

Sync The Emerging Science Of Spontaneous Order Pe

A New York Times Bestseller A Washington Post Notable Nonfiction Book of 2020 Named a Best Book of 2020 by NPR “A fascinating scientific, cultural, spiritual and evolutionary history of the way humans breathe—and how we’ve all been doing it wrong for a long, long time.” —Elizabeth Gilbert, author of Big Magic and Eat Pray Love No matter what you eat, how much you exercise, how skinny or young or wise you are, none of it matters if you’re not breathing properly. There is nothing more essential to our health and well-being than breathing: take air in, let it out, repeat twenty-five thousand times a day. Yet, as a species, humans have lost the ability to breathe correctly, with grave consequences. Journalist James Nestor travels the world to figure out what went wrong and how to fix it. The answers aren’t found in pulmonology labs, as we might expect, but in the muddy digs of ancient burial sites, secret Soviet facilities, New Jersey choir schools, and the smoggy streets of São Paulo. Nestor tracks down men and women exploring the hidden science behind ancient breathing practices like Pranayama, Sudarshan Kriya, and Tummo and teams up with pulmonary tinkerers to scientifically test long-held beliefs about how we breathe. Modern research is showing us that making even slight adjustments to the way we inhale and exhale can jump-start athletic performance; rejuvenate internal organs; halt snoring, asthma, and autoimmune disease; and even straighten scoliotic spines. None of this should be possible, and yet it is. Drawing on thousands of years of medical texts and recent cutting-edge studies in pulmonology, psychology, biochemistry, and human physiology, *Breath* turns the conventional wisdom of what we thought we knew about our most basic biological function on its head. You will never breathe the same again.

Although in recent years some emerging economies have improved their performance in terms of R&D investment, outputs and innovative capacity, these countries are still blighted by extreme poverty, inequality and social exclusion. Hence, emerging countries are exposed to conditions which differ quite substantially from the dominant OECD model of innovation policy for development and welfare. This Research Handbook contributes to the debate by looking at how innovation theory, policy and practice interact, and explains different types of configurations in countries that are characterized by two contrasting but mutually reinforcing features: systemic failure and resourcefulness. Focusing on innovation governance and public policies, it aims to understand related governance failures and to explore options for alternative, more efficient approaches.

The Calculus of Friendship is the story of an extraordinary connection between a teacher and a student, as chronicled through more than thirty years of letters between them. What makes their relationship unique is that it is based almost entirely on a shared love of calculus. For them, calculus is more than a branch of mathematics; it is a game they love playing together, a constant when all else is in flux. The teacher goes from the prime of his career to retirement, competes in whitewater kayaking at the international level, and loses a son. The student matures from high school math whiz to Ivy League professor, suffers the sudden death of a parent, and blunders into a marriage destined to fail. Yet through it all they take refuge in the haven of calculus—until a day comes when calculus is no longer enough. Like calculus itself, *The Calculus of Friendship* is an exploration of change. It’s about the transformation that takes place in a student’s heart, as he and his teacher reverse roles, as they age, as they are buffeted by life itself. Written by a renowned teacher and communicator of mathematics, *The Calculus of Friendship* is warm, intimate, and deeply moving. The most inspiring ideas of calculus, differential equations, and chaos theory are explained through metaphors, images, and anecdotes in a way that all readers will find beautiful, and even poignant. Math enthusiasts, from high school students to professionals, will delight in the offbeat problems and lucid explanations in the letters. For anyone whose life has been changed by a mentor, *The Calculus of Friendship* will be an unforgettable journey.

The Association of Southeast Asian Nations (ASEAN) has been one of the world’s most dynamic and fastest-growing regions over the years. Its average combined GDP growth rate is more than 6% and the total combined GDP was valued at US\$3.0 trillion in 2018. ASEAN countries have managed to significantly reduce their national poverty over the last few decades. Although a correlation exists between economic growth and poverty reduction, millions of people in ASEAN countries still do not have sufficient incomes to fulfill their basic needs including food, shelter, clothes and sanitation. This book is a collection of working group papers contributed by members of Network of ASEAN-China Think-tanks (NACT) and covers best practices on poverty alleviation in ASEAN member states as well as in China, and ASEAN-China cooperation. It discusses experiences of ASEAN member states and China such as with regard to national policies, principles, definitions, approaches, progress, and challenges in poverty reduction. It reviews and evaluates the way forward including existing joint projects, opportunities, and challenges in the future cooperation and offers policy recommendations from both national and regional perspectives to help policymakers better cope with the daunting poverty challenges.

The Scientific Secrets of Perfect Timing

A Modern-day Spiritual Treasure

With Applications to Physics, Biology, Chemistry, and Engineering

Towards Better Models

How Order Emerges from Chaos In the Universe, Nature, and Daily Life

The Calculus of Friendship

the science of self-organized criticality

How a Concussion Stole My Life and How the New Science of Brain Plasticity Helped Me Get it Back

For centuries, experts have argued that learning was about memorizing information: You’re supposed to study facts, dates, and details; burn them into your memory; and then apply that knowledge at opportune times. But this approach to learning isn’t nearly enough for the world that we live in today, and in *Learn Better* journalist and education researcher Ulrich Boser demonstrates that how we learn can matter just as much as what we learn. In this brilliantly researched book, Boser maps out the new science of learning, showing how simple techniques like comprehension check-ins and making material personally relatable can help people gain expertise in dramatically better ways. He covers six key steps to help you “learn how to learn,” all illuminated with fascinating stories like how Jackson Pollock developed his unique painting style and why an ancient Japanese counting device allows kids to do math at superhuman speeds. Boser’s witty, engaging writing makes this book feel like a guilty pleasure, not homework. *Learn Better* will revolutionize the way students and society alike approach learning and makes the case that being smart is not an innate ability—learning is a skill everyone can master. With Boser as your guide, you will be able to fully capitalize on your brain’s remarkable ability to gain new skills and open up a whole new world of possibilities.

At the heart of the universe is a steady, insistent beat, the sound of cycles in sync. Along the tidal rivers of Malaysia, thousands of fireflies congregate and flash in unison; the moon spins in perfect resonance with its orbit around the earth; our hearts depend on the synchronous firing of ten thousand pacemaker cells. While the forces that synchronize the flashing of fireflies may seem to have nothing to do with our heart cells, there is in fact a deep connection. Synchrony is a science in its infancy, and Strogatz is a pioneer in this new frontier in which mathematicians and physicists attempt to pinpoint just how spontaneous order emerges from chaos. From underground caves in Texas

where a French scientist spent six months alone tracking his sleep-wake cycle, to the home of a Dutch physicist who in 1665 discovered two of his pendulum clocks swinging in perfect time, this fascinating book spans disciplines, continents, and centuries. Engagingly written for readers of books such as *Chaos* and *The Elegant Universe*, *Sync* is a tour-de-force of nonfiction writing.

Unlock your children's potential by helping them build their strengths. This game-changing book shows us the extraordinary results of focusing on our children's strengths rather than always trying to correct their weaknesses. Most parents struggle with this shift because they suffer from a negativity bias, thanks to evolutionary development, giving them "strengths-blindness." By showing us how to throw the "strengths switch," Lea Waters demonstrates how we can not only help our children build resilience, optimism, and achievement but we can also help inoculate them against today's pandemic of depression and anxiety. As a strengths-based scientist for more than twenty years, ten of them spent focusing on strengths-based parenting, Waters has seen how this approach enhances self-esteem and energy in both children and teenagers. Yet more on the plus side: parents find it a particularly exciting and rewarding way to raise children. With many suggestions for specific ways to interact with your kids, Waters demonstrates how to discover strengths and talents in our children, how to use positive emotions as a resource, how to build strong brains, and even how to deal with problem behaviors and talk about difficult situations and emotions. As revolutionary yet simple as *Mindset and Grit*, *The Strength Switch* will show parents how a small shift can yield enormous results.

This textbook is aimed at newcomers to nonlinear dynamics and chaos, especially students taking a first course in the subject. The presentation stresses analytical methods, concrete examples, and geometric intuition. The theory is developed systematically, starting with first-order differential equations and their bifurcations, followed by phase plane analysis, limit cycles and their bifurcations, and culminating with the Lorenz equations, chaos, iterated maps, period doubling, renormalization, fractals, and strange attractors.

The New Science of Self-Consciousness

The Awakened Brain

Simplexity

I Am a Strange Loop

Bursts

Breath

Theory and Applications

How All of Us Can Achieve Extraordinary Things

One of our greatest philosophers and scientists of the mind asks, where does the self come from -- and how our selves can exist in the minds of others. Can thought arise out of matter? Can self, soul, consciousness, "I" arise out of mere matter? If it cannot, then how can you or I be here? *I Am a Strange Loop* argues that the key to understanding selves and consciousness is the "strange loop"-a special kind of abstract feedback loop inhabiting our brains. The most central and complex symbol in your brain is the one called "I." The "I" is the nexus in our brain, one of many symbols seeming to have free will and to have gained the paradoxical ability to push particles around, rather than the reverse. How can a mysterious abstraction be real-or is our "I" merely a convenient fiction? Does an "I" exert genuine power over the particles in our brain, or is it helplessly pushed around by the laws of physics? These are the mysteries tackled in *I Am a Strange Loop*, Douglas Hofstadter's first book-length journey into philosophy since Gödel, Escher, Bach. Compulsively readable and endlessly thought-provoking, this is a moving and profound inquiry into the nature of mind.

Dinesh D'Souza rose to national prominence as one of the founders of the Dartmouth Review, a leading voice in the rebirth of conservative politics on college campuses in the 1980s. He fired the first popular shot against political correctness with his best-selling exposé *Illiberal Education*. Now, after serving as a Reagan White House staffer, the managing editor of *Policy Review*, and a scholar at the American Enterprise Institute and the Hoover Institution, he addresses the next generation in *Letters to a Young Conservative*. Drawing on his own colorful experiences, both within the conservative world and while skirmishing with the left, D'Souza aims to enlighten and inspire young conservatives and give them weapons for the intellectual battles that they face in high school, college, and everyday life. *Letters to a Young Conservative* also illuminates the enduring themes that for D'Souza anchor the conservative position: not "family values" or patriotism, but a philosophy based on natural rights and a belief in universal moral truths. With a light touch, D'Souza shows that conservatism needn't be stodgy or defensive, even though it is based on preserving the status quo. To the contrary, when a conservative has to expose basic liberal assumptions to scrutiny, he or she must become a kind of imaginative, fun-loving, forward-looking guerrilla--philosophically conservative but temperamentally radical. Among the topics Dinesh D'Souza covers in *Letters to a Young Conservative: Fighting Political Correctness* Authentic vs. Bogus Multiculturalism Why Government Is the Problem When the Rich Get Richer How Affirmative Action Hurts Blacks The Feminist Mistake All the News That Fits How to Harpoon a Liberal The Self-Esteem Hoax A Republican Realignment? Why Conservatives Should Be Cheerful

A look at the rebellious thinkers who are challenging old ideas with their insights into the ways countless elements of complex systems interact to produce spontaneous order out of confusion

Geoffrey West's research centres on a quest to find unifying principles and patterns connecting everything, from cells and ecosystems to cities, social networks and businesses. Why do organisms and ecosystems scale with size in a remarkably universal and systematic fashion? Is there a maximum size of cities? Of animals and plants? What about companies? Can scale show us how to create a more sustainable future? By applying the rigour of physics to questions of biology, visionary physicist Geoffrey West found that despite the riotous diversity in the sizes of mammals, they are all, to a large degree, scaled versions of each other. This speaks to everything from how long we can expect to live to how many hours of sleep we need. He then made the even bolder move of exploring his work's applicability to cities and to the business world. These investigations have led to powerful insights about the elemental natural laws that bind us together in profound ways, and how all complex systems are dancing to the same simple tune, however diverse and unrelated they may seem.

A New Science of Consciousness

Being You

The Emerging Science at the Edge of Order and Chaos

The Ghost in My Brain

Why Simple Things Become Complex (and How Complex Things Can Be Made Simple)

Move!

Workshop Summary and Papers

How The New Science of Strength-Based Parenting Can Help Your Child and Your Teen to Flourish

A comprehensive look at the emerging science of networks Network science helps you design faster, more resilient communication networks; revise infrastructure systems such as electrical power grids, telecommunications networks, and airline routes; model market dynamics; understand synchronization in biological systems; and analyze social interactions among people. This is the first book to take a comprehensive look at this emerging science. It examines the various kinds of networks (regular, random, small-world, influence, scale-free, and social) and applies network processes and behaviors to emergence, epidemics, synchrony, and risk. The book's uniqueness lies in its integration of concepts across computer science, biology, physics, social network analysis, economics, and marketing. The book is divided into easy-to-understand topical chapters and the

presentation is augmented with clear illustrations, problems and answers, examples, applications, tutorials, and a discussion of related Java software. Chapters cover: Origins Graphs Regular Networks Random Networks Small-World Networks Scale-Free Networks Emergence Epidemics Synchrony Influence Networks Vulnerability Net Gain Biology This book offers a new understanding and interpretation of the field of network science. It is an indispensable resource for researchers, professionals, and technicians in engineering, computing, and biology. It also serves as a valuable textbook for advanced undergraduate and graduate courses in related fields of study.

How can our societies be stabilized in a crisis? Why can we enjoy and understand Shakespeare? Why are fruitflies uniform? How do omnivorous eating habits aid our survival? What makes the Mona Lisa's smile beautiful? How do women keep our social structures intact? – Could there possibly be a single answer to all these questions? This book shows that the statement: "weak links stabilize complex systems" provides the key to understanding each of these intriguing puzzles, and many more besides. The author, a recipient of several distinguished science communication prizes, explains weak or low probability interactions, and uses them as connecting threads in a vast variety of networks from proteins to ecosystems. This unique book and the ideas it develops will have a significant impact on diverse, seemingly unrelated fields of study.

Shortlisted for the Royal Society Science Book Prize 2019 A magisterial history of calculus (and the people behind it) from one of the world's foremost mathematicians. This is the captivating story of mathematics' greatest ever idea: calculus. Without it, there would be no computers, no microwave ovens, no GPS, and no space travel. But before it gave modern man almost infinite powers, calculus was behind centuries of controversy, competition, and even death. Taking us on a thrilling journey through three millennia, professor Steven Strogatz charts the development of this seminal achievement from the days of Archimedes to today's breakthroughs in chaos theory and artificial intelligence. Filled with idiosyncratic characters from Pythagoras to Fourier, Infinite Powers is a compelling human drama that reveals the legacy of calculus on nearly every aspect of modern civilisation, including science, politics, medicine, philosophy, and much besides.

In the summer of 2002, the Office of Naval Research asked the Committee on Human Factors to hold a workshop on dynamic social network and analysis. The primary purpose of the workshop was to bring together scientists who represent a diversity of views and approaches to share their insights, commentary, and critiques on the developing body of social network analysis research and application. The secondary purpose was to provide sound models and applications for current problems of national importance, with a particular focus on national security. This workshop is one of several activities undertaken by the National Research Council that bears on the contributions of various scientific disciplines to understanding and defending against terrorism. The presentations were grouped in four sessions – "Social Network Theory Perspectives, Dynamic Social Networks, Metrics and Models, and Networked Worlds" – each of which concluded with a discussant-led roundtable discussion among the presenters and workshop attendees on the themes and issues raised in the session.

Weak Links

Scale

The Universal Key to the Stability of Networks and Complex Systems

Learn Better

The Science of Synchronicity and How Your Choices Shape Your World

Chaos, Complexity and the Emergence of Life

How the Brain's Wiring Makes Us Who We Are

The New Science of Sunlight and How it Shapes Our Bodies and Minds

The full story of how our relationship with light shapes our health, productivity and mood. 'A sparkling and illuminating study, those rare books that could genuinely improve your life' Sunday Times Since the dawn of time, humans have worshipped the sun with good reason. Our biology is set up to work in partnership with it. From our sleep cycles to our immune systems and our health, access to sunlight is crucial for living a happy and fulfilling life. New research suggests that our sun exposure over a lifetime, even before we were born - may shape our risk of developing a range of different illnesses, from depression to diabetes. Bringing cutting-edge science and eye-opening advice, Chasing the Sun explores the extraordinary significance of sunlight, from ancient rituals and celebrations to modern sleep labs, and from the unexpected health benefits of sun exposure to what the Amish know about the rest of us don't. As more of us move into light-polluted cities, spending our days in dim offices and our evenings watching lit screens, we are in danger of losing something vital: our connection to the star that gave us life. It's a loss that could have reaching consequences that we're only just beginning to grasp.

David Reich describes how the revolution in the ability to sequence ancient DNA has changed our understanding of the deep past. This book tells the emerging story of our often surprising ancestry - the extraordinary ancient migrations and mixtures of populations that have made us who we are.

Harness the principles of synchronicity and flow to live better, work smarter, and find purpose in your life When we align with our circumstance, circumstance aligns with us. Using a cutting-edge scientific theory of synchronicity, Sky Nelson-Isaacs presents a path for living "in the flow"--a state of optimal functioning, creative thinking, and seemingly effortless productivity. Nelson-Isaacs shows how our choices create meaning, translating current and original ideas from theoretical physics and quantum mechanics into accessible, actionable steps that we can all take to live lives in better alignment with who we are and who we want to be. Encouraging and empowering, Living in Flow helps us develop an informed relationship to meaning-making and purposefulness in our lives. From this we can align ourselves more effectively within our personal, professional, and community relationships to live in flow.

Self-organized criticality, the spontaneous development of systems to a critical state, is the first general theory of complex systems with a firm mathematical basis. This theory describes how many seemingly desperate aspects of the world, from stock market crashes to mass extinctions, avalanches to solar flares, all share a set of simple, easily described properties. "...a must read"...Bak writes with ease and lucidity, and his ideas are so intriguing...essential reading for those interested in complex systems...it will reward a skeptical reader." -NATURE "...presents the theory (self-organized criticality) in a form easily absorbed by the non-mathematician inclined reader." -BOSTON BOOK REVIEW "I picture Bak as a kind of scientific musketeer; flamboyant, touchy, full of swagger and ready to join every fray... His book is written with panache. The style is brisk, the content stimulating. I recommend it as a brilliant experience." -NEW SCIENTIST

Letters to a Young Conservative

Complexity

The Emerging Science of Spontaneous Order

Chasing the Sun

Hivemind

The Strength Switch

The Hidden Patterns Behind Everything We Do, from Your E-mail to Bloody Crusades

Mastering the Skills for Success in Life, Business, and School, or How to Become an Expert in Just About Anything
The dramatic story of one man's recovery offers new hope to those suffering from concussions and other brain traumas
In 1999, Clark Elliott suffered a concussion when his car was rear-ended. Overnight his life changed from that of a rising professor with a research career in artificial intelligence to a humbled man struggling to get through a single day. At times he couldn't walk across a room, or even name his five children. Doctors told him he would never fully recover. After eight years, the cognitive demands of his job, and of being a single parent, finally became more than he could manage. As a result of one final effort to recover, he crossed paths with two brilliant Chicago-area research-clinicians—one an optometrist emphasizing neurodevelopmental techniques, the other a cognitive psychologist—working on the leading edge of brain plasticity. Within weeks the ghost of who he had been started to re-emerge. Remarkably, Elliott kept detailed notes throughout his experience, from the moment of impact to the final stages of his recovery, astounding documentation that is the basis of this fascinating book. *The Ghost in My Brain* gives hope to the millions who suffer from head injuries each year, and provides a unique and informative window into the world's most complex computational device: the human brain.

Everyone knows that timing is everything. But we don't know much about timing itself. Our lives are a neverending stream of 'when' decisions: when to start a business, schedule a class, get serious about a person. Yet we make those decisions based on intuition and guesswork. Timing, it's often assumed, is an art; in *When*, Pink shows that timing is in fact a science. Drawing on a rich trove of research from psychology, biology and economics, Pink reveals how best to live, work and succeed. How can we use the hidden patterns of the day to build the ideal schedule? Why do certain breaks dramatically improve student test scores? How can we turn a stumbling beginning into a fresh start? Why should we avoid going to the hospital in the afternoon? Why is singing in time with other people as good for us as exercise? And what is the ideal time to quit a job, switch careers, or get married? In *When*, Pink distills cutting-edge research and data on timing and synthesizes them into a fascinating, readable narrative packed with irresistible stories and practical takeaways that give readers compelling insights into how we can live richer, more engaged lives.

Provides a study of musical improvisation, using theories from cultural and cognitive studies. The author presents a systemic view, with chapters funneling outward in scope from the perspective of a solo improviser to that of a group interacting in performance, to the long-term dynamics of an improvising group from formation to dissolution.

SyncThe Emerging Science of Spontaneous OrderPenguin UK

Infinite Powers

Network Science

Connectome

Six Degrees: The Science of a Connected Age

Science, Music, and Mathematics: The Deepest Connections

The New Science of a Lost Art

The New Science of Tribalism in Our Divided World

Ageless

'Anyone who wants to get better at anything should read Peak.' Fortune Do you want to stand out at work, improve your athletic or musical performance, or help your child achieve academic goals? Anders Ericsson has made a career studying chess champions, violin virtuosos, star athletes, and memory mavens. Peak distills three decades of myth-shattering research into a powerful learning strategy that is fundamentally different from the way people traditionally think about acquiring new abilities. Ericsson's revolutionary methods will show you how to improve at almost any skill that matters to you, and that you don't have to be a genius to achieve extraordinary things. 'Remarkable...who among us doesn't want to learn how to get better at life?' Stephen J. Dubner, co-author of *Freakonomics* 'This book...could truly change the world' Joshua Foer, author of *Moonwalking with Einstein*

A groundbreaking exploration of the neuroscience of spirituality and a bold new paradigm for health, healing, and resilience—from a New York Times bestselling author and award-winning researcher “A new revolution of health and well-being and a testament to, and celebration of, the power within.”—Deepak Chopra, MD Whether it's meditation or a walk in nature, reading a sacred text or saying a prayer, there are many ways to tap into a heightened awareness of the world around you and your place in it. In *The Awakened Brain*, psychologist Dr. Lisa Miller shows you how. Weaving her own deeply personal journey of awakening with her groundbreaking research, Dr. Miller's book reveals that humans are universally equipped with a capacity for spirituality, and that our brains become more resilient and robust as a result of it. For leaders in business and government, truth-seekers, parents, healers, educators, and any person confronting life's biggest questions, *The Awakened Brain* combines cutting-edge science (from MRI studies to genetic research, epidemiology, and more) with on-the-ground application for people of all ages and from all walks of life, illuminating the surprising science of spirituality and how to engage it in our lives:

- The awakened decision is the better decision. With an awakened perception, we are more creative, collaborative, ethical, and innovative.
- The awakened brain is the healthier brain. An engaged spiritual life enhances grit, optimism, and resilience while providing insulation against addiction, trauma, and depression.
- The awakened life is the inspired life. Loss, uncertainty, and even trauma are the gateways by which we are invited to move beyond merely coping with hardship to transcend into a life of renewal, healing, joy, and fulfillment.

Absorbing, uplifting, and ultimately enlightening, *The Awakened Brain* is a conversation-starting

saga of scientific discovery packed with counterintuitive findings and practical advice on concrete ways to access your innate spirituality and build a life of meaning and contribution. A candid self-portrait by the *NSYNC pop group artist describes his childhood, career experiences, Russian cosmonaut training, and more, in a revealing account that also discusses his homosexuality and initial efforts to hide his orientation in order to safeguard the band's success. Reprint.

THE INSTANT SUNDAY TIMES BESTSELLER Anil Seth's radical new theory of consciousness challenges our understanding of perception and reality, doing for brain science what Dawkins did for evolutionary biology. 'A brilliant beast of a book. Seth proposes to explain not just what and how we are, but why we are the way we are. Hugely inspirational.' DAVID BYRNE 'Insightful and profound. The nature of consciousness is still one of the hardest problems in science, but Anil Seth brings us closer than ever before to the answer. This a hugely important book.' JIM AL-KHALILI 'Anil Seth thinks clearly and sharply on one of the hardest problems of science and philosophy, cutting through weeds with a scientist's mind and a storyteller's skill.' ADAM RUTHERFORD 'Seth provokes us to think about thinking . . . readable, relatable, and gripping.' ALEX GARLAND, director of Ex Machina 'Amazing . . . a brilliant read.' RUSSELL BRAND 'An exhilarating book: a vast-ranging, phenomenal achievement that will undoubtedly become a seminal text.' GAIA VINCE, GUARDIAN (Book of the Day) 'Lucid, engaging.' NEW STATESMAN 'One of the most important books of 2021.' FIVE BOOKS Being You is not as simple as it sounds. Somehow, within each of our brains, billions of neurons work to create our conscious experience. How does this happen? Why do we experience life in the first person? After over twenty years researching the brain, world-renowned neuroscientist Anil Seth puts forward a radical new theory of consciousness and self. His unique theory of what it means to 'be you' challenges our understanding of perception and reality and it turns what you thought you knew about yourself on its head. 'A fascinating book. A joy to read. Anil Seth explores fundamental questions about consciousness and the self from the perspective of a philosophically-informed neuroscientist. Highly recommended.' NIGEL WARBURTON 'Offers us new cause for astonishment and wonder . . . a must-read for anyone seeking a better understanding of the brain and how nature sculpts the human experience.' ANNAKA HARRIS, author of Conscious 'Few people are as well positioned as Anil Seth to tackle the question of consciousness. Beautifully written, crystal clear, deeply insightful.' DAVID EAGLEMAN, Pulitzer Prize-nominated author of Livewired 'Truly compelling.' PROFESSOR KARL FRISTON, University College London 'A wonderfully accessible and comprehensive account of how our minds capture the world, and how that makes us who we are.' SEAN CARROLL, author of Something Deeply Hidden

Deep Simplicity

Ancient DNA and the New Science of the Human Past

Body Am I

Research Handbook on Innovation Governance for Emerging Economies

The Universal Laws of Life and Death in Organisms, Cities and Companies

Peak

Improvising Music in a Complex Age

When

'Gribbin takes us through the basics with his customary talent for accessibility and clarity' Sunday Times The world around us can be a complex, confusing place. Earthquakes happen without warning, stock markets fluctuate, weather forecasters seldom seem to get it right - even other people continue to baffle us. How do we make sense of it all? In fact, John Gribbin reveals, our seemingly random universe is actually built on simple laws of cause and effect that can explain why, for example, just one vehicle braking can cause a traffic jam; why wild storms result from a slight atmospheric change; even how we evolved from the most basic materials. Like a zen painting, a fractal image or the pattern on a butterfly's wings, simple elements form the bedrock of a sophisticated whole. Synthesizing chaos and complexity theory for the perplexed, Deep Simplicity brilliantly illuminates the harmony underlying our existence. Why are the instruction manuals for cell phones incomprehensible? Why is a truck driver's job as hard as a CEO's? How can 10 percent of every medical dollar cure 90 percent of the world's disease? Why do bad teams win so many games? Complexity, as any scientist will tell you, is a slippery idea. Things that seem complicated can be astoundingly simple; things that seem simple can be dizzyingly complex. A houseplant may be more intricate than a manufacturing plant. A colony of garden ants may be more complicated than a community of people. A sentence may be richer than a book, a couplet more complicated than a song. These and other paradoxes are driving a whole new science--simplicity -- that is redefining how we look at the world and using that new view to improve our lives in fields as diverse as economics, biology, cosmology, chemistry, psychology, politics, child development, the arts, and more. Seen through the lens of this surprising new science, the world becomes a delicate place filled with predictable patterns--patterns we often fail to see as we're time and again fooled by our instincts, by our fear, by the size of things, and even by their beauty. In Simplicity, Time senior writer Jeffrey Kluger shows how a drinking straw can save thousands of lives; how a million cars can be on the streets but just a few hundred of them can lead to gridlock; how investors behave like atoms; how arithmetic governs abstract art and physics drives jazz; why swatting a TV indeed makes it work better. As simplicity moves from the research lab into popular consciousness it will challenge our models for modern living. Jeffrey Kluger adeptly translates newly evolving theory into a delightful theory of everything that will have you rethinking the rules of business, family, art -- your world.

'SYNC' IS A STORY OF A DAZZLING KIND OF ORDER IN THE UNIVERSE, THE HARMONY THAT COMES FROM CYCLES IN SYNC. THE TENDENCY TO SYNCHRONIZE IS ONE OF THE MOST FAR- REACHING DRIVES IN ALL OF NATURE. IT EXTENDS FROM PEOPLE TO PLANETS, FROM ANIMALS TO ATOMS. IN 'SYNC' PROFESSOR STEVEN STROGATZ CONSIDERS A RANGE OF APPLICATIONS - HUMAN SLEEP AND CIRCADIAN RHYTHMS, MENSTRUAL SYNCHRONY, INSECT OUTBREAKS, SUPERCONDUCTORS, LASERS, SECRET CODES, HEART ARRHYTHMIAS AND FADS - CONNECTING ALL THROUGH AN EXPLORATION OF THE SAME MATHEMATICAL THEME: SELF- ORGANISATION, OR THE SPONTANEOUS EMERGENCE OF ORDER OUT OF CHAOS. FOCUSED ENOUGH TO PRESENT A COHERENT WORLD UNTO THEMSELVES, STROGATZ'S CHOSEN TOPICS TOUCH ON SEVERAL OF THE HOTTEST DIRECTIONS IN CONTEMPORARY SCIENCE.

How the way we perceive our bodies plays a critical role in the way we perceive ourselves: stories of phantom limbs, rubber hands, anorexia, and other phenomena. The body is central to our sense of identity. It can be a canvas for self-expression, decorated with clothing, jewelry, cosmetics, tattoos, and piercings. But the body is more than that. Bodily awareness, says scientist-writer Moheb Costandi, is key to self-consciousness. In *Body Am I*, Costandi examines how the brain perceives the body, how that perception translates into our conscious experience of the body, and how that experience contributes to our sense of self. Along the way, he explores what can happen when the mechanisms of bodily awareness are disturbed, leading to such phenomena as phantom limbs, alien hands, and amputee fetishes. Costandi explains that the brain generates maps and models of the body that guide how we perceive and use it, and that these maps and models are repeatedly modified and reconstructed. Drawing on recent bodily awareness research, the new science of self-consciousness, and historical milestones in neurology, he describes a range of psychiatric and neurological disorders that result when body and brain are out of sync, including not only the well-known phantom limb syndrome but also phantom breast and phantom penis syndromes; body integrity identity disorder, which compels a person to disown and then amputate a healthy arm or leg; and such eating disorders as anorexia. Wide-ranging and meticulously researched, *Body Am I* (the title comes from Nietzsche's *Thus Spoke Zarathustra*) offers new insight into self-consciousness by describing it in terms of bodily awareness.

The New Science of Getting Older Without Getting Old

The Quantum Revelation

A Guided Tour of Mathematics, from One to Infinity

Sync Or Swarm

How Nature Works

The New Science of Body Over Mind

The Joy of X

The New Science of Spirituality and Our Quest for an Inspired Life

The pioneering young scientist whose work on the structure of small worlds has triggered an avalanche of interest in networks. In this remarkable book, Duncan Watts, one of the principal architects of network theory, sets out to explain the innovative research that he and other scientists are spearheading to create a blueprint of our connected planet. Whether they bind computers, economies, or terrorist organizations, networks are everywhere in the real world, yet only recently have scientists attempted to explain their mysterious workings. From epidemics of disease to outbreaks of market madness, from people searching for information to firms surviving crisis and change, from the structure of personal relationships to the technological and social choices of entire societies, Watts weaves together a network of discoveries across an array of disciplines to tell the story of an explosive new field of knowledge, the people who are building it, and his own peculiar path in forging this new science.

*"The Quantum Revelation is mind-blowing." --Sting To say that quantum physics is the greatest scientific discovery of all time is not an exaggeration. In their discovery of the quantum realm, the physics community stumbled upon a genuine multifaceted revelation which can be likened to a profound spiritual treasure--a heretofore undreamed of creative power--hidden within our own mind. Quantum physics unequivocally points out that the study of the universe and the study of consciousness are inseparably linked, which is to say that ultimate progress in the one will be impossible without progress in the other. Einstein declared that what it reveals is so immensely important that "it should be everyone's concern." Yet few of us in the general public truly understand how the game-changing discoveries of the past century not only relate to our day-to-day lives, but also give us insights into the nature of reality and our place within it. Written for readers with no physics background, Paul Levy's latest book, *The Quantum Revelation: A Radical Synthesis of Science and Spirituality* is for those who have heard that quantum physics is a fascinating subject but don't quite understand how or why. Levy contemplates the deeper philosophical underpinnings of quantum physics, exploring the fundamental questions it provokes: What does it mean that quantum theory has discovered that there is no such thing as "objective reality?" How are we participating--via our consciousness--in creating our experience of a reality that quantum theory itself describes as "dreamlike?" What are the implications for us in our day-to-day lives that--as quantum theory reveals--what we call reality is more like a dream that we had previously imagined? *The Quantum Revelation* is unique in how it synthesizes science and spirituality so as to reveal and explore the dreamlike nature of reality. It is a book not just for people interested in quantum theory, but for anyone who is interested in waking up and dreaming lucidly, be it in our night dreams or our waking life.*

*'A stunner ... If you haven't got this book in your house, I don't know why' Chris Evans 'A startling wake-up call . . . Writing with the vim of a Bill Bryson and the technical knowledge of a scientist, Steele gives us a chance to grasp what's at stake' Independent 'An exhilarating journey . . . Steele is a superb guide' Telegraph 'A fascinating read with almost every page bursting with extraordinary facts . . . Read it now' Mail on Sunday Ageless is a guide to the biggest issue we all face. Ageing – not cancer, not heart disease – is the world's leading cause of death and suffering. What would the world be like if we could cure it? Living disease-free until the age of 100 is achievable within our lifetimes. In prose that is lucid and full of fascinating facts, *Ageless* introduces us to the cutting-edge research that is paving the way for this revolution. Computational biologist Andrew Steele explains what occurs biologically as we age, as well as practical ways we can slow down the process. He reveals how understanding the scientific implications of ageing could lead to the greatest discovery in the history of civilisation – one that has the potential to improve billions of lives, save trillions of dollars, and transform the human condition.*

Award-winning Steven Strogatz, one of the foremost popularisers of maths, has written a witty and fascinating account of maths' most

compelling ideas and how, so often, they are an integral part of everyday life. Maths is everywhere, often where we don't even realise. Award-winning professor Steven Strogatz acts as our guide as he takes us on a tour of numbers that - unbeknownst to the uninitiated - connect pop culture, literature, art, philosophy, current affairs, business and even every day life. In *The Joy of X*, Strogatz explains the great ideas of maths - from negative numbers to calculus, fat tails to infinity - with clarity, wit and insight. He is the maths teacher you never had and this book is perfect for the smart and curious, the expert and the beginner.

Nonlinear Dynamics and Chaos

What a Teacher and a Student Learned about Life while Corresponding about Math

Dynamic Social Network Modeling and Analysis

Out of Sync

Sync

Living in Flow

Who We Are and How We Got Here

"Accessible, witty . . . an important new researcher, philosopher and popularizer of brain science . . . on par with cosmology's Brian Greene and the late Carl Sagan" (*The Plain Dealer*). One of the *Wall Street Journal's* 10 Best Nonfiction Books of the Year and a *Publishers Weekly* "Top Ten in Science" Title Every person is unique, but science has struggled to pinpoint where, precisely, that uniqueness resides. Our genome may determine our eye color and even aspects of our character. But our friendships, failures, and passions also shape who we are. The question is: How? Sebastian Seung is at the forefront of a revolution in neuroscience. He believes that our identity lies not in our genes, but in the connections between our brain cells—our particular wiring. Seung and a dedicated group of researchers are leading the effort to map these connections, neuron by neuron, synapse by synapse. It's a monumental effort, but if they succeed, they will uncover the basis of personality, identity, intelligence, memory, and perhaps disorders such as autism and schizophrenia. *Connectome* is a mind-bending adventure story offering a daring scientific and technological vision for understanding what makes us who we are, as individuals and as a species. "This is complicated stuff, and it is a testament to Dr. Seung's remarkable clarity of exposition that the reader is swept along with his enthusiasm, as he moves from the basics of neuroscience out to the farthest regions of the hypothetical, sketching out a spectacularly illustrated giant map of the universe of man." —*TheNew York Times* "An elegant primer on what's known about how the brain is organized and how it grows, wires its neurons, perceives its environment, modifies or repairs itself, and stores information. Seung is a clear, lively writer who chooses vivid examples."

—*TheWashington Post*

A revolutionary new theory showing how we can predict human behavior—from a radical genius and bestselling author Can we scientifically predict our future? Scientists and pseudo scientists have been pursuing this mystery for hundreds and perhaps thousands of years. But now, astonishing new research is revealing patterns in human behavior previously thought to be purely random. Precise, orderly, predictable patterns... Albert Laszlo Barabasi, already the world's preeminent researcher on the science of networks, describes his work on this profound mystery in *Bursts*, a stunningly original investigation into human nature. His approach relies on the digital reality of our world, from mobile phones to the Internet and email, because it has turned society into a huge research laboratory. All those electronic trails of time stamped texts, voicemails, and internet searches add up to a previously unavailable massive data set of statistics that track our movements, our decisions, our lives. Analysis of these trails is offering deep insights into the rhythm of how we do everything. His finding? We work and fight and play in short flourishes of activity followed by next to nothing. The pattern isn't random, it's "bursty." Randomness does not rule our lives in the way scientists have assumed up until now.

Illustrating this revolutionary science, Barabasi artfully weaves together the story of a 16th century burst of human activity—a bloody medieval crusade launched in his homeland, Transylvania—with the modern tale of a contemporary artist hunted by the FBI through our post 9/11 surveillance society. These narratives illustrate how predicting human behavior has long been the obsession, sometimes the duty, of those in power. Barabasi's astonishingly wide range of examples from seemingly unrelated areas include how dollar bills move around the U.S., the pattern everyone follows in writing email, the spread of epidemics, and even the flight patterns of albatross. In all these phenomena a virtually identical, mathematically described bursty pattern emerges. *Bursts* reveals what this amazing new research is showing us about where individual spontaneity ends and predictability in human behavior begins. The way you think about your own potential to do something truly extraordinary will never be the same.

"Exercise changes the brain. But which exercises have what effect? Time to get up to speed with the cutting-edge science of the mind-body connection and discover how just a little bit of movement could shift your own head to a better place"—*Publisher's description*.

Cavanagh brings you along on her journey through an exquisite collection of scholarly knowledge and empirical insight to ground both your mind and your gut. From zombies to bees, moral panics to conspiracy theories, *Hivemind* mixes the dark with the light to help readers find a path through a very destabilizing present' - danah boyd, author of *It's Complicated: The Social Lives of Networked Teens* 'This fascinating book guides us through the nuanced landscape of why we think and behave the way we do—online and off—and offers a much-needed vision for how we can find our way back from the edge' - Scott Barry Kaufman, Psychologist at Columbia University and co-author of *Wired to Create* 'Hivemind provides a fascinating tour of research that reveals our social nature, for good and for bad. Cavanagh is a natural teacher whose enthusiasm for psychology shines through on every page. Whether you're looking to have healthier technology habits, develop better relationships with others, or address societal challenges, this book will give you food for thought and wisdom to take action' - Kelly McGonigal, author of *The Joy of Movement* and *The Willpower Instinct* +++ *Hivemind: A collective consciousness in which we share consensus thoughts, emotions, and opinions; a phenomenon whereby a group of people function as if with a single mind. Our views of the world are shaped by the stories told by our self-selected communities.*

Whether seeking out groups that share our tastes, our faith, our heritage, or other interests, since the dawn of time we have taken comfort in defining ourselves through our social groups. But what happens when we only socialize with our chosen group, to the point that we lose the ability to connect to people who don't share our passions? What happens when our tribes merely confirm our world view, rather than expand it? Leading a narrative journey from the site of the Charlottesville riots to the boardrooms of Facebook, considering such diverse topics as zombies, neuroscience, and honeybees, psychologist and emotion regulation specialist Sarah Rose Cavanagh leaves no stone unturned in her quest to understand how social technology is reshaping the way we socialize. It's not possible to turn back the clocks, and Cavanagh argues that there's no need to; instead, she presents a fully examined and thoughtful call to cut through our online tribalism, dial back our moral panic about screens and mental health, and shore up our sense of community. With compelling storytelling and shocking research, Hivemind is a must-read for anyone hoping to make sense of the dissonance around us.

The Story of Calculus - The Language of the Universe