offer new and promising options for the disease's prevention and treatments that aim at long-term management rather than simple eradication. Looking across species—from sponges and cacti to dogs and elephants—we are discovering new mechanisms of tumor suppression and the many ways that multicellular life-forms have evolved to keep cancer under control. By accepting that cancer is a part of our biological past, present, and future—and that we cannot win a war against evolution—treatments can become smarter, more strategic, and more humane.

Unifying the latest research from biology, ecology, medicine, and social science, *The Cheating Cell* challenges us to rethink cancer's fundamental nature and our relationship to it.

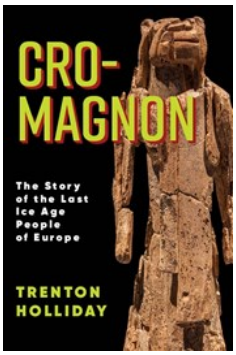


The Collapse of Western Civilization

Naomi Oreskes
9780231169547
£7.99
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.



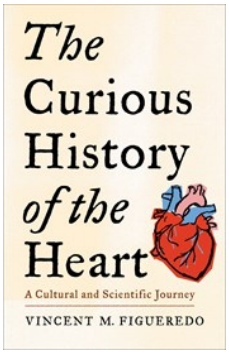
Cro-Magnon

Trenton W. Holliday
9780231204972
£25.00
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 post-glacial 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.



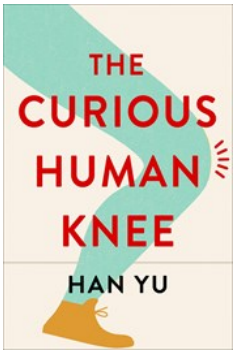
The Curious History of the Heart

Vincent M. Figueredo
9780231208185
£25.00
Hardcover
Medical / Cardiology
April 2023
Columbia University Press

For much of recorded history, people considered the heart to be the most important organ in the body. In cultures around the world, the heart—not the brain—was believed to be the location of intelligence, memory, emotion, and the soul. Over time, views on the purpose of the heart have transformed as people sought to understand the life forces it contains. Modern medicine and science dismissed what was once the king of the organs as a mere blood pump subservient to the brain, yet the heart remains a potent symbol of love and health and an important part of our cultural iconography.

This book traces the evolution of our understanding of the heart from the dawn of civilization to the present. Vincent M. Figueredo—an accomplished cardiologist and expert on the history of the human heart—explores the role and significance of the heart in art, culture, religion, philosophy, and science across time and place. He examines how the heart really works, its many meanings in our emotional and daily lives, and what cutting-edge science is teaching us about this remarkable organ. Figueredo considers the science of heart disease, recent advancements in heart therapies, and what the future may hold. He highlights the emerging field of neurocardiology, which has found evidence of a "heart-brain connection" in mental and physical health, suggesting that ancient views hold more truth than moderns suspect.

Ranging widely and deeply throughout human history, this book sheds new light on why the heart remains so central to our sense of self.



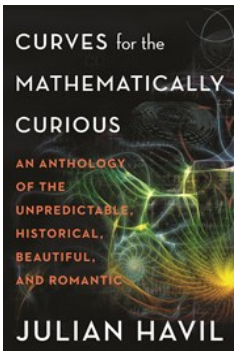
The Curious Human Knee

Han Yu
9780231207027
£25.00
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.

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. The 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. 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.



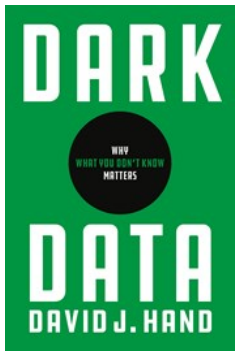
Curves for the Mathematically Curious

Julian Havil
9780691206134
£17.99
Trade Paperback
Mathematics / Geometry
November 2021
Princeton University Press

Ten amazing curves personally selected by one of today's most important math writers

Curves for the Mathematically Curious is a thoughtfully curated collection of ten mathematical curves, selected by Julian Havil for their significance, mathematical interest, and beauty. Each chapter gives an account of the history and definition of one curve, providing a glimpse into the elegant and often surprising mathematics involved in its creation and evolution. In telling the ten stories, Havil introduces many mathematicians and other innovators, some whose fame has withstood the passing of years and others who have slipped into comparative obscurity. You will meet Pierre Bézier, who is known for his ubiquitous and eponymous curves, and Adolphe Quetelet, who trumpeted the ubiquity of the normal curve but whose name now hides behind the modern body mass index. These and other ingenious thinkers engaged with the challenges, incongruities, and insights to be found in these remarkable curves—and now you can share in this adventure.

Curves for the Mathematically Curious is a rigorous and enriching mathematical experience for anyone interested in curves, and the book is designed so that readers who choose can follow the details with pencil and paper. Every curve has a story worth telling.



Dark Data

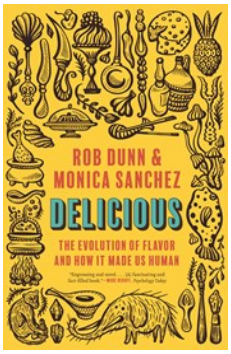
David J. Hand
9780691234465
£16.99
Trade Paperback
Computers / Data Science / Data Analytics
February 2022
Princeton University Press

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
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.

Dinopedia

Darren Naish
9780691212029
£9.99
Hardcover
Nature / Animals / Dinosaurs & Prehistoric Creatures
November 2021
Princeton University Press

An illuminating and entertaining collection of dinosaur facts, from A to Z

Dinopedia is an illustrated, pocket-friendly encyclopedia of all things dinosaurian. Featuring dozens of entries on topics ranging from hadrosaur nesting colonies to modern fossil hunters and paleontologists such as Halszka Osmólska and Paul Sereno, this amazing A–Z compendium is brimming with facts about these thrilling, complex, and sophisticated animals.

Almost everything we know about dinosaurs has changed in recent decades. A scientific revolution, kick-started in the late 1960s by astounding new discoveries and a succession of new ideas, has shown that these magnificent creatures were marvels of evolution that surpassed modern reptiles and mammals in size, athletic abilities, and more. Darren Naish sheds invaluable light on our current, fast-changing understanding of dinosaur diversity and evolutionary history, and discusses the cultural impacts of dinosaurs through books, magazines, and movies. Naish also shows how our emerging view of these animals is very much a human story about ambition and competing egos, revealing that controversy and disagreement are commonplace in the vigorous field of dinosaur studies.

With a wealth of original illustrations by the author, *Dinopedia* is an informative and entertaining collection of lore for the dinosaur lover in all of us.

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

Do Not Erase

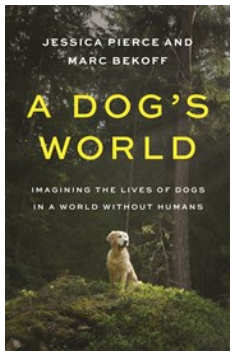
Jessica Wynne
9780691199221
£30.00
Hardcover
Mathematics
June 2021
Princeton University Press

A photographic exploration of mathematicians' chalkboards

"A mathematician, like a painter or poet, is a maker of patterns," wrote the British mathematician G. H. Hardy. In *Do Not Erase*, photographer Jessica Wynne presents remarkable examples of this idea through images of mathematicians' chalkboards. While other fields have replaced chalkboards with whiteboards and digital presentations, mathematicians remain loyal to chalk for puzzling out their ideas and communicating their research. Wynne offers more than one hundred stunning photographs of these chalkboards, gathered from a diverse group of mathematicians around the world. The photographs are accompanied by essays from each mathematician, reflecting on their work and processes. Together, pictures and words provide an illuminating meditation on the unique relationships among mathematics, art, and creativity.

The mathematicians featured in this collection comprise exciting new voices alongside established figures, including Sun-Yung Alice Chang, Alain Connes, Misha Gromov, Andre Neves, Kasso Okoudjou, Peter Shor, Christina Sormani, Terence Tao, Claire Voisin, and many others. The companion essays give insights into how the chalkboard serves as a special medium for mathematical expression. The volume also includes an introduction by the author, an afterword by *New Yorker* writer Alec Wilkinson, and biographical information for each contributor.

Do Not Erase is a testament to the myriad ways that mathematicians use their chalkboards to reveal the conceptual and visual beauty of their discipline—shapes, figures, formulas, and conjectures created through imagination, argument, and speculation.



A Dog's World

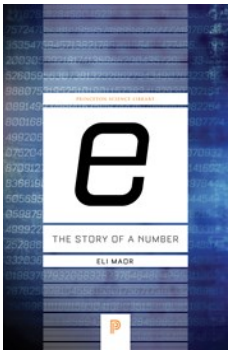
Jessica Pierce
9780691196183
£18.99
Hardcover
Nature / Animals / Mammals
October 2021
Princeton University Press

From two of the world's leading authorities on dogs, an imaginative journey into a future of dogs without people

What would happen to dogs if humans simply disappeared? Would dogs be able to survive on their own without us? *A Dog's World* imagines a posthuman future for dogs, revealing how dogs would survive—and possibly even thrive—and explaining how this new and revolutionary perspective can guide how we interact with dogs now.

Drawing on biology, ecology, and the latest findings on the lives and behavior of dogs and their wild relatives, Jessica Pierce and Marc Bekoff—two of today's most innovative thinkers about dogs—explore who dogs might become without direct human intervention into breeding, arranged playdates at the dog park, regular feedings, and veterinary care. Pierce and Bekoff show how dogs are quick learners who are highly adaptable and opportunistic, and they offer compelling evidence that dogs already do survive on their own—and could do so in a world without us.

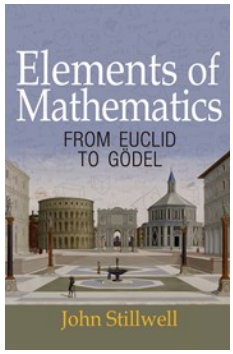
Challenging the notion that dogs would be helpless without their human counterparts, *A Dog's World* enables us to understand these independent and remarkably intelligent animals on their own terms.



e: The Story of a Number

Eli Maor
9780691168487
£13.99
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.



Elements of Mathematics

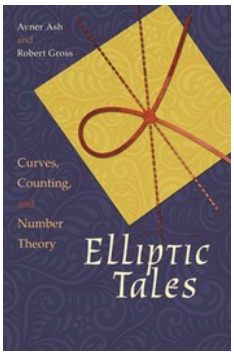
John Stillwell
9780691178547
£17.99
Trade Paperback
Mathematics / History & Philosophy
November 2017
Princeton University Press

An exciting look at the world of elementary mathematics

Elements of Mathematics takes readers on a fascinating tour that begins in elementary mathematics—but, as John Stillwell shows, this subject is not as elementary or straightforward as one might think. Not all topics that are part of today's elementary mathematics were always considered as such, and great mathematical advances and discoveries had to occur in order for certain subjects to become "elementary." Stillwell examines elementary mathematics from a distinctive twenty-first-century viewpoint and describes not only the beauty and scope of the discipline, but also its limits.

From Gaussian integers to propositional logic, Stillwell delves into arithmetic, computation, algebra, geometry, calculus, combinatorics, probability, and logic. He discusses how each area ties into more advanced topics to build mathematics as a whole. Through a rich collection of basic principles, vivid examples, and interesting problems, Stillwell demonstrates that elementary mathematics becomes advanced with the intervention of infinity. Infinity has been observed throughout mathematical history, but the recent development of "reverse mathematics" confirms that infinity is essential for proving well-known theorems, and helps to determine the nature, contours, and borders of elementary mathematics.

Elements of Mathematics gives readers, from high school students to professional mathematicians, the highlights of elementary mathematics and glimpses of the parts of math beyond its boundaries.



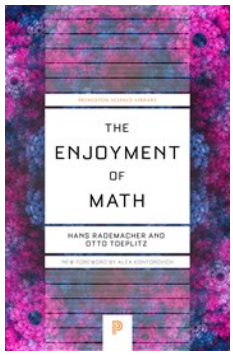
Elliptic Tales

Avner Ash
9780691163505
£13.99
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.

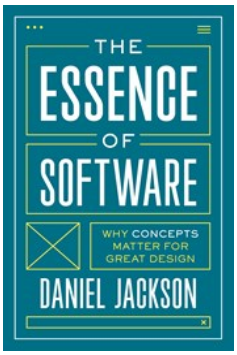


The Enjoyment of Math

Hans Rademacher
9780691241548
£16.99
Trade Paperback
Mathematics / History & Philosophy
January 2023
Princeton University Press

The classic book that shares the enjoyment of mathematics with readers of all skill levels

What is so special about the number 30? Do the prime numbers go on forever? Are there more whole numbers than even numbers? *The Enjoyment of Math* explores these and other captivating problems and puzzles, introducing readers to some of the most fundamental ideas in mathematics. Written by two eminent mathematicians and requiring only a background in plane geometry and elementary algebra, this delightful book covers topics such as the theory of sets, the four-color problem, regular polyhedrons, Euler's proof of the infinitude of prime numbers, and curves of constant breadth. Along the way, it discusses the history behind the problems, carefully explaining how each has arisen and, in some cases, how to resolve it. With an incisive foreword by Alex Kontorovich, this Princeton Science Library edition shares the enjoyment of math with a new generation of readers.



The Essence of Software

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

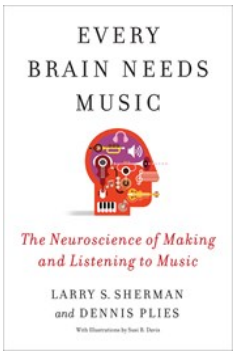
A revolutionary concept-based approach to thinking about, designing, and interacting with software

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.



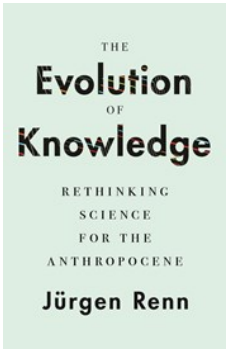
Every Brain Needs Music

Lawrence Sherman
9780231209106
£25.00
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.



The Evolution of Knowledge

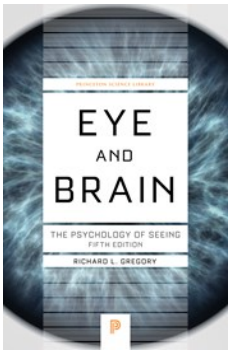
Jürgen Renn
9780691218595
£22.00
Trade Paperback
Science / History
May 2022
Princeton University Press

A fundamentally new approach to the history of science and technology

This book presents a new way of thinking about the history of science and technology, one that offers a grand narrative of human history in which knowledge serves as a critical factor of cultural evolution. Jürgen Renn examines the role of knowledge in global transformations going back to the dawn of civilization while providing vital perspectives on the complex challenges confronting us today in the Anthropocene—this new geological epoch shaped by humankind.

Renn reframes the history of science and technology within a much broader history of knowledge, analyzing key episodes such as the evolution of writing, the emergence of science in the ancient world, the Scientific Revolution of early modernity, the globalization of knowledge, industrialization, and the profound transformations wrought by modern science. He investigates the evolution of knowledge using an array of disciplines and methods, from cognitive science and experimental psychology to earth science and evolutionary biology. The result is an entirely new framework for understanding structural changes in systems of knowledge—and a bold new approach to the history and philosophy of science.

Written by one of today's preeminent historians of science, *The Evolution of Knowledge* features discussions of historiographical themes, a glossary of key terms, and practical insights on global issues ranging from climate change to digital capitalism. This incisive book also serves as an invaluable introduction to the history of knowledge.

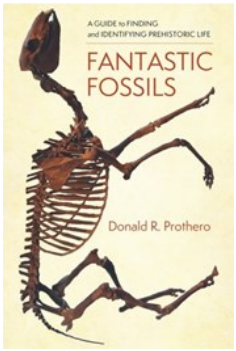


Eye and Brain

Richard L. Gregory
9780691165165
£16.99
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.

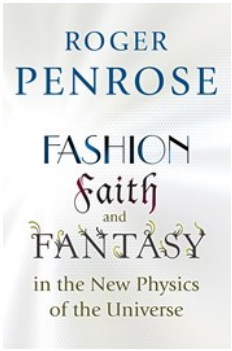


Fantastic Fossils

Donald R. Prothero
9780231195799
£20.00
Trade Paperback
Nature / Fossils
July 2022
Columbia University Press

Nothing fills us with a sense of wonder like fossils. What looks at first like a simple rock is in fact a clue that reveals the staggering diversity of ancient environments, the winding pathways of evolution, and the majesty of a vanished earth. But as much as one might daydream of digging a hole in the backyard and finding a *Tyrannosaurus*, only a few places contain these buried treasures, and when a scientist comes across a remnant of prehistoric life, great care must be taken. What do budding paleontologists need to know before starting their search?

In *Fantastic Fossils*, Donald R. Prothero offers an accessible, entertaining, and richly illustrated guide to the paleontologist's journey. He details the best places to look for fossils, the art of how to find them, and how to classify the major types. Prothero provides expert wisdom about typical fossils that an average person can hope to collect and how to hunt fossils responsibly and ethically. He also explores the lessons that both common and rarer discoveries offer about paleontology and its history, as well as what fossils can tell us about past climates and present climate change. Captivating illustrations by the paleoartist Mary Persis Williams bring to life hundreds of important specimens. Offering valuable lessons for armchair enthusiasts and paleontology students alike, *Fantastic Fossils* is an essential companion for all readers who have ever dreamed of going in search of traces of a lost world.



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

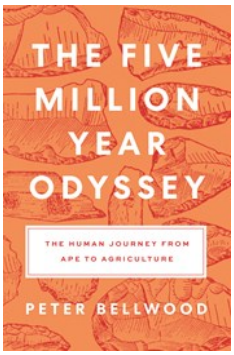
Roger Penrose
9780691178530
£14.99
Trade Paperback
Science / Philosophy & Social Aspects
September 2017
Princeton University Press

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.



The Five-Million-Year Odyssey

Peter Bellwood
9780691197579
£25.00
Hardcover
Science / Life Sciences / Evolution
August 2022
Princeton University Press

The epic story of human evolution, from our primate beginnings more than five million years ago to the agricultural era

Over the course of five million years, our primate ancestors evolved from a modest population of sub-Saharan apes into the globally dominant species *Homo sapiens*. Along the way, humans became incredibly diverse in appearance, language, and culture. How did all of this happen? In *The Five-Million-Year Odyssey*, Peter Bellwood synthesizes research from archaeology, biology, anthropology, and linguistics to immerse us in the saga of human evolution, from the earliest traces of our hominin forebears in Africa, through waves of human expansion across the continents, and to the rise of agriculture and explosive demographic growth around the world.

Bellwood presents our modern diversity as a product of both evolution, which led to the emergence of the genus *Homo* approximately 2.5 million years ago, and migration, which carried humans into new environments. He introduces us to the ancient hominins—including the australopithecines, *Homo erectus*, the Neanderthals, and others—before turning to the appearance of *Homo sapiens* circa 300,000 years ago and subsequent human movement into Eurasia, Australia, and the Americas. Bellwood then explores the invention of agriculture, which enabled farmers to disperse to new territories over the last 10,000 years, facilitating the spread of language families and cultural practices. The outcome is now apparent in our vast array of contemporary ethnicities, linguistic systems, and customs.

The fascinating origin story of our varied human existence, *The Five-Million-Year Odyssey* underscores the importance of recognizing our shared genetic heritage to appreciate what makes us so diverse.

Florapedia

Carol Gracie
9780691211404
£9.99
Hardcover
Nature / Plants / Flowers
April 2021
Princeton University Press

A delightful illustrated treasury of botanical facts and fancy

Florapedia is an eclectic A–Z compendium of botanical lore. With more than 100 enticing entries—on topics ranging from achlorophyllous plants that use a fungus as an intermediary to obtain nutrients from other plants to zygomorphic flowers that admit only the most select pollinators—this collection is a captivating journey into the realm of botany.

Writing in her incomparably engaging style, Carol Gracie discusses remarkable plants from around the globe, botanical art and artists, early botanical explorers, ethnobotanical uses of plants, botanical classification and terminology, the role of plants in history, and more. She shares illuminating facts about van Gogh's sunflowers and reveals how a hallucinogenic weed left its enduring mark on the early history of the Jamestown colony. Gracie describes the travels of John and William Bartram—father and son botanists and explorers who roamed widely in early America in search of plants—and delves into the miniature ecosystems entangled in Spanish moss. The book's convenient size allows for it to be tucked into a pocket or bag, making it the perfect companion on your own travels.

With charming drawings by Amy Jean Porter, *Florapedia* is the ideal gift book for the plant enthusiast in your life and a rare pleasure for anyone interested in botanical art, history, medicine, or exploration.

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

Fungipedia

Lawrence Millman
9780691194721
£9.99
Hardcover
Nature / Plants / Mushrooms
October 2019
Princeton University Press

"This little book is big fun."—Michael Pollan

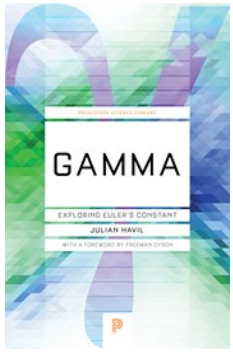
An illustrated mini-encyclopedia of fungal lore, from John Cage and Terence McKenna to mushroom sex and fairy rings

Fungipedia presents a delightful A–Z treasury of mushroom lore. With more than 180 entries—on topics as varied as *Alice in Wonderland*, chestnut blight, medicinal mushrooms, poisonings, Santa Claus, and waxy caps—this collection will transport both general readers and specialists into the remarkable universe of fungi.

Combining ecological, ethnographic, historical, and contemporary knowledge, author and mycologist Lawrence Millman discusses how mushrooms are much more closely related to humans than to plants, how they engage in sex, how insects farm them, and how certain species happily dine on leftover radiation, cockroach antennae, and dung. He explores the lives of individuals like African American scientist George Washington Carver, who specialized in crop diseases caused by fungi; Beatrix Potter, creator of *Peter Rabbit*, who was prevented from becoming a professional mycologist because she was a woman; and Gordon Wasson, a J. P. Morgan vice-president who almost single-handedly introduced the world to magic mushrooms. Millman considers why fungi are among the most significant organisms on our planet and how they are currently being affected by destructive human behavior, including climate change.

With charming drawings by artist and illustrator Amy Jean Porter, *Fungipedia* offers a treasure trove of scientific and cultural information. The world of mushrooms lies right at your door—be amazed!

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



Gamma

Julian Havil
9780691178103
£15.99
Trade Paperback
Mathematics / History & Philosophy
October 2017
Princeton University Press

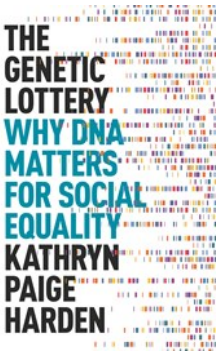
Among the many constants that appear in mathematics, π, e, and i are the most familiar. Following closely behind is y, or gamma, a constant that arises in many mathematical areas yet maintains a profound sense of mystery.

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
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
£9.99
Hardcover
Science / Earth Sciences / Geology
May 2022
Princeton University Press

A garden of geologic delights for all Earthlings

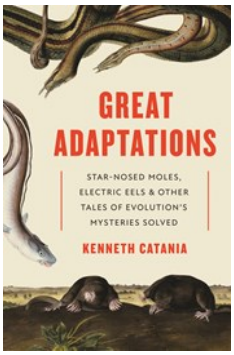
Geopedia is a trove of geologic wonders and the evocative terms that humans have devised to describe them. Featuring dozens of entries—from Acasta gneiss to Zircon—this illustrated compendium is brimming with lapidary and lexical insights that will delight rockhounds and word lovers alike.

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



Great Adaptations

Kenneth Catania
9780691228471
£13.99
Trade Paperback
Science / Natural History
October 2021
Princeton University Press

"The irresistible enthusiasm of *Great Adaptations* couldn't come at a better time."—David P. Barash, *Wall Street Journal*

"Be very amazed."—Carl Safina, author of *Beyond Words* and *Becoming Wild*

How one scientist unlocked the secrets behind some of nature's most astounding animals

From star-nosed moles that have super-sensing snouts to electric eels that paralyze their prey, animals possess unique and extraordinary abilities. In *Great Adaptations*, Kenneth Catania presents an entertaining and engaging look at some of nature's most remarkable creatures. Telling the story of his biological detective work, Catania sheds light on the mysteries behind the behaviors of tentacled snakes, tiny shrews, zombie-making wasps, and more. He shows not only how studying these animals can provide deep insights into how life evolved, but also how scientific discovery can be filled with adventure and fun.

Beginning with the star-nosed mole, Catania reveals what the creature's nasal star is actually for, and what this tells us about how brains work. He explores how the deceptive hunting strategy of tentacled snakes leads prey straight to their mouths, how eels use electricity to control other animals, and why emerald jewel wasps make zombies out of cockroaches. He also solves the enigma of worm grunting—a traditional technique in which earthworms are enticed out of the ground—by teaming up with professional worm grunters. Catania demonstrates the merits of approaching science with an open mind, considers the role played by citizen scientists, and illustrates that most animals have incredible, hidden abilities that defy our imagination.

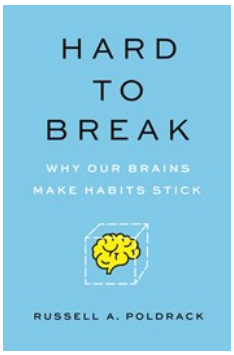
Examining some strange and spectacular creatures, *Great Adaptations* offers a wondrous journey into nature's grand designs.

Guesstimation

Lawrence Weinstein
9780691129495
£16.99
Paperback - with flaps
Mathematics / Recreations & Games
April 2008
Princeton University Press

Guesstimation is a book that unlocks the power of approximation--it's popular mathematics rounded to the nearest power of ten! The ability to estimate is an important skill in daily life. More and more leading businesses today use estimation questions in interviews to test applicants' abilities to think on their feet. *Guesstimation* enables anyone with basic math and science skills to estimate virtually anything--quickly--using plausible assumptions and elementary arithmetic.

Lawrence Weinstein and John Adam present an eclectic array of estimation problems that range from devilishly simple to quite sophisticated and from serious real-world concerns to downright silly ones. How long would it take a running faucet to fill the inverted dome of the Capitol? What is the total length of all the pickles consumed in the US in one year? What are the relative merits of internal-combustion and electric cars, of coal and nuclear energy? The problems are marvelously diverse, yet the skills to solve them are the same. The authors show how easy it is to derive useful ballpark estimates by breaking complex problems into simpler, more manageable ones--and how there can be many paths to the right answer. The book is written in a question-and-answer format with lots of hints along the way. It includes a handy appendix summarizing the few formulas and basic science concepts needed, and its small size and French-fold design make it conveniently portable. Illustrated with humorous pen-and-ink sketches, *Guesstimation* will delight popular-math enthusiasts and is ideal for the classroom.



Hard to Break

Russell A. Poldrack
9780691241494
£15.99
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.

A History of Biology

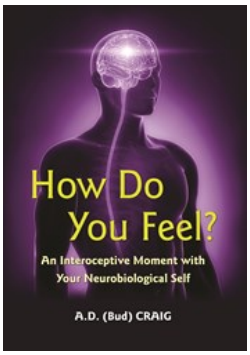
Michel Morange
9780691175409
£25.00
Hardcover
Science / Life Sciences / Biology
June 2021
Princeton University Press

A comprehensive history of the biological sciences from antiquity to the modern era

This book presents a global history of the biological sciences from ancient times to today, providing needed perspective on the development of biological thought while shedding light on the field's upheavals and key breakthroughs through the ages. Michel Morange brings to life the dynamic interplay of science, society, and biology's many subdisciplines, enabling readers to better appreciate the interdisciplinary exchanges that have shaped the field over the centuries.

Each chapter of this incisive book focuses on a specific period in the history of biology, describing the major transformations that occurred, the enduring scientific concerns behind these changes, and the implications of yesterday's science for today's. Morange covers everything from the first cell theory to the origins of the concept of ecosystems, and offers perspectives on areas that are often neglected by historians of biology, such as ecology, ethology, and plant biology. Along the way, he highlights the contributions of technology, the important role of hypothesis and experimentation, and the cultural contexts in which some of the most breathtaking discoveries in biology were made.

Unrivaled in scope and written by a world-renowned historian of science, *A History of Biology* is an ideal introduction for students and experts alike, and essential reading for anyone seeking to understand the present state of biological knowledge.



How Do You Feel?

A. D. Craig
9780691204086
£28.00
Trade Paperback
Science / Life Sciences / Neuroscience
June 2020
Princeton University Press

A book that fundamentally changes how neuroscientists and psychologists categorize sensations and understand the origins and significance of human feelings

How Do You Feel? brings together startling evidence from neuroscience, psychology, and psychiatry to present revolutionary new insights into how our brains enable us to experience the range of sensations and mental states known as feelings. Drawing on his own cutting-edge research, neurobiologist Bud Craig has identified an area deep inside the mammalian brain—the insular cortex—as the place where interoception, or the processing of bodily stimuli, generates feelings. He shows how this crucial pathway for interoceptive awareness gives rise in humans to the feeling of being alive, vivid perceptual feelings, and a subjective image of the sentient self across time. Craig explains how feelings represent activity patterns in our brains that signify emotions, intentions, and thoughts, and how integration of these patterns is driven by the unique energy needs of the hominid brain. He describes the essential role of feelings and the insular cortex in such diverse realms as music, fluid intelligence, and bivalent emotions, and relates these ideas to the philosophy of William James and even to feelings in dogs.

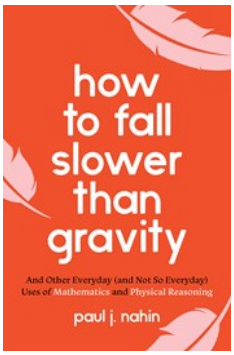
How Do You Feel? is also a compelling insider's account of scientific discovery, one that takes readers behind the scenes as the astonishing answer to this neurological puzzle is pursued and pieced together from seemingly unrelated fields of scientific inquiry. This book will fundamentally alter the way that neuroscientists and psychologists categorize sensations and understand the origins and significance of human feelings.

How the Universe Got Its Spots

Janna Levin
9780691232270
£14.99
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 Fall Slower Than Gravity

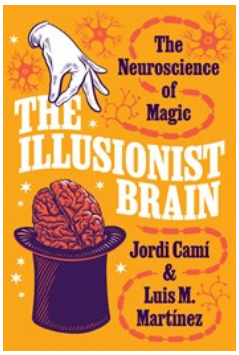
Paul J. Nahin
9780691229171
£16.99
Trade Paperback
Mathematics / Recreations & Games
November 2021
Princeton University Press

An engaging collection of intriguing problems that shows you how to think like a mathematical physicist

Paul Nahin is a master at explaining odd phenomena through straightforward mathematics. In this collection of twenty-six intriguing problems, he explores how mathematical physicists think. Always entertaining, the problems range from ancient catapult conundrums to the puzzling physics of a very peculiar material called NASTYGLASS—and from dodging trucks to why raindrops fall slower than the rate of gravity. The questions raised may seem impossible to answer at first and may require an unexpected twist in reasoning, but sometimes their solutions are surprisingly simple. Nahin's goal, however, is always to guide readers—who will need only to have studied advanced high school math and physics—in expanding their mathematical thinking to make sense of the curiosities of the physical world.

The problems are in the first part of the book and the solutions are in the second, so that readers may challenge themselves to solve the questions on their own before looking at the explanations. The problems show how mathematics—including algebra, trigonometry, geometry, and calculus—can be united with physical laws to solve both real and theoretical problems. Historical anecdotes woven throughout the book bring alive the circumstances and people involved in some amazing discoveries and achievements.

More than a puzzle book, this work will immerse you in the delights of scientific history while honing your math skills.



The Illusionist Brain

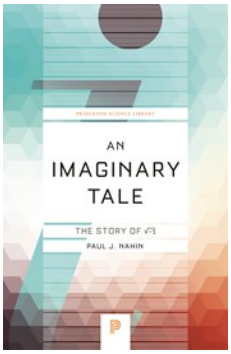
Jordi Camí
9780691208442
£22.00
Hardcover
Science / Life Sciences / Neuroscience
June 2022
Princeton University Press

How magicians exploit the natural functioning of our brains to astonish and amaze us

How do magicians make us see the impossible? *The Illusionist Brain* takes you on an unforgettable journey through the inner workings of the human mind, revealing how magicians achieve their spectacular and seemingly impossible effects by interfering with your cognitive processes. Along the way, this lively and informative book provides a guided tour of modern neuroscience, using magic as a lens for understanding the unconscious and automatic functioning of our brains.

We construct reality from the information stored in our memories and received through our senses, and our brains are remarkably adept at tricking us into believing that our experience is continuous. In fact, our minds create our perception of reality by elaborating meanings and continuities from incomplete information, and while this strategy carries clear benefits for survival, it comes with blind spots that magicians know how to exploit. Jordi Camí and Luis Martínez explore the many different ways illusionists manipulate our attention—making us look but not see—and take advantage of our individual predispositions and fragile memories.

The Illusionist Brain draws on the latest findings in neuroscience to explain how magic deceives us, surprises us, and amazes us, and demonstrates how illusionists skillfully "hack" our brains to alter how we perceive things and influence what we imagine.



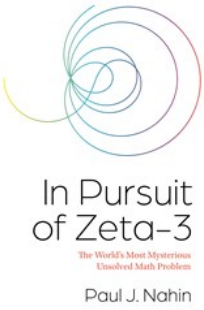
An Imaginary Tale

Paul J. Nahin
9780691169248
£13.99
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.



In Pursuit of Zeta-3

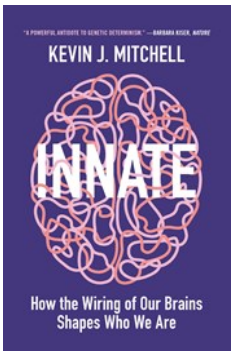
Paul J. Nahin
9780691206073
£22.00
Hardcover
Mathematics / History & Philosophy
October 2021
Princeton University Press

An engrossing look at the history and importance of a centuries-old but still unanswered math problem

For centuries, mathematicians the world over have tried, and failed, to solve the zeta-3 problem. Math genius Leonhard Euler attempted it in the 1700s and came up short. The straightforward puzzle considers if there exists a simple symbolic formula for the following: 1+(1/2)^3+(1/3)^3+(1/4)^3+. . . . But why is this issue—the sum of the reciprocals of the positive integers cubed—so important? With *In Pursuit of Zeta-3*, popular math writer Paul Nahin investigates the history and significance of this mathematical conundrum.

Drawing on detailed examples, historical anecdotes, and even occasionally poetry, Nahin sheds light on the richness of the nature of zeta-3. He shows its intimate connections to the Riemann hypothesis, another mathematical mystery that has stumped mathematicians for nearly two centuries. He looks at its links with Euler's achievements and explores the modern research area of Euler sums, where zeta-3 occurs frequently. An exact solution to the zeta-3 question wouldn't simply satisfy pure mathematical interest: it would have critical ramifications for applications in physics and engineering, such as quantum electrodynamics. Challenge problems with detailed solutions and *MATLAB* code are included at the end of each of the book's sections.

Detailing the trials and tribulations of mathematicians who have approached one of the field's great unsolved riddles, *In Pursuit of Zeta-3* will tantalize curious math enthusiasts everywhere.



Innate

Kevin J. Mitchell
9780691204154
£15.99
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.

Insectpedia

Eric R. Eaton
9780691210346
£9.99
Hardcover
Nature / Animals / Insects & Spiders
May 2022
Princeton University Press

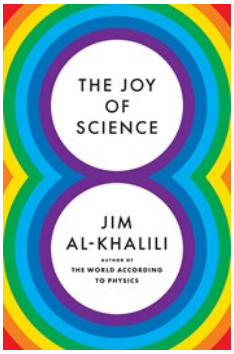
A fun and fact-filled A–Z treasury for the insect lover in all of us

Insectpedia introduces you to the wonders of the insect world while inviting you to make discoveries of your own. Featuring dozens of entries on topics ranging from murder hornets and the "insect apocalypse" to pioneering entomologists such as Margaret James Strickland Collins and Douglas Tallamy, this beautifully illustrated, pocket-friendly encyclopedia dispels many common myths about insects while offering new perspectives on the vital relationships we share with these incredible creatures.

This entertaining collection celebrates the long and storied history of entomology, highlights our dependence on insects for food and ecosystem services, and explains the meaning behind various entomological terms. With Eric Eaton as your guide, you will circle the globe in search of African Toktokkies and Australian beer bottle beetles, and witness the peculiar spectacle of cricket fighting in Asia. Profiles of influential figures in entomology provide insights into the curious minds that animate this extraordinarily broad field of scientific inquiry, while the book's portable size makes it the perfect travel companion no matter where your own entomological adventures may lead you.

With captivating illustrations by Amy Jean Porter, *Insectpedia* is an engaging blend of insect facts and folklore that will inspire anyone who delights in the marvels of nature.

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



The Joy of Science

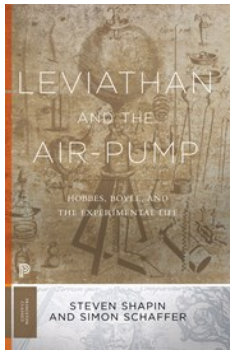
Jim Al-Khalili
9780691211572
£12.99
Hardcover
Science / Philosophy & Social Aspects
April 2022
Princeton University Press

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.

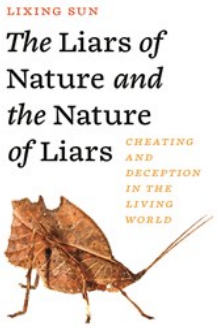


Leviathan and the Air-Pump

Steven Shapin
9780691178165
£18.99
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

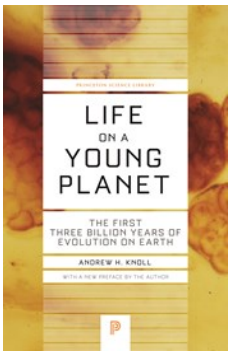
Lixing Sun
9780691198606
£25.00
Hardcover
Science / Life Sciences / Zoology / Ethology (Animal Behavior)
April 2023
Princeton University Press

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

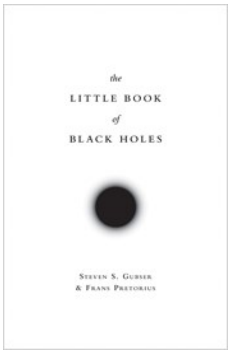
Andrew H. Knoll
9780691165530
£16.99
Trade Paperback
Science / Life Sciences / Evolution
March 2015
Princeton University Press

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

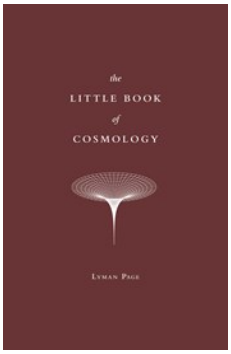
Steven S. Gubser
9780691163727
£16.99
Hardcover
Science / Physics / Astrophysics
October 2017
Princeton University Press

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

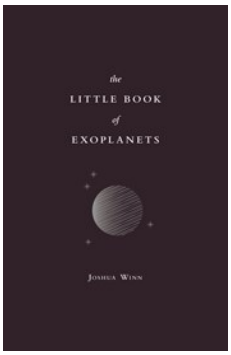
Lyman Page
9780691195780
£16.99
Hardcover
Science / Space Science / Cosmology
April 2020
Princeton University Press

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.



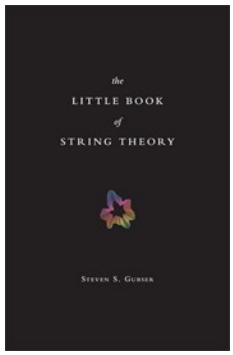
The Little Book of Exoplanets

Joshua N. Winn
9780691215471
£18.99
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 Satellite Survey 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

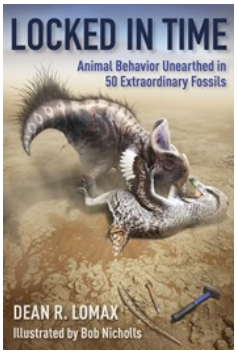
Steven S. Gubser
9780691142890
£16.99
Hardcover
Science / Physics
February 2010
Princeton University Press

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.

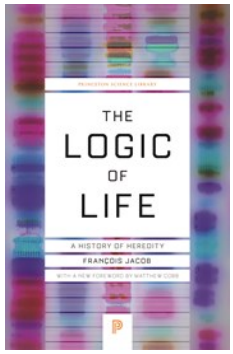


Locked in Time

Dean R. Lomax
9780231197298
£14.99
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.

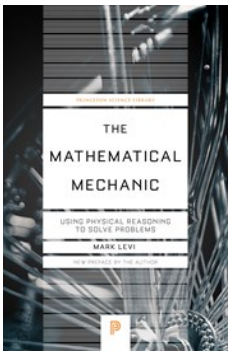


The Logic of Life

François Jacob
9780691182841
£16.99
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.



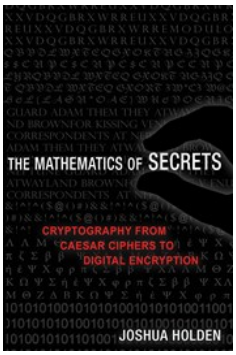
The Mathematical Mechanic

Mark Levi
9780691242057
£15.99
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.



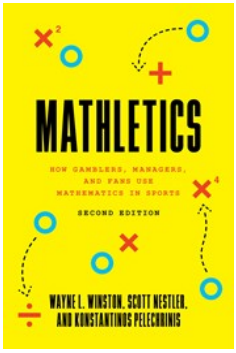
The Mathematics of Secrets

Joshua Holden
9780691183312
£15.99
Trade Paperback
Computers / Security / Cryptography & Encryption
October 2018
Princeton University Press

Explaining the mathematics of cryptography

The Mathematics of Secrets takes readers on a fascinating tour of the mathematics behind cryptography—the science of sending secret messages. Using a wide range of historical anecdotes and real-world examples, Joshua Holden shows how mathematical principles underpin the ways that different codes and ciphers work. He focuses on both code making and code breaking and discusses most of the ancient and modern ciphers that are currently known. He begins by looking at substitution ciphers, and then discusses how to introduce flexibility and additional notation. Holden goes on to explore polyalphabetic substitution ciphers, transposition ciphers, connections between ciphers and computer encryption, stream ciphers, public-key ciphers, and ciphers involving exponentiation. He concludes by looking at the future of ciphers and where cryptography might be headed. *The Mathematics of Secrets* reveals the mathematics working stealthily in the science of coded messages.

A blog describing new developments and historical discoveries in cryptography related to the material in this book is accessible at http://press.princeton.edu/titles/10826.html.

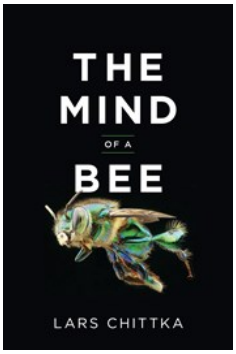


Mathletics

Wayne L. Winston
9780691177625
£20.00
Trade Paperback
Computers / Data Science / Data Analytics
February 2022
Princeton University Press

How to use math to improve performance and predict outcomes in professional sports

Mathletics reveals the mathematical methods top coaches and managers use to evaluate players and improve team performance, and gives math enthusiasts the practical skills they need to enhance their understanding and enjoyment of their favorite sports—and maybe even gain the outside edge to winning bets. This second edition features new data, new players and teams, and new chapters on soccer, e-sports, golf, volleyball, gambling Calcuttas, analysis of camera data, Bayesian inference, ridge regression, and other statistical techniques. After reading *Mathletics*, you will understand why baseball teams should almost never bunt; why football overtime systems are unfair; why points, rebounds, and assists aren't enough to determine who's the NBA's best player; and more.



The Mind of a Bee

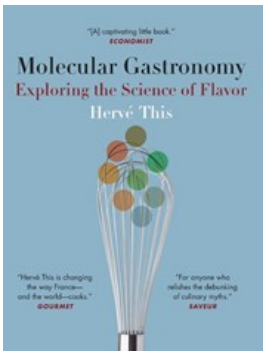
Lars Chittka
9780691180472
£25.00
Hardcover
Nature / Animals / Insects & Spiders
July 2022
Princeton University Press

A rich and surprising exploration of the intelligence of bees

Most of us are aware of the hive mind—the power of bees as an amazing collective. But do we know how uniquely intelligent bees are as individuals? In *The Mind of a Bee*, Lars Chittka draws from decades of research, including his own pioneering work, to argue that bees have remarkable cognitive abilities. He shows that they are profoundly smart, have distinct personalities, can recognize flowers and human faces, exhibit basic emotions, count, use simple tools, solve problems, and learn by observing others. They may even possess consciousness.

Taking readers deep into the sensory world of bees, Chittka illustrates how bee brains are unparalleled in the animal kingdom in terms of how much sophisticated material is packed into their tiny nervous systems. He looks at their innate behaviors and the ways their evolution as foragers may have contributed to their keen spatial memory. Chittka also examines the psychological differences between bees and the ethical dilemmas that arise in conservation and laboratory settings because bees feel and think. Throughout, he touches on the fascinating history behind the study of bee behavior.

Exploring an insect whose sensory experiences rival those of humans, *The Mind of a Bee* reveals the singular abilities of some of the world's most incredible creatures.



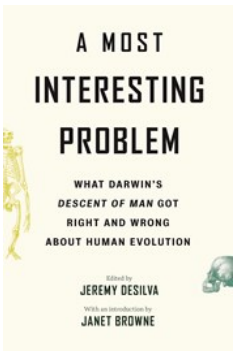
Molecular Gastronomy

Herve This
9780231133135
£12.99
Trade Paperback
Cooking / Methods / Special Appliances
August 2008
Columbia University Press

Hervé This (pronounced "Teess") is an internationally renowned chemist, a popular French television personality, a bestselling cookbook author, a longtime collaborator with the famed French chef Pierre Gagnaire, and the only person to hold a doctorate in molecular gastronomy, a cutting-edge field he pioneered. Bringing the instruments and experimental techniques of the laboratory into the kitchen, This uses recent research in the chemistry, physics, and biology of food to challenge traditional ideas about cooking and eating. What he discovers will entertain, instruct, and intrigue cooks, gourmets, and scientists alike.

Molecular Gastronomy, This's first work to appear in English, is filled with practical tips, provocative suggestions, and penetrating insights. This begins by reexamining and debunking a variety of time-honored rules and dictums about cooking and presents new and improved ways of preparing a variety of dishes from quiches and quenelles to steak and hard-boiled eggs. He goes on to discuss the physiology of flavor and explores how the brain perceives tastes, how chewing affects food, and how the tongue reacts to various stimuli. Examining the molecular properties of bread, ham, foie gras, and champagne, the book analyzes what happens as they are baked, cured, cooked, and chilled.

Looking to the future, Hervé This imagines new cooking methods and proposes novel dishes. A chocolate mousse without eggs? A flourless chocolate cake baked in the microwave? *Molecular Gastronomy* explains how to make them. This also shows us how to cook perfect French fries, why a soufflé rises and falls, how long to cool champagne, when to season a steak, the right way to cook pasta, how the shape of a wine glass affects the taste of wine, why chocolate turns white, and how salt modifies tastes.



A Most Interesting Problem

Jeremy Desilva
9780691242064
£16.99
Trade Paperback
Science / Life Sciences / Evolution
November 2022
Princeton University Press

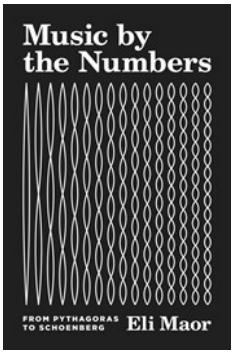
Leading scholars take stock of Darwin's ideas about human evolution in the light of modern science

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.

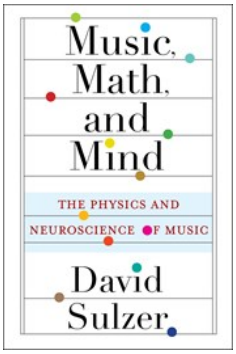


Music by the Numbers

Eli Maor
9780691202969
£14.99
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.



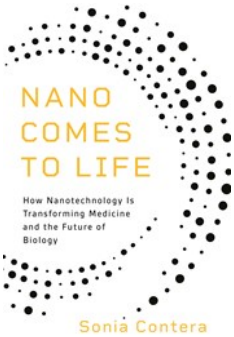
Music, Math, and Mind

David Sulzer
9780231193795
£22.00
Trade Paperback
Mathematics
April 2021
Columbia University Press

Why does a clarinet play at lower pitches than a flute? What does it mean for sounds to be in or out of tune? How are emotions carried by music? Do other animals perceive sound like we do? How might a musician use math to come up with new ideas?

This book offers a lively exploration of the mathematics, physics, and neuroscience that underlie music in a way that readers without scientific background can follow. David Sulzer, also known in the musical world as Dave Soldier, explains why the perception of music encompasses the physics of sound, the functions of the ear and deep-brain auditory pathways, and the physiology of emotion. He delves into topics such as the math by which musical scales, rhythms, tuning, and harmonies are derived, from the days of Pythagoras to technological manipulation of sound waves. Sulzer ranges from styles from around the world to canonical composers to hip-hop, the history of experimental music, and animal sound by songbirds, cetaceans, bats, and insects. He makes accessible a vast range of material, helping readers discover the universal principles behind the music they find meaningful.

Written for musicians and music lovers with any level of science and math proficiency, including none, *Music, Math, and Mind* demystifies how music works while testifying to its beauty and wonder.



Nano Comes to Life

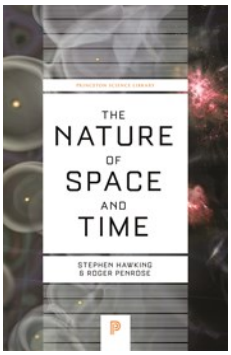
Sonia Contera
9780691206448
£15.99
Trade Paperback
Science / Nanoscience
November 2021
Princeton University Press

The nanotechnology revolution that will transform human health and longevity

Nano Comes to Life opens a window onto the nanoscale—the infinitesimal realm of proteins and DNA where physics and cellular and molecular biology meet—and introduces readers to the rapidly evolving nanotechnologies that are allowing us to manipulate the very building blocks of life. Sonia Contera gives an insider's perspective on this new frontier, revealing how nanotechnology enables a new kind of multidisciplinary science that is poised to give us control over our own biology, our health, and our lives.

Drawing on her perspective as one of today's leading researchers in the field, Contera describes the exciting ways in which nanotechnology makes it possible to understand, interact with, and manipulate biology—such as by designing and building artificial structures and even machines at the nanoscale using DNA, proteins, and other biological molecules as materials. In turn, nanotechnology is revolutionizing medicine in ways that will have profound effects on our health and longevity, from nanoscale machines that can target individual cancer cells and deliver drugs more effectively, to nanoantibiotics that can fight resistant bacteria, to the engineering of tissues and organs for research, drug discovery, and transplantation.

The future will bring about the continued fusion of nanotechnology with biology, physics, medicine, and cutting-edge fields like robotics and artificial intelligence, ushering us into a new "transmaterial era." As we contemplate the power, advantages, and risks of accessing and manipulating our own biology, Contera offers insight and hope that we may all share in the benefits of this revolutionary research.



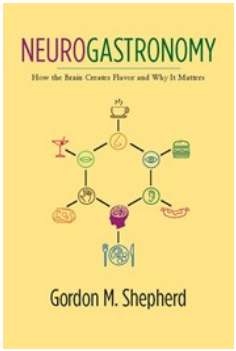
The Nature of Space and Time

Stephen Hawking
9780691168449
£12.99
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.



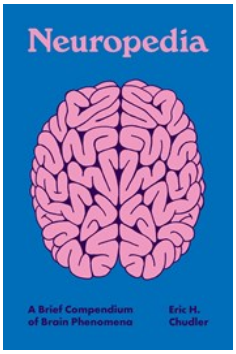
Neurogastronomy

Gordon Shepherd
9780231159111
£14.99
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

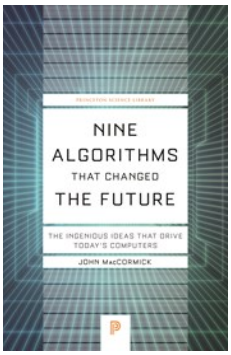
Eric H. Chudler
9780691213576
£9.99
Hardcover
Science / Life Sciences / Neuroscience
November 2022
Princeton University Press

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.

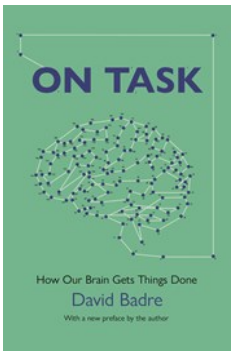


Nine Algorithms That Changed the Future

John MacCormick
9780691209067
£16.99
Trade Paperback
Computers / Programming / Algorithms
September 2020
Princeton University Press

Nine revolutionary algorithms that power our computers and smartphones

Every day, we use our computers to perform remarkable feats. A simple web search picks out a handful of relevant needles from the world's biggest haystack. Uploading a photo to Facebook transmits millions of pieces of information over numerous error-prone network links, yet somehow a perfect copy of the photo arrives intact. Without even knowing it, we use public-key cryptography to transmit secret information like credit card numbers, and we use digital signatures to verify the identity of the websites we visit. How do our computers perform these tasks with such ease? John MacCormick answers this question in language anyone can understand, using vivid examples to explain the fundamental tricks behind nine computer algorithms that power our PCs, tablets, and smartphones.



On Task

David Badre
9780691234700
£16.99
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

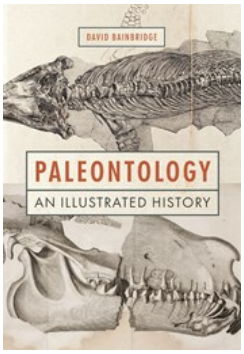
Martin Rees
9780691231068
£10.99
Trade Paperback
Science / Biotechnology
October 2021
Princeton University Press

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.



Paleontology

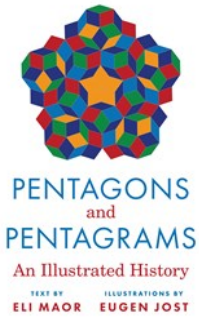
David Bainbridge
9780691220925
£25.00
Hardcover
Science / Paleontology
February 2022
Princeton University Press

An illustrated look at the art and science of paleontology from its origins to today

Humans have been stumbling upon the petrified remains of ancient animals since prehistoric times, leading to tales of giant dogs, deadly dragons, tree gods, sea serpents, and all manner of strange and marvelous creatures. In this richly illustrated book, David Bainbridge recounts how legends like these gradually gave rise to the modern science of paleontology, and how this pioneering discipline has reshaped our view of the natural world.

Bainbridge takes readers from ancient Greece to the eighteenth century, when paleontology began to coalesce into the scientific field we know today, and discusses how contemporary paleontologists use cutting-edge technologies to flesh out the discoveries of past and present. He brings to life the stories and people behind some of the greatest fossil finds of all time, and explains how paleontology has long straddled the spheres of science and art. Bainbridge also looks to the future of the discipline, discussing how the rapid recovery of DNA and other genetic material from the fossil record promises to revolutionize our understanding of the origins and evolution of ancient life.

This panoramic book brings together stunning illustrations ranging from early sketches and engravings to eye-popping paleoart and high-tech computer reconstructions.



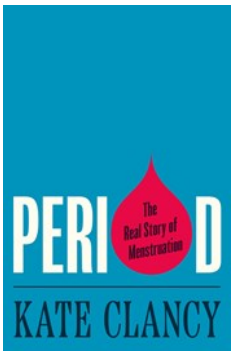
Pentagons and Pentagrams

Eli Maor
9780691201122
£20.00
Hardcover
Mathematics / Geometry
September 2022
Princeton University Press

A fascinating exploration of the pentagon and its role in various cultures

The pentagon and its close cousin, the pentagram, have inspired individuals for the last two and half millennia, from mathematicians and philosophers to artists and naturalists. Despite the pentagon's wide-ranging history, no single book has explored the important role of this shape in various cultures, until now. Richly illustrated, *Pentagons and Pentagrams* offers a sweeping view of the five-sided polygon, revealing its intriguing geometric properties and its essential influence on a variety of fields.

Traversing time, Eli Maor narrates vivid stories, both celebrated and unknown, about the pentagon and pentagram. He discusses the early Pythagoreans, who ascribed to the pentagon mythical attributes, adopted it as their emblem, and figured out its construction with a straightedge and compass. Maor looks at how a San Diego housewife uncovered four previously unknown types of pentagonal tilings, and how in 1982 a scientist's discovery of fivefold symmetries in certain alloys caused an uproar in crystallography and led to a Nobel Prize. Maor also discusses the pentagon's impact on many buildings, from medieval fortresses to the Pentagon in Washington, D.C. Eugen Jost's superb illustrations provide sumptuous visual context, and the book's puzzles and mazes offer fun challenges for readers, with solutions given in an appendix.



Period

Kate Clancy
9780691191317
£22.00
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.

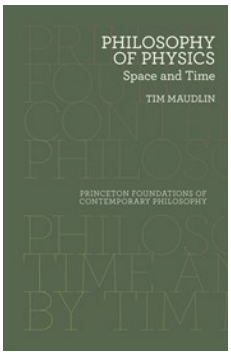
Philosophy of Biology

Peter Godfrey–smith
9780691174679
£17.99
Trade Paperback
Science / Philosophy & Social Aspects
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.



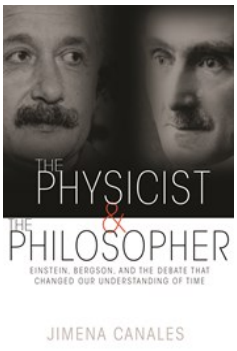
Philosophy of Physics

Tim Maudlin
9780691165714
£18.99
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

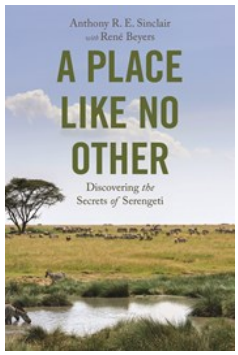
Jimena Canales
9780691173177
£20.00
Trade Paperback
Science / History
October 2016
Princeton University Press

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.



A Place like No Other

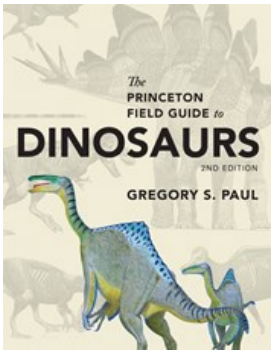
Anthony R. E. Sinclair
9780691222332
£25.00
Hardcover
Science / Life Sciences / Biology
October 2021
Princeton University Press

From famed zoologist Anthony Sinclair, an account of his decades-long quest to understand one of Earth's most spectacular ecosystems

With its rich biodiversity, astounding wildlife, and breathtaking animal migrations, Serengeti is like no other ecosystem on the planet. *A Place like No Other* is Anthony Sinclair's firsthand account of how he and other scientists discovered the biological principles that regulate life in Serengeti and how they rule all of the natural world.

When Sinclair first began studying this spectacular ecosystem in 1965, a host of questions confronted him. What environmental features make its annual migration possible? What determines the size of animal populations and the stunning diversity of species? What factors enable Serengeti to endure over time? In the five decades that followed, Sinclair and others sought answers. What they learned is that seven principles of regulation govern all natural processes in the Serengeti ecosystem. Sinclair shows how these principles can help us to understand and overcome the challenges facing Serengeti today, and how they can be used to repair damaged habitats throughout the world.

Blending vivid storytelling with invaluable scientific insights from Sinclair's pioneering fieldwork in Africa, *A Place like No Other* reveals how Serengeti holds timely lessons for the restoration and conservation of our vital ecosystems.



The Princeton Field Guide to Dinosaurs

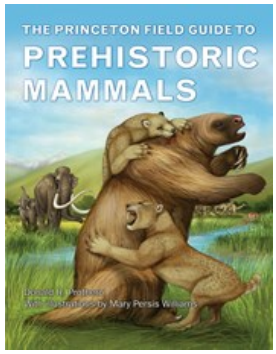
Gregory S. Paul
9780691167664
£30.00
Hardcover
Nature / Animals / Dinosaurs & Prehistoric Creatures
November 2016
Princeton University Press

A fully updated and expanded new edition of the acclaimed, bestselling dinosaur field guide

The bestselling *Princeton Field Guide to Dinosaurs* remains the must-have book for anyone who loves dinosaurs, from amateur enthusiasts to professional paleontologists. Now extensively revised and expanded, this dazzlingly illustrated large-format edition features some 100 new dinosaur species and 200 new and updated illustrations, bringing readers up to the minute on the latest discoveries and research that are radically transforming what we know about dinosaurs and their world.

Written and illustrated by acclaimed dinosaur expert Gregory Paul, this stunningly beautiful book includes detailed species accounts of all the major dinosaur groups as well as nearly 700 color and black-and-white images—skeletal drawings, "life" studies, scenic views, and other illustrations that depict the full range of dinosaurs, from small feathered creatures to whale-sized supersauropods. Paul's extensively revised introduction delves into dinosaur history and biology, the extinction of nonavian dinosaurs, the origin of birds, and the history of dinosaur paleontology, as well as giving a taste of what it might be like to travel back in time to the era when dinosaurs roamed the earth.

- Now extensively revised and expanded
- Covers nearly 750 dinosaur species, including scores of newly discovered ones
- Provides startling new perspectives on the famed *Brontosaurus* and *Tyrannosaurus*
- Features nearly 700 color and black-and-white drawings and figures, including life studies, scenic views, and skull and muscle drawings
- Includes color paleo-distribution maps and a color time line
- Describes anatomy, physiology, locomotion, reproduction, and growth of dinosaurs, as well as the origin of birds and the extinction of nonavian dinosaurs



The Princeton Field Guide to Prehistoric Mammals

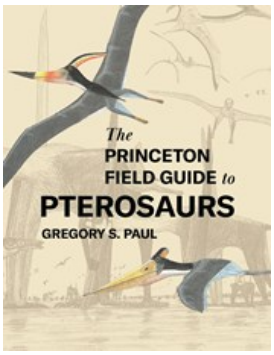
Donald R. Prothero
9780691156828
£30.00
Hardcover
Nature / Animals / Dinosaurs & Prehistoric Creatures
December 2016
Princeton University Press

The ultimate illustrated guide to the lost world of prehistoric mammals

After the mass extinction of the dinosaurs 65 million years ago, mammals became the dominant terrestrial life form on our planet. Roaming the earth were spectacular beasts such as saber-toothed cats, giant mastodonts, immense ground sloths, and gigantic giraffe-like rhinoceroses. Here is the ultimate illustrated field guide to the lost world of these weird and wonderful prehistoric creatures.

A woolly mammoth probably won't come thundering through your vegetable garden any time soon. But if one did, this would be the book to keep on your windowsill next to the binoculars. It covers all the main groups of fossil mammals, discussing taxonomy and evolutionary history, and providing concise accounts of the better-known genera and species as well as an up-to-date family tree for each group. No other book presents such a wealth of new information about these animals—what they looked like, how they behaved, and how they were interrelated. In addition, this unique guide is stunningly illustrated throughout with full-color reconstructions of these beasts—many never before depicted—along with photographs of amazing fossils from around the world.

- Provides an up-to-date guidebook to hundreds of extinct species, from saber-toothed cats to giant mammoths
- Features a wealth of color illustrations, including new reconstructions of many animals never before depicted
- Demonstrates evolution in action—such as how whales evolved from hoofed mammals and how giraffes evolved from creatures with short necks
- Explains how mass extinctions and climate change affected mammals, including why some mammals grew so huge



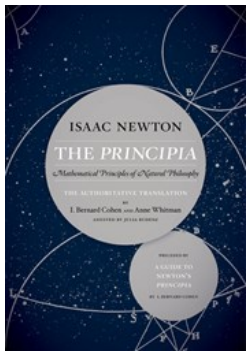
The Princeton Field Guide to Pterosaurs

Gregory S. Paul
9780691180175
£25.00
Hardcover
Nature / Animals / Dinosaurs & Prehistoric Creatures
June 2022
Princeton University Press

The most up-to-date and authoritative illustrated guide to the marvelous flying reptiles that dominated the skies of the Mesozoic for 160 million years

Once seen by some as evolutionary dead-enders, pterosaurs were vigorous winged reptiles capable of thriving in an array of habitats and climates, including polar winters. *The Princeton Field Guide to Pterosaurs* transforms our understanding of these great Mesozoic archosaurs of the air. This incredible guide covers 115 pterosaur species and features stunning illustrations of pterosaurs ranging in size from swallows to small sailplanes, some with enormous, bizarre head crests and elongated beaks. It discusses the history of pterosaurs through 160 million years of the Mesozoic—including their anatomy, physiology, locomotion, reproduction, growth, and extinction—and even gives a taste of what it might be like to travel back to the Mesozoic. This one-of-a-kind guide also challenges the common image of big pterosaurs as ultralights that only soared, showing how these spectacular creatures could be powerful flappers as heavy as bears.

- Features detailed species accounts of 115 different kinds of pterosaurs, with the latest size and mass estimates
- Written and illustrated by the acclaimed researcher and artist who helped to redefine the anatomy and flight performance of pterosaurs
- Covers everything from pterosaur biology to the colorful history of pterosaur paleontology
- Includes dozens of original skeletal drawings and full-color life studies



The Principia: The Authoritative Translation and Guide

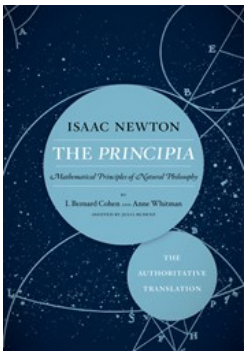
Isaac Newton
9780520290884
£30.00
Trade Paperback
Science / Physics / Mathematical & Computational
February 2016

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 illuminating Guide to Newton's *Principia* by I. Bernard Cohen makes this preeminent work truly accessible for today's scientists, scholars, and students.



The Principia: The Authoritative Translation

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

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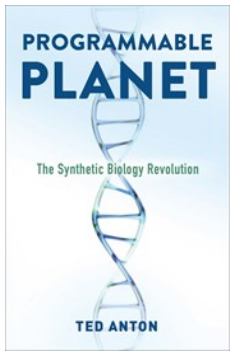
The translation-only edition of this preeminent work is truly accessible for today's scientists, scholars, and students.

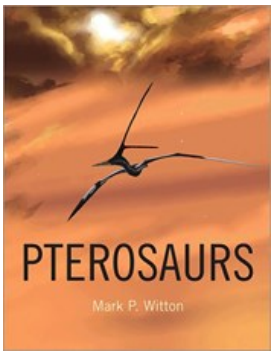


Programmable Planet

Ted Anton
9780231205108
£28.00
Hardcover
Science / Life Sciences / Biology
July 2023
Columbia University Press

A new science is reengineering the fabric of life. Synthetic biology offers bold new ways of manufacturing medicines, clothing, foods, fragrances, and fuels, often using microbe fermentation, much like brewing beer. The technology can help confront climate change, break down industrial pollutants, and fight novel viruses. Today, researchers are manipulating life forms and automating evolution to create vegetarian “meat,” renewable construction materials, and cancer treatments. In the process, they are changing our concept of what life science can achieve. Is this a new industrial and information revolution—or dangerous tinkering that could unleash unintended consequences?

Programmable Planet is a grand tour through the world of synthetic biology, telling the stories of the colorful visionaries whose ideas are shaping discoveries. Ted Anton explores the field from its beginning in fighting malaria in Africa to the COVID vaccines and beyond. Covering medical and agricultural triumphs and blunders, he examines successes in energy production, plant gene editing, and chemical manufacturing, as well as the most controversial attempts at human gene enhancement. This book reports from the front lines of research, showing policy makers’ struggle to stay abreast of the technologies they aim to regulate. Even-handed, lively, and informative, *Programmable Planet* gives a glimpse of the promise and problems of a new biology-based industry.



Pterosaurs

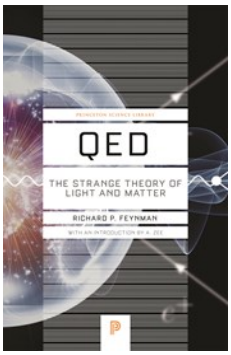
Mark P. Witton
9780691150611
£30.00
Hardcover
Science / Paleontology
June 2013
Princeton University Press

The most authoritative illustrated book on flying reptiles available

For 150 million years, the skies didn't belong to birds—they belonged to the pterosaurs. These flying reptiles, which include the pterodactyls, shared the world with the nonavian dinosaurs until their extinction 65 million years ago. Some pterosaurs, such as the giant azhdarchids, were the largest flying animals of all time, with wingspans exceeding thirty feet and standing heights comparable to modern giraffes. This richly illustrated book takes an unprecedented look at these astonishing creatures, presenting the latest findings on their anatomy, ecology, and extinction.

Pterosaurs features some 200 stunning illustrations, including original paintings by Mark Witton and photos of rarely seen fossils. After decades of mystery, paleontologists have finally begun to understand how pterosaurs are related to other reptiles, how they functioned as living animals, and, despite dwarfing all other flying animals, how they managed to become airborne. Here you can explore the fossil evidence of pterosaur behavior and ecology, learn about the skeletal and soft-tissue anatomy of pterosaurs, and consider the newest theories about their cryptic origins. This one-of-a-kind book covers the discovery history, paleobiogeography, anatomy, and behaviors of more than 130 species of pterosaur, and also discusses their demise at the end of the Mesozoic.

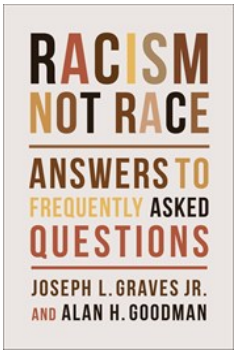
- The most comprehensive book on pterosaurs ever published
- Features some 200 illustrations, including original paintings by the author
- Covers every known species and major group of pterosaurs
- Describes pterosaur anatomy, ecology, behaviors, diversity, and more



QED

Richard P. Feynman
9780691164090
£14.99
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.



Racism, Not Race

Joseph L. Graves
9780231200677
£14.99
Trade Paperback
Science / Philosophy & Social Aspects
February 2023
Columbia University Press

The science on race is clear. Common categories like "Black," "white," and "Asian" do not represent genetic differences among groups. But if race is a pernicious fiction according to natural science, it is all too significant in the day-to-day lives of racialized people across the globe. Inequities in health, wealth, and an array of other life outcomes cannot be explained without referring to "race"—but their true source is *racism*. What do we need to know about the pseudoscience of race in order to fight racism and fulfill human potential?

In this book, two distinguished scientists tackle common misconceptions about race, human biology, and racism. Using an accessible question-and-answer format, Joseph L. Graves Jr. and Alan H. Goodman explain the differences between social and biological notions of race. Although there are many meaningful human genetic variations, they do not map onto socially constructed racial categories. Drawing on evidence from both natural and social science, Graves and Goodman dismantle the malignant myth of gene-based racial difference. They demonstrate that the ideology of racism created races and show why the inequalities ascribed to race are in fact caused by racism.

Graves and Goodman provide persuasive and timely answers to key questions about race and racism for a moment when people of all backgrounds are striving for social justice. *Racism, Not Race* shows readers why antiracist principles are both just and backed by sound science.

Radical by Nature

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

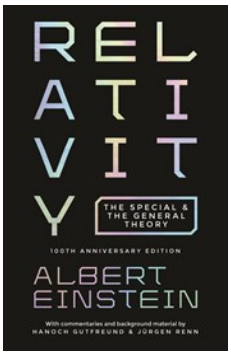
A major new biography of the brilliant naturalist, traveler, humanitarian, and codiscoverer of natural selection

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.

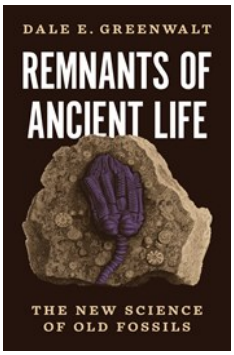


Relativity

Albert Einstein
9780691191812
£13.99
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.



Remnants of Ancient Life

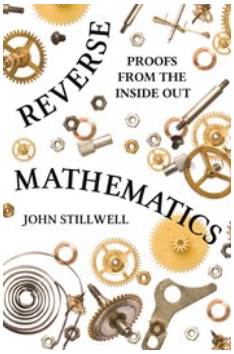
Dale E. Greenwalt
9780691221144
£22.00
Hardcover
Nature / Fossils
January 2023
Princeton University Press

The revolution in science that is transforming our understanding of extinct life

We used to think of fossils as being composed of nothing but rock and minerals, all molecular traces of life having vanished long ago. We were wrong. *Remnants of Ancient Life* reveals how the new science of ancient biomolecules—pigments, proteins, and DNA that once functioned in living organisms tens of millions of years ago—is opening a new window onto the evolution of life on Earth.

Paleobiologists are now uncovering these ancient remnants in the fossil record with increasing frequency, shedding vital new light on long-extinct creatures and the lost world they inhabited. Dale Greenwalt is your guide to these astonishing breakthroughs. He explains how ancient biomolecules hold the secrets to how mammoths dealt with the bitter cold, what colors dinosaurs exhibited in mating displays, how ancient viruses evolved to become more dangerous, and much more. Each chapter discusses different types of biomolecules and the insights they provide about the physiology, behavior, and evolution of extinct organisms, many of which existed long before the age of dinosaurs.

A marvelous adventure of discovery, *Remnants of Ancient Life* offers an unparalleled look at an emerging science that is transforming our picture of the remote past. You will never think of fossils in the same way again.

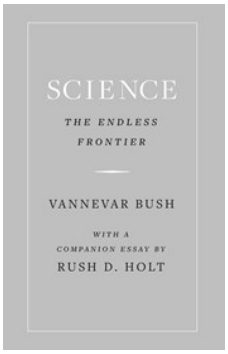


Reverse Mathematics

John Stillwell
9780691196411
£15.99
Trade Paperback
Mathematics / History & Philosophy
September 2019
Princeton University Press

The first book surveying the history and ideas behind reverse mathematics

Reverse mathematics is a new field that seeks to find the axioms needed to prove given theorems. In *Reverse Mathematics*, John Stillwell offers a historical and representative view, emphasizing basic analysis and giving a novel approach to logic. By using a minimum of mathematical logic in a well-motivated way, *Reverse Mathematics* will engage advanced undergraduates and all mathematicians interested in the foundations of mathematics.



Science, the Endless Frontier

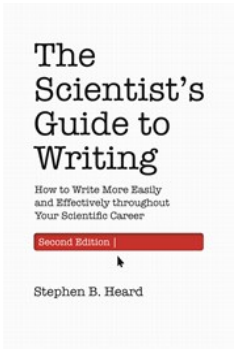
Vannevar Bush
9780691186627
£10.99
Hardcover
Science / Philosophy & Social Aspects
February 2021
Princeton University Press

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.



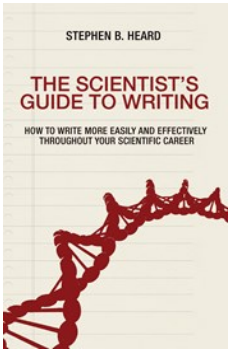
The Scientist's Guide to Writing, 2nd Edition

Stephen B. Heard
9780691219189
£20.00
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
Trade Paperback
Science / Reference
April 2016
Princeton University Press

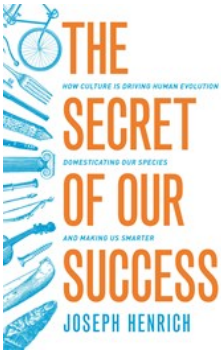
A concise and accessible primer on the scientific writer's craft

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

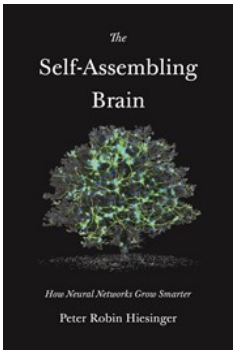
Joseph Henrich
9780691178431
£16.99
Trade Paperback
Science / Cognitive Science
October 2017
Princeton University Press

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

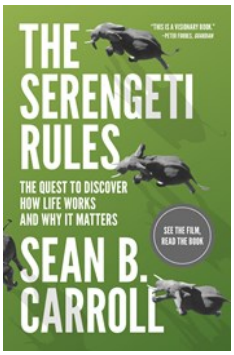
Peter Robin Hiesinger
9780691241692
£20.00
Trade Paperback
Science / Life Sciences / Neuroscience
December 2022
Princeton University Press

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.



The Serengeti Rules

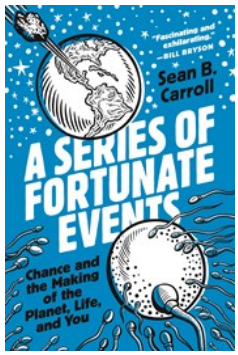
Sean B. Carroll
9780691175683
£13.99
Trade Paperback
Science / Life Sciences / Biology
March 2017
Princeton University Press

Now the subject of an Emmy Award–winning film the *New York Times* calls "spellbinding"

How does life work? How does nature produce the right numbers of zebras and lions on the African savanna, or fish in the ocean? How do our bodies produce the right numbers of cells in our organs and bloodstream? In *The Serengeti Rules*, award-winning biologist and author Sean Carroll tells the stories of the pioneering scientists who sought the answers to such simple yet profoundly important questions, and shows how their discoveries matter for our health and the health of the planet we depend upon.

One of the most important revelations about the natural world is that everything is regulated—there are rules that regulate the amount of every molecule in our bodies and rules that govern the numbers of every animal and plant in the wild. And the most surprising revelation about the rules that regulate life at such different scales is that they are remarkably similar—there is a common underlying logic of life. Carroll recounts how our deep knowledge of the rules and logic of the human body has spurred the advent of revolutionary life-saving medicines, and makes the compelling case that it is now time to use the Serengeti Rules to heal our ailing planet.

A bold and inspiring synthesis by one of our most accomplished biologists and gifted storytellers, *The Serengeti Rules* is the first book to illuminate how life works at vastly different scales. Read it and you will never look at the world the same way again.



A Series of Fortunate Events

Sean B. Carroll
9780691234694
£12.99
Trade Paperback
Science / Life Sciences / Evolution
March 2022
Princeton University Press

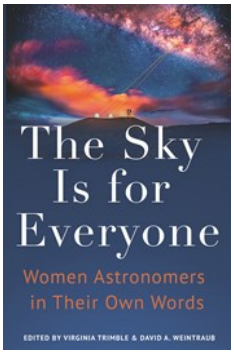
"Fascinating and exhilarating—Sean B. Carroll at his very best."—Bill Bryson, author of *The Body: A Guide for Occupants*

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.



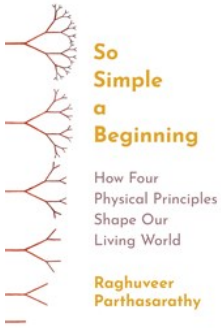
The Sky Is for Everyone

Virginia Trimble
9780691207100
£25.00
Hardcover
Science / Space Science / Astronomy
June 2022
Princeton University Press

An inspiring anthology of writings by trailblazing women astronomers from around the globe

The Sky Is for Everyone is an internationally diverse collection of autobiographical essays by women who broke down barriers and changed the face of modern astronomy. Virginia Trimble and David Weintraub vividly describe how, before 1900, a woman who wanted to study the stars had to have a father, brother, or husband to provide entry, and how the considerable intellectual skills of women astronomers were still not enough to enable them to pry open doors of opportunity for much of the twentieth century. After decades of difficult struggles, women are closer to equality in astronomy than ever before. Trimble and Weintraub bring together the stories of the tough and determined women who flung the doors wide open. Taking readers from 1960 to today, this triumphant anthology serves as an inspiration to current and future generations of women scientists while giving voice to the history of a transformative era in astronomy.

With contributions by Neta A. Bahcall, Beatriz Barbuy, Ann Merchant Boesgaard, Jocelyn Bell Burnell, Catherine Cesarsky, Poonam Chandra, Xuefei Chen, Cathie Clarke, Judith Gamora Cohen, France Anne Córdova, Anne Pyne Cowley, Bożena Czerny, Wendy L. Freedman, Yilen Gómez Maqueo Chew, Gabriela González, Saeko S. Hayashi, Martha P. Haynes, Roberta M. Humphreys, Vicky Kalogera, Gillian Knapp, Shazrene S. Mohamed, Carole Mundell, Priyamvada Natarajan, Dara J. Norman, Hiranya Peiris, Judith Lynn Pipher, Dina Prialnik, Anneila I. Sargent, Sara Seager, Gražina Tautvaišienė, Silvia Torres-Peimbert, Virginia Trimble, Meg Urry, Ewine F. van Dishoeck, Patricia Ann Whitelock, Sidney Wolff, and Rosemary F. G. Wyse.



So Simple a Beginning

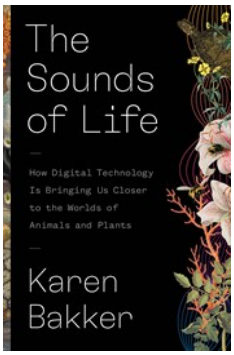
Raghuveer Parthasarathy
9780691200408
£30.00
Hardcover
Science / Life Sciences / Biophysics
February 2022
Princeton University Press

A biophysicist reveals the hidden unity behind nature's breathtaking complexity

The form and function of a sprinting cheetah are quite unlike those of a rooted tree. A human being is very different from a bacterium or a zebra. The living world is a realm of dazzling variety, yet a shared set of physical principles shapes the forms and behaviors of every creature in it. *So Simple a Beginning* shows how the emerging new science of biophysics is transforming our understanding of life on Earth and enabling potentially lifesaving but controversial technologies such as gene editing, artificial organ growth, and ecosystem engineering.

Raghuveer Parthasarathy explains how four basic principles—self-assembly, regulatory circuits, predictable randomness, and scaling—shape the machinery of life on scales ranging from microscopic molecules to gigantic elephants. He describes how biophysics is helping to unlock the secrets of a host of natural phenomena, such as how your limbs know to form at the proper places, and why humans need lungs but ants do not. Parthasarathy explores how the cutting-edge biotechnologies of tomorrow could enable us to alter living things in ways both subtle and profound.

Featuring dozens of original watercolors and drawings by the author, this sweeping tour of biophysics offers astonishing new perspectives on how the wonders of life can arise from so simple a beginning.



The Sounds of Life

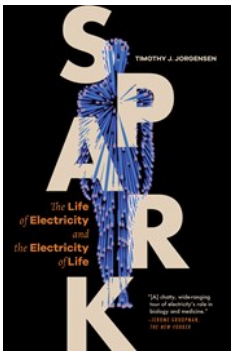
Karen Bakker
9780691206288
£28.00
Hardcover
Nature / Animals
October 2022
Princeton University Press

An amazing journey into the hidden realm of nature's sounds

The natural world teems with remarkable conversations, many beyond human hearing range. Scientists are using groundbreaking digital technologies to uncover these astonishing sounds, revealing vibrant communication among our fellow creatures across the Tree of Life.

At once meditative and scientific, *The Sounds of Life* shares fascinating and surprising stories of nonhuman sound, interweaving insights from technological innovation and traditional knowledge. We meet scientists using sound to protect and regenerate endangered species from the Great Barrier Reef to the Arctic and the Amazon. We discover the shocking impacts of noise pollution on both animals and plants. We learn how artificial intelligence can decode nonhuman sounds, and meet the researchers building dictionaries in East African Elephant and Sperm Whalish. At the frontiers of innovation, we explore digitally mediated dialogues with bats and honeybees. Technology often distracts us from nature, but what if it could reconnect us instead?

The Sounds of Life offers hope for environmental conservation and affirms humanity's relationship with nature in the digital age. After learning about the unsuspected wonders of nature's sounds, we will never see walks outdoors in the same way again.



Spark

Timothy J. Jorgensen
9780691248158
£18.99
Trade Paperback
Science / Physics / Electricity
June 2023
Princeton University Press

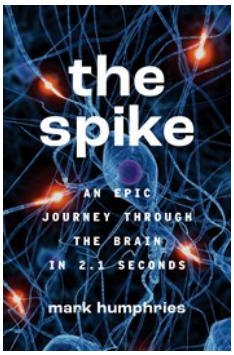
A fresh look at electricity and its powerful role in life on Earth

When we think of electricity, we likely imagine the energy humming inside our home appliances or lighting up our electronic devices—or perhaps we envision the lightning-streaked clouds of a stormy sky. But electricity is more than an external source of power, heat, or illumination. Life at its essence is nothing if not electrical.

The story of how we came to understand electricity's essential role in all life is rooted in our observations of its influences on the body—influences governed by the body's central nervous system. *Spark* explains the science of electricity from this fresh, biological perspective. Through vivid tales of scientists and individuals—from Benjamin Franklin to Elon Musk—Timothy Jorgensen shows how our views of electricity and the nervous system evolved in tandem, and how progress in one area enabled advancements in the other. He explains how these developments have allowed us to understand—and replicate—the ways electricity enables the body's essential functions of sight, hearing, touch, and movement itself.

Throughout, Jorgensen examines our fascination with electricity and how it can help or harm us. He explores a broad range of topics and events, including the Nobel Prize–winning discoveries of the electron and neuron, the history of experimentation involving electricity's effects on the body, and recent breakthroughs in the use of electricity to treat disease.

Filled with gripping adventures in scientific exploration, *Spark* offers an indispensable look at electricity, how it works, and how it animates our lives from within and without.



The Spike

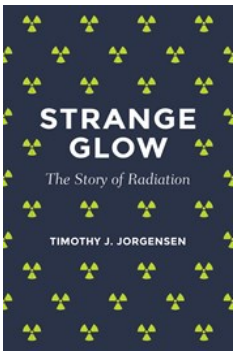
Mark Humphries
9780691241487
£15.99
Trade Paperback
Science / Life Sciences / Neuroscience
January 2023
Princeton University Press

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

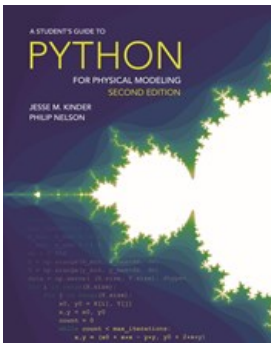
Timothy J. Jorgensen
9780691178349
£16.99
Trade Paperback
Science / Radiation
August 2017
Princeton University Press

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
£20.00
Trade Paperback
Science / Physics
August 2021
Princeton University Press

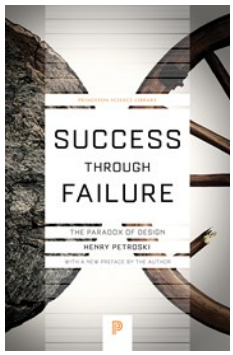
A fully updated tutorial on the basics of the Python programming language for science students

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.



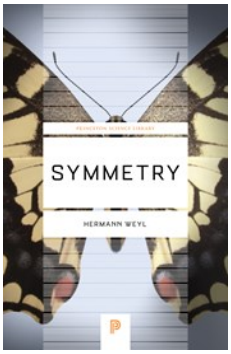
Success through Failure

Henry Petroski
9780691180991
£16.99
Trade Paperback
Technology & Engineering / Industrial Design
May 2018
Princeton University Press

Design pervades our lives. Everything from drafting a PowerPoint presentation to planning a state-of-the-art bridge embodies this universal human activity. But what makes a great design? In this compelling and wide-ranging look at the essence of invention, distinguished engineer and author Henry Petroski argues that, time and again, we have built success on the back of failure--not through easy imitation of success.

Success through Failure shows us that making something better--by carefully anticipating and thus averting failure--is what invention and design are all about. Petroski explores the nature of invention and the character of the inventor through an unprecedented range of both everyday and extraordinary examples--illustrated lectures, child-resistant packaging for drugs, national constitutions, medical devices, the world's tallest skyscrapers, long-span bridges, and more. Stressing throughout that there is no surer road to eventual failure than modeling designs solely on past successes, he sheds new light on spectacular failures, from the destruction of the Tacoma Narrows Bridge in 1940 and the space shuttle disasters of recent decades, to the collapse of the World Trade Center in 2001.

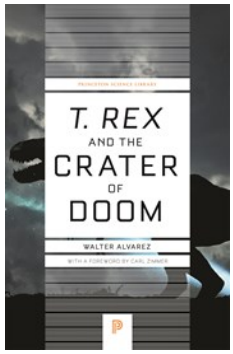
Petroski also looks at the prehistoric and ancient roots of many modern designs. The historical record, especially as embodied in failures, reveals patterns of human social behavior that have implications for large structures like bridges and vast organizations like NASA. *Success through Failure*--which will fascinate anyone intrigued by design, including engineers, architects, and designers themselves--concludes by speculating on when we can expect the next major bridge failure to occur, and the kind of bridge most likely to be involved.



Symmetry

Hermann Weyl
9780691173252
£13.99
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.

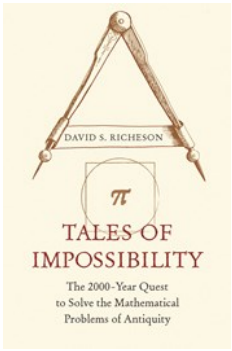


T. rex and the Crater of Doom

Walter Alvarez
9780691169668
£15.99
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.



Tales of Impossibility

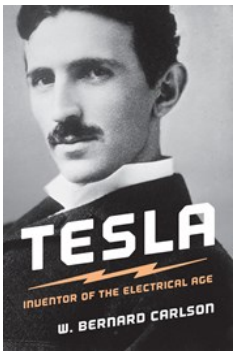
David S. Richeson
9780691218724
£18.99
Trade Paperback
Mathematics / History & Philosophy
November 2021
Princeton University Press

A comprehensive look at four of the most famous problems in mathematics

Tales of Impossibility recounts the intriguing story of the renowned problems of antiquity, four of the most famous and studied questions in the history of mathematics. First posed by the ancient Greeks, these compass and straightedge problems—squaring the circle, trisecting an angle, doubling the cube, and inscribing regular polygons in a circle—have served as ever-present muses for mathematicians for more than two millennia. David Richeson follows the trail of these problems to show that ultimately their proofs—which demonstrated the impossibility of solving them using only a compass and straightedge—depended on and resulted in the growth of mathematics.

Richeson investigates how celebrated luminaries, including Euclid, Archimedes, Viète, Descartes, Newton, and Gauss, labored to understand these problems and how many major mathematical discoveries were related to their explorations. Although the problems were based in geometry, their resolutions were not, and had to wait until the nineteenth century, when mathematicians had developed the theory of real and complex numbers, analytic geometry, algebra, and calculus. Pierre Wantzel, a little-known mathematician, and Ferdinand von Lindemann, through his work on pi, finally determined the problems were impossible to solve. Along the way, Richeson provides entertaining anecdotes connected to the problems, such as how the Indiana state legislature passed a bill setting an incorrect value for pi and how Leonardo da Vinci made elegant contributions in his own study of these problems.

Taking readers from the classical period to the present, *Tales of Impossibility* chronicles how four unsolvable problems have captivated mathematical thinking for centuries.



Tesla

W. Bernard Carlson
9780691165615
£16.99
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.

Things Fall Together

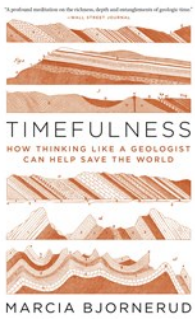
Skylar Tibbits
9780691170336
£20.00
Hardcover
Technology & Engineering / Materials Science
June 2021
Princeton University Press

From the visionary founder of the Self-Assembly Lab at MIT, a manifesto for the dawning age of active materials

Things in life tend to fall apart. Cars break down. Buildings fall into disrepair. Personal items deteriorate. Yet today's researchers are exploiting newly understood properties of matter to program materials that physically sense, adapt, and fall together instead of apart. These materials open new directions for industrial innovation and challenge us to rethink the way we build and collaborate with our environment. *Things Fall Together* is a provocative guide to this emerging, often mind-bending reality, presenting a bold vision for harnessing the intelligence embedded in the material world.

Drawing on his pioneering work on self-assembly and programmable material technologies, Skylar Tibbits lays out the core, frequently counterintuitive ideas and strategies that animate this new approach to design and innovation. From furniture that builds itself to shoes printed flat that jump into shape to islands that grow themselves, he describes how matter can compute and exhibit behaviors that we typically associate with biological organisms, and challenges our fundamental assumptions about what physical materials can do and how we can interact with them. Intelligent products today often rely on electronics, batteries, and complicated mechanisms. Tibbits offers a different approach, showing how we can design simple and elegant material intelligence that may one day animate and improve itself—and along the way help us build a more sustainable future.

Compelling and beautifully designed, *Things Fall Together* provides an insider's perspective on the materials revolution that lies ahead, revealing the spectacular possibilities for designing active materials that can self-assemble, collaborate, and one day even evolve and design on their own.



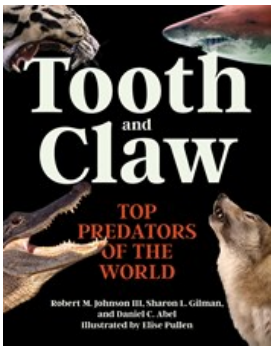
Timefulness

Marcia Bjornerud
9780691202631
£13.99
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.



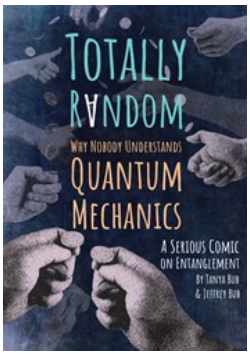
Tooth and Claw

Robert M. Johnson
9780691240282
£38.00
Hardcover
Nature / Animals / Wildlife
May 2023
Princeton University Press

A marvelously illustrated look at the most deadly predators on the planet

Tooth and Claw presents the world's top predators as you have never seen them before, from big cats and wild dogs to sharks, reptiles, and killer whales. Blending gorgeous photos and illustrations with spellbinding storytelling, this book is packed with the latest facts about these fearsome but often misunderstood animals. It covers apex and other top predators in each major vertebrate family, discussing where and how they live, how they are faring in the modern world, and why they matter. Along the way, the authors share informative and entertaining anecdotes from their decades in the field learning about predators and reveal hard truths about the role humans continue to play in their fate. *Tooth and Claw* also describes conservation successes and lays out some simple but crucial steps each of us can take to protect these magnificent beasts. Are humans top predators, too? Read this amazing book and find out.

- Offers an unparalleled look at a side of nature rarely witnessed up close
- Stunningly illustrated throughout and brimming with fun facts
- Describes ultimate vertebrate predators ranging from sharks and reptiles to raptors, cats, dogs, bears, and marine mammals
- Provides rare insights into the biology, ecology, and conservation of top predators
- Draws on the latest findings from habitats around the world
- Conveys the wonders of the natural world with engaging storytelling and lively personal anecdotes



Totally Random

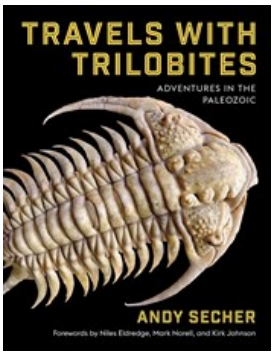
Tanya Bub
9780691176956
£18.99
Trade Paperback
Science / Physics / Quantum Theory
June 2018
Princeton University Press

An eccentric comic about the central mystery of quantum mechanics

Totally Random is a comic for the serious reader who wants to really understand the central mystery of quantum mechanics--entanglement: what it is, what it means, and what you can do with it.

Measure two entangled particles separately, and the outcomes are totally random. But compare the outcomes, and the particles seem as if they are instantaneously influencing each other at a distance—even if they are light-years apart. This, in a nutshell, is entanglement, and if it seems weird, then this book is for you. *Totally Random* is a graphic experiential narrative that unpacks the deep and insidious significance of the curious correlation between entangled particles to deliver a gut-feel glimpse of a world that is not what it seems. See for yourself how entanglement has led some of the greatest thinkers of our time to talk about crazy-sounding stuff like faster-than-light signaling, many worlds, and cats that are both dead and alive. Find out why it remains one of science's most paradigm-shaking discoveries. Join Niels Bohr's therapy session with the likes of Einstein, Schrödinger, and other luminaries and let go of your commonsense notion of how the world works. Use your new understanding of entanglement to do the seemingly impossible, like beat the odds in the quantum casino, or quantum encrypt a message to evade the Sphinx's all-seeing eye. But look out, or you might just get teleported back to the beginning of the book!

A fresh and subversive look at our quantum world with some seriously funny stuff, *Totally Random* delivers a real understanding of entanglement that will completely change the way you think about the nature of physical reality.



Travels with Trilobites

Andy Secher
9780231200967
£30.00
Hardcover
Science / Paleontology
June 2022
Columbia University Press

Trilobites were some of the most successful and versatile organisms ever to exist. Among the earliest forms of complex animal life, these hard-shelled marine invertebrates inhabited the primal seas of the Paleozoic Era. Their march through evolutionary time began in the Lower Cambrian, some 521 million years ago, and lasted until their demise at the end of the Permian, more than 250 million years later. During this vast stretch of planetary history, these adaptable animals filled virtually every available undersea niche, evolving into more than 25,000 scientifically recognized species.

In *Travels with Trilobites*, Andy Secher invites readers to come along in search of the fossilized remains of these ancient arthropods. He explores breathtaking paleontological hot spots around the world—including Alnif, Morocco, on the edge of the Sahara Desert; the Sakha Republic, deep in the Siberian wilderness; and Kangaroo Island, off the coast of South Australia—and offers a behind-the-scenes look at museums, fossil shows, and life on the collectors' circuit. The book features hundreds of photographs of unique specimens drawn from Secher's private collection, showcasing stunning fossil finds that highlight the diversity, complexity, and beauty of trilobites. Entertaining and informative, *Travels with Trilobites* combines key scientific information about these captivating creatures with wry, colorful observations and inside stories from one of the world's most prolific collectors.

Treepedia

Joan Maloof
9780691208756
£9.99
Hardcover
Nature / Plants / Trees
September 2021
Princeton University Press

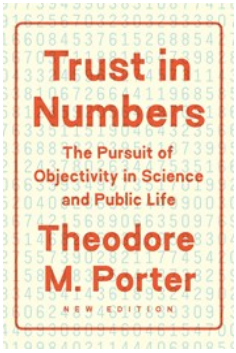
A captivating A–Z treasury for the tree hugger in all of us

Treepedia is an entertaining and fact-filled illustrated compendium of tree lore. Featuring nearly 100 entries—on topics ranging from tree ecology and conservation to the role of trees in religion, literature, art, and movies—this enticing collection is a celebration of all things arboreal.

In this charming book, Joan Maloof explains the difference between a cedar and a cypress, and reveals where to find the most remarkable trees on the planet. She tells the story behind the venerable Bodhi Tree, and describes peculiar species like baobabs and Fitzroya. Maloof profiles legendary conservationists such as Julia "Butterfly" Hill, John Muir, Wangari Maathai, and Ken Wu. She discusses reforestation, proforestation, emerald ash borers, the ents from *The Lord of the Rings*, culturally modified trees, the ill-fated and controversial Redwood Summer, and much more. The book's portable size makes it the perfect travel companion no matter where your love of the forest may lead you.

With enchanting illustrations by Maren Westfall, *Treepedia* is a fun and informative book that is guaranteed to inspire anyone who has ever enjoyed a walk in the woods.

- Features a real cloth cover with an elaborate foil-stamped design
- Uses 100 percent recycled, uncoated, wood-free paper

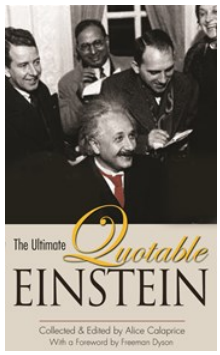


Trust in Numbers

Theodore M. Porter
9780691208411
£25.00
Trade Paperback
Science / History
August 2020
Princeton University Press

A foundational work on historical and social studies of quantification

What accounts for the prestige of quantitative methods? The usual answer is that quantification is desirable in social investigation as a result of its successes in science. *Trust in Numbers* questions whether such success in the study of stars, molecules, or cells should be an attractive model for research on human societies, and examines why the natural sciences are highly quantitative in the first place. Theodore Porter argues that a better understanding of the attractions of quantification in business, government, and social research brings a fresh perspective to its role in psychology, physics, and medicine. Quantitative rigor is not inherent in science but arises from political and social pressures, and objectivity derives its impetus from cultural contexts. In a new preface, the author sheds light on the current infatuation with quantitative methods, particularly at the intersection of science and bureaucracy.



The Ultimate Quotable Einstein

Albert Einstein
9780691160146
£13.99
Trade Paperback
Science / Physics
September 2013
Princeton University Press

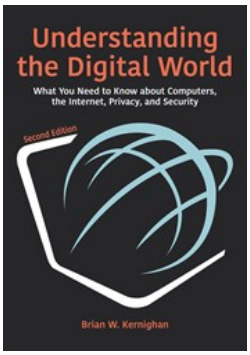
The most comprehensive collection of Einstein quotations ever published

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



Understanding the Digital World

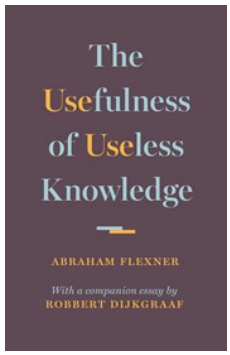
Brian W. Kernighan
9780691219103
£25.00
Trade Paperback
Computers
March 2021
Princeton University Press

A brand-new edition of the popular introductory textbook that explores how computer hardware, software, and networks work

Computers are everywhere. Some are highly visible, in laptops, tablets, cell phones, and smart watches. But most are invisible, like those in appliances, cars, medical equipment, transportation systems, power grids, and weapons. We never see the myriad computers that quietly collect, share, and sometimes leak personal data about us. Governments and companies increasingly use computers to monitor what we do. Social networks and advertisers know more about us than we should be comfortable with. Criminals have all-too-easy access to our data. Do we truly understand the power of computers in our world?

In this updated edition of *Understanding the Digital World*, Brian Kernighan explains how computer hardware, software, and networks work. Topics include how computers are built and how they compute; what programming is; how the Internet and web operate; and how all of these affect security, privacy, property, and other important social, political, and economic issues. Kernighan touches on fundamental ideas from computer science and some of the inherent limitations of computers, and new sections in the book explore Python programming, big data, machine learning, and much more. Numerous color illustrations, notes on sources for further exploration, and a glossary explaining technical terms and buzzwords are included.

Understanding the Digital World is a must-read for readers of all backgrounds who want to know more about computers and communications.



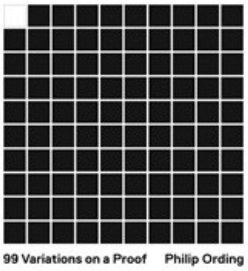
The Usefulness of Useless Knowledge

Abraham Flexner
9780691174761
£7.99
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.



99 Variations on a Proof

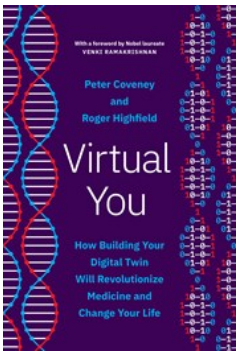
Philip Ording
9780691218977
£16.99
Trade Paperback
Mathematics
October 2021
Princeton University Press

An exploration of mathematical style through 99 different proofs of the same theorem

This book offers a multifaceted perspective on mathematics by demonstrating 99 different proofs of the same theorem. Each chapter solves an otherwise unremarkable equation in distinct historical, formal, and imaginative styles that range from Medieval, Topological, and Doggerel to Chromatic, Electrostatic, and Psychedelic. With a rare blend of humor and scholarly aplomb, Philip Ording weaves these variations into an accessible and wide-ranging narrative on the nature and practice of mathematics.

Inspired by the experiments of the Paris-based writing group known as the Oulipo—whose members included Raymond Queneau, Italo Calvino, and Marcel Duchamp—Ording explores new ways to examine the aesthetic possibilities of mathematical activity. *99 Variations on a Proof* is a mathematical take on Queneau's *Exercises in Style*, a collection of 99 retellings of the same story, and it draws unexpected connections to everything from mysticism and technology to architecture and sign language. Through diagrams, found material, and other imagery, Ording illustrates the flexibility and creative potential of mathematics despite its reputation for precision and rigor.

Readers will gain not only a bird's-eye view of the discipline and its major branches but also new insights into its historical, philosophical, and cultural nuances. Readers, no matter their level of expertise, will discover in these proofs and accompanying commentary surprising new aspects of the mathematical landscape.



Virtual You

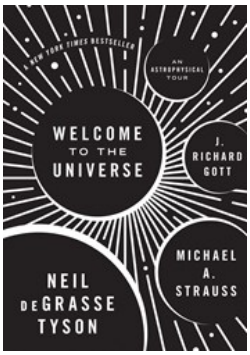
Peter Coveney
9780691223278
£25.00
Hardcover
Science / Life Sciences / Biology
March 2023
Princeton University Press

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.



Welcome to the Universe

Neil Degrasse Tyson
9780691157245
£35.00
Hardcover
Science / Physics / Astrophysics
September 2016
Princeton University Press

The *New York Times* bestselling tour of the cosmos from three of today's leading astrophysicists

Welcome to the Universe is a personal guided tour of the cosmos by three of today's leading astrophysicists. Inspired by the enormously popular introductory astronomy course that Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott taught together at Princeton, this book covers it all—from planets, stars, and galaxies to black holes, wormholes, and time travel.

Describing the latest discoveries in astrophysics, the informative and entertaining narrative propels you from our home solar system to the outermost frontiers of space. How do stars live and die? Why did Pluto lose its planetary status? What are the prospects of intelligent life elsewhere in the universe? How did the universe begin? Why is it expanding and why is its expansion accelerating? Is our universe alone or part of an infinite multiverse? Answering these and many other questions, the authors open your eyes to the wonders of the cosmos, sharing their knowledge of how the universe works.

Breathtaking in scope and stunningly illustrated throughout, *Welcome to the Universe* is for those who hunger for insights into our evolving universe that only world-class astrophysicists can provide.

Welcome to the Universe in 3D

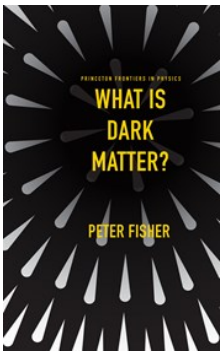
Neil deGrasse Tyson
9780691194073
£22.00
Hardcover
Science / Physics / Astrophysics
April 2022
Princeton University Press

***New York Times* bestseller**
Journey into the universe through the most spectacular sights in astronomy in stereoscopic 3D

Welcome to the Universe in 3D takes you on a grand tour of the observable universe, guiding you through the most spectacular sights in the cosmos—in breathtaking 3D. Presenting a rich array of stereoscopic color images, which can be viewed in 3D using a special stereo viewer that folds easily out of the cover of the book, this book reveals your cosmic environment as you have never seen it before.

Astronomy is the story of how humankind's perception of the two-dimensional dome of the sky evolved into a far deeper comprehension of an expanding three-dimensional cosmos. This book invites you to take part in this story by exploring the universe in depth, as revealed by cutting-edge astronomical research and observations. You will journey from the Moon through the solar system, out to exoplanets, distant nebulas, and galaxy clusters, until you finally reach the cosmic microwave background radiation (or CMB), the most distant light we can observe. The distances to these celestial wonders range from 1.3 light-seconds to 13.8 billion light-years. Along the way, the authors explain the fascinating features of what you are seeing, including how the 3D images were made using the same technique that early astronomers devised to measure distances to objects in space.

The dramatic 3D images in this one-of-a-kind book will astonish you, extending your vision out to the farthest reaches of the universe. You will never look up into the night sky the same way again.



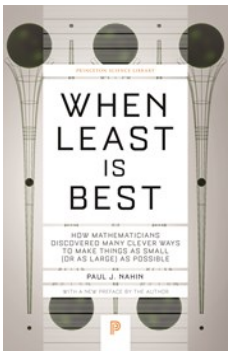
What Is Dark Matter?

Peter Fisher
9780691148342
£30.00
Hardcover
Science / Physics / Condensed Matter
July 2022
Princeton University Press

What we know about dark matter and what we have yet to discover

Astronomical observations have confirmed dark matter's existence, but what exactly is dark matter? In *What Is Dark Matter?*, particle physicist Peter Fisher introduces readers to one of the most intriguing frontiers of physics. We cannot actually see dark matter, a mysterious, nonluminous form of matter that is believed to account for about 27 percent of the mass-energy balance in the universe. But we know dark matter is present by observing its ghostly gravitational effects on the behavior and evolution of galaxies. Fisher brings readers quickly up to speed regarding the current state of the dark matter problem, offering relevant historical context as well as a close look at the cutting-edge research focused on revealing dark matter's true nature.

Could dark matter be a new type of particle—an axion or a Weakly Interacting Massive Particle (WIMP)—or something else? What have physicists ruled out so far—and why? What experimental searches are now underway and planned for the near future, in hopes of detecting dark matter on Earth or in space? Fisher explores these questions and more, illuminating what is known and unknown, and what a triumph it will be when scientists discover dark matter's identity at last.

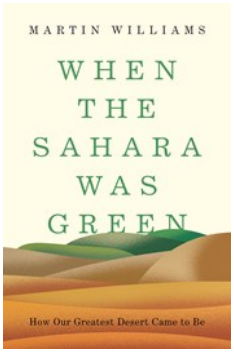


When Least Is Best

Paul J. Nahin
9780691218762
£15.99
Trade Paperback
Mathematics / History & Philosophy
May 2021
Princeton University Press

A mathematical journey through the most fascinating problems of extremes and how to solve them

What is the best way to photograph a speeding bullet? How can lost hikers find their way out of a forest? Why does light move through glass in the least amount of time possible? *When Least Is Best* combines the mathematical history of extrema with contemporary examples to answer these intriguing questions and more. Paul Nahin shows how life often works at the extremes—with values becoming as small (or as large) as possible—and he considers how mathematicians over the centuries, including Descartes, Fermat, and Kepler, have grappled with these problems of minima and maxima. Throughout, Nahin examines entertaining conundrums, such as how to build the shortest bridge possible between two towns, how to vary speed during a race, and how to make the perfect basketball shot. Moving from medieval writings and modern calculus to the field of optimization, the engaging and witty explorations of *When Least Is Best* will delight math enthusiasts everywhere.



When the Sahara Was Green

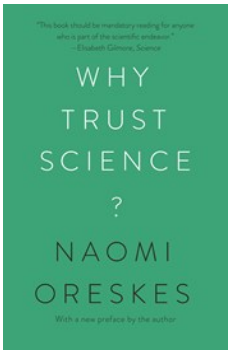
Martin Williams
9780691201627
£22.00
Hardcover
Science / Global Warming & Climate Change
October 2021
Princeton University Press

The little-known history of how the Sahara was transformed from a green and fertile land into the largest hot desert in the world

The Sahara is the largest hot desert in the world, equal in size to China or the United States. Yet, this arid expanse was once a verdant, pleasant land, fed by rivers and lakes. The Sahara sustained abundant plant and animal life, such as Nile perch, turtles, crocodiles, and hippos, and attracted prehistoric hunters and herders. What transformed this land of lakes into a sea of sands? *When the Sahara Was Green* describes the remarkable history of Earth's greatest desert—including why its climate changed, the impact this had on human populations, and how scientists uncovered the evidence for these extraordinary events.

From the Sahara's origins as savanna woodland and grassland to its current arid incarnation, Martin Williams takes us on a vivid journey through time. He describes how the desert's ancient rocks were first fashioned, how dinosaurs roamed freely across the land, and how it was later covered in tall trees. Along the way, Williams addresses many questions: Why was the Sahara previously much wetter, and will it be so again? Did humans contribute to its desertification? What was the impact of extreme climatic episodes—such as prolonged droughts—upon the Sahara's geology, ecology, and inhabitants? Williams also shows how plants, animals, and humans have adapted to the Sahara and what lessons we might learn for living in harmony with the harshest, driest conditions in an ever-changing global environment.

A valuable look at how an iconic region has changed over millions of years, *When the Sahara Was Green* reveals the desert's surprising past to reflect on its present, as well as its possible future.

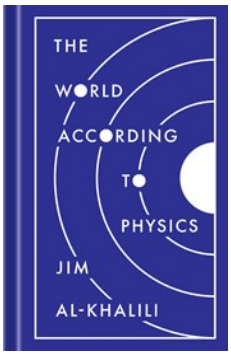


Why Trust Science?

Naomi Oreskes
9780691212265
£15.99
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.



The World According to Physics

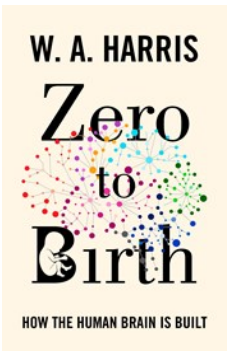
Jim Al–khalili
9780691182308
£12.99
Hardcover
Science / Physics
March 2020
Princeton University Press

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.



Zero to Birth

William A. Harris
9780691211312
£22.00
Hardcover
Science / Life Sciences / Neuroscience
May 2022
Princeton University Press

A revelatory tale of how the human brain develops, from conception to birth and beyond

By the time a baby is born, its brain is equipped with billions of intricately crafted neurons wired together through trillions of interconnections to form a compact and breathtakingly efficient supercomputer. *Zero to Birth* takes you on an extraordinary journey to the very edge of creation, from the moment of an egg's fertilization through each step of a human brain's development in the womb—and even a little beyond.

As pioneering experimental neurobiologist W. A. Harris guides you through the process of how the brain is built, he takes up the biggest questions that scientists have asked about the developing brain, describing many of the thrilling discoveries that were foundational to our current understanding. He weaves in a remarkable evolutionary story that begins billions of years ago in the Proterozoic eon, when multicellular animals first emerged from single-cell organisms, and reveals how the growth of a fetal brain over nine months reflects the brain's evolution through the ages. Our brains have much in common with those of other animals, and Harris offers an illuminating look at how comparative animal studies have been crucial to understanding what makes a human brain human.

An unforgettable chronicle of one of nature's greatest achievements, *Zero to Birth* describes how the brain's incredible feat of orchestrated growth ensures that every brain is unique, and how breakthroughs at the frontiers of science are helping us to decode many traits that only reveal themselves later in life.