

Perfect Rigor A Genius And The Mathematical Breakthrough Of The Century

With clarity, sensitivity, and striking authenticity, Eliza Minot adeptly captures the voice of a vibrant, intelligent child swept into a sea of sorrow and confusion in *The Tiny One*. Via Mahoney Revere is eight years old when her mother is killed in a car accident. Confused by anguish, bewildered by her mother's absence, and mystified by the notion of death itself, Via retells the day of her mother's death in minute detail, trying to discern the crack in the world through which her mother must have slipped. She takes us through the seemingly ordinary moments of her day, from a cold-cereal breakfast to math class, when she is called to the principal's office to hear the news. Every small event of the tragic day calls up earlier memories from Via's young life, resulting in a beautifully patterned portrait of a comfortable childhood guarded by a warm and loving mother. Via attempts to grasp "how something so big could fit into such a little thing as a day."

When Vladimir Putin, an unimportant, low-level KGB operative, was rushed to power by a group of Oligarchs in 1999, he was a man without a history. Within a few brief years, Putin had dismantled Russia's media, wrested control and wealth from the country's burgeoning business class, and decimated the fragile mechanisms of democracy. Virtually every obstacle to his unbridled control was removed and every opposing voice silenced, with political rivals and critics driven into exile or to the grave. Drawing on information and sources no other writer has tapped, Masha Gessen's fearless account charts Putin's rise from the boy who had scrapped his way through post-war Leningrad schoolyards, to the 'faceless' man who manoeuvred his way into absolute - and absolutely corrupt - power.

What do Bach's compositions, Rubik's Cube, the way we choose our mates, and the physics of subatomic particles have in common? All are governed by the laws of symmetry, which elegantly unify scientific and artistic principles. Yet the mathematical language of symmetry-known as group theory-did not emerge from the study of symmetry at all, but from an equation that couldn't be solved. For thousands of years mathematicians solved progressively more difficult algebraic equations, until they encountered the quintic equation, which resisted solution for three centuries. Working independently, two great prodigies ultimately proved that the quintic cannot be solved by a simple formula. These geniuses, a Norwegian named Niels Henrik Abel and a romantic Frenchman named Évariste Galois, both died tragically young. Their incredible labor, however, produced the origins of group theory. The first extensive, popular account of the mathematics of symmetry and order, *The Equation That Couldn't Be Solved* is told not through abstract formulas but in a beautifully written and dramatic account of the lives and work of some of the greatest and most intriguing mathematicians in history.

"What Bodanis does brilliantly is to give us a feel for Einstein as a person. I don't think I've ever read a book that does this as well" (*Popular Science*). In this "fascinating" biography, the acclaimed author of $E=mc^2$ reveals that in spite of his indisputable brilliance, Albert Einstein found himself ignored by most working scientists during the final decades of his life, his ideas opposed by even his closest friends (*Forbes*). How did this happen? Einstein revolutionized our understanding of the cosmos with his general theory of relativity, and helped lead us into the atomic age. This book goes beyond his remarkable intellect and accomplishments to examine the man himself, from the skeptical, erratic student to the world's greatest physicist to the fallen-from-grace celebrity. An intimate biography that "imparts fresh insight into the genius—and failures—of the 20th century's most celebrated scientist," *Einstein's Greatest Mistake* reveals what we owe Einstein today—and how much more he might have achieved if not for his all-too-human flaws (*Publishers Weekly*).

Named a Science Book of the Year by the *Sunday Times* and one of the Top Five Science Books of 2016 by ABC News Australia, this unique book "offers a window onto Einstein's achievements and missteps, as well as his life—his friendships, his complicated love life (two marriages, many affairs) and his isolation from other scientists at the end of his life" (*BookPage*).

The idiosyncratic curriculum from the Professor of Interdisciplinary Creativity will teach you how to draw and write your story Hello students, meet Professor Skeletor. Be on time, don't miss class, and turn off your phones. No time for introductions, we start drawing right away. The goal is more rock, less talk, and we communicate only through images. For more than five years the cartoonist Lynda Barry has been an associate professor in the University of Wisconsin—Madison art department and at the Wisconsin Institute for Discovery, teaching students from all majors, both graduate and undergraduate, how to make comics, how to be creative, how to not think. There is no academic lecture in this classroom. Doodling is enthusiastically encouraged. *Making Comics* is the follow-up to Barry's bestselling *Syllabus*, and this time she shares all her comics-making exercises. In a new hand-drawn syllabus detailing her creative curriculum, Barry has students drawing themselves as monsters and superheroes, convincing students who think they can't draw that they can, and, most important, encouraging them to understand that a daily journal can be anything so long as it is hand drawn. Barry teaches all students and believes everyone and anyone can be creative. At the core of *Making Comics* is her certainty that creativity is vital to processing the world around us.

Sample Text

New York Times Bestseller Discover the critical link between your brain and the food you eat and change the way your brain ages, in this cutting-edge, practical guide to eliminating brain fog, optimizing brain health, and achieving peak mental performance from media personality and leading voice in health Max Lugavere. After his mother was diagnosed with a mysterious form of dementia, Max Lugavere put his successful media career on hold to learn everything he could about brain health and performance. For the better half of a decade, he consumed the most up-to-date scientific research, talked to dozens of leading scientists and clinicians around the world, and visited the country's best neurology departments—all in the hopes of understanding his mother's condition. Now, in *Genius Foods*, Lugavere presents a comprehensive guide to brain optimization. He uncovers the stunning link between our dietary and lifestyle choices and our brain functions, revealing how the foods you eat directly affect your ability to focus, learn, remember, create, analyze new ideas, and maintain a balanced mood. Weaving together pioneering research on dementia prevention, cognitive

optimization, and nutritional psychiatry, Lugavere distills groundbreaking science into actionable lifestyle changes. He shares invaluable insights into how to improve your brain power, including the nutrients that can boost your memory and improve mental clarity (and where to find them); the foods and tactics that can energize and rejuvenate your brain, no matter your age; a brain-boosting fat-loss method so powerful it has been called "biochemical liposuction"; and the foods that can improve your happiness, both now and for the long term. With Genius Foods, Lugavere offers a cutting-edge yet practical road map to eliminating brain fog and optimizing the brain's health and performance today—and decades into the future.

****Don't miss John Sandford's brand-new, pulse-pounding thriller, *Masked Prey*, available now**** Virgil Flowers will have to watch his back – and his mouth – as he investigates a culture war turned deadly in the latest page-turner from the master of pulse-pounding thrillers. At the local state university, renowned Professor Quill goes to the library one night – and winds up dead. With no suspects, no prints, no murder weapon – not even a time of death – Virgil Flowers is brought in to investigate. Flowers discovers that, prior to his death, Quill had sparked a feud between two departments at the university. Each side carries their views to extremes, and Flowers soon realizes he's dealing with people who, on this particular issue, are functionally crazy. Somewhere among this group of diametrically opposed zealots lurks a murderer. But with no leads, little evidence and the media breathing down his neck, can Flowers find him before he kills again? * * * Praise for John Sandford and the Virgil Flower novels * * * 'John Sandford knows all there is to know about detonating the gut-level shocks of a good thriller' *The New York Times Book Review* 'Sandford has always been at the top of any list of great mystery writers. His writing and the appeal of his lead character are as fresh as ever' *The Huffington Post* 'Sandford is consistently brilliant' *Cleveland Plain Dealer* 'Along the way to the satisfying ending, Virgil displays the rough humor and rough justice that make him such an appealing character' *Publishers Weekly on Deep Freeze* 'A knowing portrait of small-town life layered into a very well plotted mystery. Virgil understands that, in small towns, no one ever outgrows high school... One of the very best novels in a superior series' *Booklist (starred review) on Deep Freeze* 'Add a gripping storyline, a generous helping of exquisitely conceived characters and laugh-out-loud humor that produce explosive guffaws, not muted chuckles, and you're in for the usual late-night, don't-even-think-of-stopping treat when Flowers hits town' *Richmond Times-Dispatch on Deep Freeze* 'An outstanding novel' *Publishers Weekly (starred review) on Escape Clause* 'Perfect entertainment' *Kirkus Reviews on Escape Clause*

Fascinating study of the origin and nature of mathematical thought, including relation of mathematics and science, 20th-century developments, impact of computers, and more. Includes 34 illustrations. 1968 edition."

An acclaimed biography of the Enlightenment's greatest mathematician This is the first full-scale biography of Leonhard Euler (1707–1783), one of the greatest mathematicians and theoretical physicists of all time. In this comprehensive and authoritative account, Ronald Calinger connects the story of Euler's eventful life to the astonishing achievements that place him in the company of Archimedes, Newton, and Gauss. Drawing on Euler's massive published works and correspondence, this biography sets Euler's work in its multilayered context—personal, intellectual, institutional, political, cultural, religious, and social. It is a story of nearly incessant accomplishment, from Euler's fundamental contributions to almost every area of pure and applied mathematics in his time—especially calculus, mechanics, and optics—to his advances in shipbuilding, telescopes, acoustics, ballistics, cartography, chronology, and music theory.

A gripping modern-day detective story about the scientific quest to understand the Oracle of Delphi Like *Walking the Bible*, this fascinating book turns a modern eye on an enduring legend. The Oracle of Delphi was one of the most influential figures in ancient Greece. Human mistress of the god Apollo, she had the power to enter into ecstatic communion with him and deliver his prophecies to men. Thousands of years later, Pulitzer Prize–winning journalist William J. Broad follows a crew of enterprising researchers as they sift through the evidence of history, geology, and archaeology to reveal—as far as science is able—the source of her visions.

The Poincaré Conjecture tells the story behind one of the world's most confounding mathematical theories. Formulated in 1904 by Henri Poincaré, his Conjecture promised to describe the very shape of the universe, but remained unproved until a huge prize was offered for its solution in 2000. Six years later, an eccentric Russian mathematician had the answer. Here, Donal O'Shea explains the maths behind the Conjecture and its proof, and illuminates the curious personalities surrounding this perplexing conundrum, along the way taking in a grand sweep of scientific history from the ancient Greeks to Christopher Columbus. This is an enthralling tale of human endeavour, intellectual brilliance and the thrill of discovery.

A biography of the Indian mathematician Srinivasa Ramanujan. The book gives a detailed account of his upbringing in India, his mathematical achievements, and his mathematical collaboration with English mathematician G. H. Hardy. The book also reviews the life of Hardy and the academic culture of Cambridge University during the early twentieth century. Here she tells how Buffalo Bill taught her to ride, describes how she redefined the standards of attractiveness with the quirky models she brought to *Vogue* in the sixties, disparages her own looks, relates her search for the perfect red, and discourses on the nature of elegance. Whatever her subject, from backaches to nostalgia, from Paris to New York, from marriage to dinner parties, from Clark Gable to Swifty Lazar, you never want her to stop. For D.

In August 1859 Bernhard Riemann, a little-known 32-year old mathematician, presented a paper to the Berlin Academy titled: "On the Number of Prime Numbers Less Than a Given Quantity." In the middle of that paper, Riemann made an incidental remark "a guess, a hypothesis. What he tossed out to the assembled mathematicians that day has proven to be almost cruelly compelling to countless scholars in the ensuing years. Today, after 150 years of careful research and exhaustive study, the question remains. Is the hypothesis true or false? Riemann's basic inquiry, the primary topic of his paper, concerned a straightforward but nevertheless important matter of arithmetic "defining a precise formula to track and identify the occurrence of prime numbers. But it is that incidental remark "the Riemann Hypothesis" that is the

truly astonishing legacy of his 1859 paper. Because Riemann was able to see beyond the pattern of the primes to discern traces of something mysterious and mathematically elegant shrouded in the shadows – subtle variations in the distribution of those prime numbers. Brilliant for its clarity, astounding for its potential consequences, the Hypothesis took on enormous importance in mathematics. Indeed, the successful solution to this puzzle would herald a revolution in prime number theory. Proving or disproving it became the greatest challenge of the age. It has become clear that the Riemann Hypothesis, whose resolution seems to hang tantalizingly just beyond our grasp, holds the key to a variety of scientific and mathematical investigations. The making and breaking of modern codes, which depend on the properties of the prime numbers, have roots in the Hypothesis. In a series of extraordinary developments during the 1970s, it emerged that even the physics of the atomic nucleus is connected in ways not yet fully understood to this strange conundrum. Hunting down the solution to the Riemann Hypothesis has become an obsession for many – the veritable "great white whale" of mathematical research. Yet despite determined efforts by generations of mathematicians, the Riemann Hypothesis defies resolution. Alternating passages of extraordinarily lucid mathematical exposition with chapters of elegantly composed biography and history, *Prime Obsession* is a fascinating and fluent account of an epic mathematical mystery that continues to challenge and excite the world. Posited a century and a half ago, the Riemann Hypothesis is an intellectual feast for the cognoscenti and the curious alike. Not just a story of numbers and calculations, *Prime Obsession* is the engrossing tale of a relentless hunt for an elusive proof – and those who have been consumed by it.

Selected as a Book of the Year 2016 in the Sunday Times The full inside story of the detection of gravitational waves at LIGO, one of the most ambitious feats in scientific history. Travel around the world 100 billion times. A strong gravitational wave will briefly change that distance by less than the thickness of a human hair. We have perhaps less than a few tenths of a second to perform this measurement. And we don't know if this infinitesimal event will come next month, next year or perhaps in thirty years. In 1916 Einstein predicted the existence of gravitational waves: miniscule ripples in the very fabric of spacetime generated by unfathomably powerful events. If such vibrations could somehow be recorded, we could observe our universe for the first time through sound: the hissing of the Big Bang, the whale-like tunes of collapsing stars, the low tones of merging galaxies, the drumbeat of two black holes collapsing into one. For decades, astrophysicists have searched for a way of doing so... In 2016 a team of hundreds of scientists at work on a billion-dollar experiment made history when they announced the first ever detection of a gravitational wave, confirming Einstein's prediction. This is their story, and the story of the most sensitive scientific instrument ever made: LIGO. Based on complete access to LIGO and the scientists who created it, *Black Hole Blues* provides a firsthand account of this astonishing achievement: a compelling, intimate portrait of cutting-edge science at its most awe-inspiring and ambitious. *Perfect Rigor: A Genius and the Mathematical Breakthrough of the Century* Houghton Mifflin Harcourt

A definitive portrait of the scientific visionary who has influenced fields ranging from quantum physics and national defense to space and religion describes his relationships with leading world thinkers and documents his contributions to nuclear rocket technology, the Nuclear Test Ban Treaty and other world-changing endeavors. 40,000 first printing. In the tradition of *WONDER* and *TO KILL A MOCKINGBIRD* this award-winning New York Times bestseller is an intensely moving, lyrically-written novel. *COUNTING BY 7S* tells the story of Willow Chance, a twelve-year-old genius who is obsessed with diagnosing medical conditions and finds comfort in counting by 7s. It has never been easy for her to connect with anyone other than her adoptive parents, but that hasn't kept her from leading a quietly happy life . . . until now. Suddenly Willow's world is tragically changed when her parents both die in a car crash, leaving her alone in a baffling world. Her journey to find a fascinatingly diverse and fully believable surrogate family is a joy and a revelation to read.

When *Stoner* was published in 1965, the novel sold only a couple of thousand copies before disappearing with hardly a trace. Yet John Williams's quietly powerful tale of a Midwestern college professor, William Stoner, whose life becomes a parable of solitude and anguish eventually found an admiring audience in America and especially in Europe. The New York Times called *Stoner* "a perfect novel," and a host of writers and critics, including Colum McCann, Julian Barnes, Bret Easton Ellis, Ian McEwan, Emma Straub, Ruth Rendell, C. P. Snow, and Irving Howe, praised its artistry. The New Yorker deemed it "a masterly portrait of a truly virtuous and dedicated man." *The Man Who Wrote the Perfect Novel* traces the life of *Stoner*'s author, John Williams. Acclaimed biographer Charles J. Shields follows the whole arc of Williams's life, which in many ways paralleled that of his titular character, from their shared working-class backgrounds to their undistinguished careers in the halls of academia. Shields vividly recounts Williams's development as an author, whose other works include the novels *Butcher's Crossing* and *Augustus* (for the latter, Williams shared the 1972 National Book Award). Shields also reveals the astonishing afterlife of *Stoner*, which garnered new fans with each American reissue, and then became a bestseller all over Europe after Dutch publisher Lebowski brought out a translation in 2013. Since then, *Stoner* has been published in twenty-one countries and has sold over a million copies.

We often think identity is personal. But the identities that shape the world, our struggles, and our hopes, are social ones, shared with countless others. Our sense of self is shaped by our family, but also by affiliations that spread out from there, like our nationality, culture, class, race and religion. Taking these broad categories as a starting point, Professor Appiah challenges our assumptions about how identity works. In eloquent and lively chapters, he weaves personal anecdote with historical, cultural and literary example to explore the entanglements within the stories we tell ourselves. We all know there are conflicts among identities; but Professor Appiah explores how identities are created by conflict. Identities are then crafted from confusions - confusions this book aims to help us sort through. Religion, Appiah shows us, isn't primarily about beliefs. The idea of national self-determination is incoherent. Our everyday racial thinking is an artefact of discarded science. Class is not a matter of upper and lower. And the very idea of Western culture is a misleading myth. We will see our situation more clearly if we start to question these mistaken identities. This is radical new thinking from a

master in the subject and will change forever the way we think about ourselves and our communities.

Some probability problems are so difficult that they stump the smartest mathematicians. But even the hardest of these problems can often be solved with a computer and a Monte Carlo simulation, in which a random-number generator simulates a physical process, such as a million rolls of a pair of dice. This is what *Digital Dice* is all about: how to get numerical answers to difficult probability problems without having to solve complicated mathematical equations. Popular-math writer Paul Nahin challenges readers to solve twenty-one difficult but fun problems, from determining the odds of coin-flipping games to figuring out the behavior of elevators. Problems build from relatively easy (deciding whether a dishwasher who breaks most of the dishes at a restaurant during a given week is clumsy or just the victim of randomness) to the very difficult (tackling branching processes of the kind that had to be solved by Manhattan Project mathematician Stanislaw Ulam). In his characteristic style, Nahin brings the problems to life with interesting and odd historical anecdotes. Readers learn, for example, not just how to determine the optimal stopping point in any selection process but that astronomer Johannes Kepler selected his second wife by interviewing eleven women. The book shows readers how to write elementary computer codes using any common programming language, and provides solutions and line-by-line walk-throughs of a MATLAB code for each problem. *Digital Dice* will appeal to anyone who enjoys popular math or computer science. In a new preface, Nahin wittily addresses some of the responses he received to the first edition.

A tour of the exotic and remote outposts where scientists seek answers to the great mysteries: "A thrilling ride around the globe and around the cosmos." —Sean Carroll, author of *From Eternity to Here In The Edge of Physics*, a science writer journeys to the ends of the Earth—visiting remote and sometimes dangerous places—in search of the telescopes and detectors that promise to answer the biggest questions in modern cosmology. Anil Ananthaswamy treks to the Atacama Desert in the Chilean Andes, one of the coldest, driest places on the planet, where not even a blade of grass can survive, and the spectacularly clear skies and dry atmosphere allow astronomers to gather brilliant images of galaxies billions of light-years away. He takes us inside the European Organisation for Astronomical Research in the Southern Hemisphere's Very Large Telescope on Mount Paranal, where four massive domes open to the sky each night "like a dragon waking up." Ananthaswamy also heads deep inside an abandoned iron mine in Minnesota—where half-mile-thick rock shields physicists as they hunt for elusive dark matter particles. And to the East Antarctic Ice Sheet, where engineers are drilling 1.5 miles into the clearest ice on the planet. They are building the world's largest neutrino detector, which could finally help reconcile quantum physics with Einstein's theory of general relativity. The stories of the people who work at these and other research sites make for a compelling new portrait of the universe—and our quest to understand it. "From the top of Hawaii's Mauna Kea to Switzerland's Large Hadron Collider and more, Ananthaswamy paints a vivid picture of scientific investigations in harsh working conditions. . . . Even for readers who don't know a neutrino from Adam, these interesting tales of human endeavor make *The Edge of Physics* a trip worth taking."

—Bookpage "Ananthaswamy journeys to several geographically and scientifically extreme outposts, and returns not only with engaging portraits of the men and women who work there, but also a vibrant glimpse of how cutting-edge research is actually performed. Part history lesson, part travelogue, part adventure story, 'The Edge of Physics' is a wonder-stepped page-turner." —Seed Magazine "Ananthaswamy displays a writer's touch for the fascinating detail." —The Washington Post

A sweeping cultural survey reminiscent of Barzun's *From Dawn to Decadence*. "At irregular times and in scattered settings, human beings have achieved great things. Human Accomplishment is about those great things, falling in the domains known as the arts and sciences, and the people who did them." So begins Charles Murray's unique account of human excellence, from the age of Homer to our own time. Employing techniques that historians have developed over the last century but that have rarely been applied to books written for the general public, Murray compiles inventories of the people who have been essential to the stories of literature, music, art, philosophy, and the sciences—a total of 4,002 men and women from around the world, ranked according to their eminence. The heart of *Human Accomplishment* is a series of enthralling descriptive chapters: on the giants in the arts and what sets them apart from the merely great; on the differences between great achievement in the arts and in the sciences; on the meta-inventions, 14 crucial leaps in human capacity to create great art and science; and on the patterns and trajectories of accomplishment across time and geography. Straightforwardly and undogmatically, Charles Murray takes on some controversial questions. Why has accomplishment been so concentrated in Europe? Among men? Since 1400? He presents evidence that the rate of great accomplishment has been declining in the last century, asks what it means, and offers a rich framework for thinking about the conditions under which the human spirit has expressed itself most gloriously. Eye-opening and humbling, *Human Accomplishment* is a fascinating work that describes what humans at their best can achieve, provides tools for exploring its wellsprings, and celebrates the continuing common quest of humans everywhere to discover truths, create beauty, and apprehend the good.

"Our understanding of how the human brain performs mathematical calculations is far from complete. In *The Number Sense*, Stanislas Dehaene offers readers an enlightening exploration of the mathematical mind. Using research showing that human infants have a rudimentary number sense, Dehaene suggests that this sense is as basic as our perception of color, and that it is wired into the brain. But how then did we leap from this basic number ability to trigonometry, calculus, and beyond? Dehaene shows that it was the invention of symbolic systems of numerals that started us on the climb to higher mathematics. Tracing the history of numbers, we learn that in early times, people indicated numbers by pointing to part of their bodies, and how Roman numerals were replaced by modern numbers. On the way, we also discover many fascinating facts: for example, because Chinese names for numbers are short, Chinese people can remember up to nine or ten digits at a time, while English-speaking people can only remember seven. A fascinating look at the crossroads

where numbers and neurons intersect, *The Number Sense* offers an intriguing tour of how the structure of the brain shapes our mathematical abilities, and how math can open up a window on the human mind"--Provided by publisher. 'What is a self and how can a self come out of inanimate matter?' This is the riddle that drove Douglas Hofstadter to write this extraordinary book. In order to impart his original and personal view on the core mystery of human existence - our intangible sensation of 'I'-ness - Hofstadter defines the playful yet seemingly paradoxical notion of 'strange loop', and explicates this idea using analogies from many disciplines.

These short tales of undead Romance, Revenge, Risk, and Raunch will leave readers shambling, moaning, and clawing for more. Features works by Pete Alberti, Damon B, Renee Bennett, Xander Briggs, Jennifer Brozek, J.R. Campbell, Johann Carlisle, Nathan Crowder, and Carrie Cuinn.

Caro, gallant and adventurous, is one of two Australian sisters who have come to post-war England to seek their fortunes. Courted long and hopelessly by young scientist, Ted Tice, she is to find that love brings passion, sorrow, betrayal and finally hope. The milder Grace seeks fulfilment in an apparently happy marriage. But as the decades pass and the characters weave in and out of each other's lives, love, death and two slow-burning secrets wait in ambush for them.

When it comes to creating ideas, we hold ourselves back. That's because inside each of us is an internal editor whose job is to forever polish our thoughts, so we sound smart and in control, and so that we fit into society. But what happens when we encounter problems where such conventional thinking fails us? How to get unstuck? For Mark Levy, t...

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

The advancement of the knowledge frontier is crucial for technological innovation and human progress. Using novel data from the setting of mathematics, this paper establishes two results. First, we document that individuals who demonstrate exceptional talent in their teenage years have an irreplaceable ability to create new ideas over their lifetime, suggesting that talent is a central ingredient in the production of knowledge. Second, such talented individuals born in low- or middle-income countries are systematically less likely to become knowledge producers. Our findings suggest that policies to encourage exceptionally-talented youth to pursue scientific careers—especially those from lower income countries—could accelerate the advancement of the knowledge frontier.

Can a good company become a great one and, if so, how? After a five-year research project, Collins concludes that good to great can and does happen. In this book, he uncovers the underlying variables that enable any type of organization to , "A book that belongs on the shelf alongside *The Gulag Archipelago*. -- Kirkus Reviews A haunting literary and visual journey deep into Russia's past -- and present. The Gulag was a monstrous network of labor camps that held and killed millions of prisoners from the 1930s to the 1950s. More than half a century after the end of Stalinist terror, the geography of the Gulag has been barely sketched and the number of its victims remains unknown. Has the Gulag been forgotten? Writer Masha Gessen and photographer Misha Friedman set out across Russia in search of the memory of the Gulag. They journey from Moscow to Sandarmokh, a forested site of mass executions during Stalin's Great Terror; to the only Gulag camp turned into a museum, outside of the city of Perm in the Urals; and to Kolyma, where prisoners worked in deadly mines in the remote reaches of the Far East. They find that in Vladimir Putin's Russia, where Stalin is remembered as a great leader, Soviet terror has not been forgotten: it was never remembered in the first place.

"Delightful . . . easily digestible chapters include plenty of helpful examples and illustrations. You'll never forget the Pythagorean theorem again!"—Scientific American Many people take math in high school and promptly forget much of it. But math plays a part in all of our lives all of the time, whether we know it or not. In *The Joy of x*, Steven Strogatz expands on his hit New York Times series to explain the big ideas of math gently and clearly, with wit, insight, and brilliant illustrations. Whether he is illuminating how often you should flip your mattress to get the maximum lifespan from it, explaining just how Google searches the internet, or determining how many people you should date before settling down, Strogatz shows how math connects to every aspect of life. Discussing pop culture, medicine, law, philosophy, art, and business, Strogatz is the math teacher you wish you'd had. Whether you aced integral calculus or aren't sure what an integer is, you'll find profound wisdom and persistent delight in *The Joy of x*. Provides brief descriptions of the careers of more than 240 Jewish athletes in numerous sports

A Fields medalist recounts his lifelong transnational effort to uncover the geometric shape—the Calabi-Yau manifold—that may store the hidden dimensions of our universe. Harvard geometer and Fields medalist Shing-Tung Yau has provided a mathematical foundation for string theory, offered new insights into black holes, and mathematically demonstrated the stability of our universe. In this autobiography, Yau reflects on his improbable journey to becoming one of the world's most distinguished mathematicians. Beginning with an impoverished childhood in China and Hong Kong, Yau takes readers through his doctoral studies at Berkeley during the height of the Vietnam War protests, his Fields Medal-winning proof of the Calabi conjecture, his return to China, and his pioneering work in geometric analysis. This new branch of geometry, which Yau built up with his friends and colleagues, has paved the way for solutions to several important and previously intransigent problems. With complicated ideas explained for a broad audience, this book offers readers not only insights into the life of an eminent mathematician, but also an accessible way to understand advanced and highly abstract concepts in mathematics and theoretical physics.

Expert treatment introduces semi-Riemannian geometry and its principal physical application, Einstein's theory of general relativity, using the Cartan exterior calculus as a principal tool. Prerequisites include linear algebra and advanced calculus. 2012 edition.

A gripping and tragic tale that sheds rare light on the unique burden of genius In 2006, an eccentric Russian mathematician named Grigori Perelman solved the Poincare Conjecture, an extremely complex topological problem that had eluded the best minds for over a century. A prize of one million dollars was offered to anyone who could unravel it, but Perelman declined the winnings, and in doing so inspired journalist Masha Gessen to tell his story. Drawing on interviews with Perelman's teachers, classmates, coaches, teammates, and colleagues in Russia and the United

States—and informed by her own background as a math whiz raised in Russia—Gessen uncovered a mind of unrivaled computational power, one that enabled Perelman to pursue mathematical concepts to their logical (sometimes distant) end. But she also discovered that this very strength turned out to be Perelman's undoing and the reason for his withdrawal, first from the world of mathematics and then, increasingly, from the world in general.

From the acclaimed author of *The Man Without a Face*, the previously untold story of the Jews in twentieth-century Russia that reveals the complex, strange, and heart-wrenching truth behind the familiar narrative that begins with pogroms and ends with emigration. In 1929, the Soviet government set aside a sparsely populated area in the Soviet Far East for settlement by Jews. The place was called Birobidzhan. The idea of an autonomous Jewish region was championed by Jewish Communists, Yiddishists, and intellectuals, who envisioned a haven of post-oppression Jewish culture. By the mid-1930s tens of thousands of Soviet Jews, as well as about a thousand Jews from abroad, had moved there. The state-building ended quickly, in the late 1930s, with arrests and purges instigated by Stalin. But after the Second World War, Birobidzhan received another influx of Jews—those who had been dispossessed by the war. In the late 1940s a second wave of arrests and imprisonments swept through the area, traumatizing Birobidzhan's Jews into silence and effectively shutting down most of the Jewish cultural enterprises that had been created. *Where the Jews Aren't* is a haunting account of the dream of Birobidzhan—and how it became the cracked and crooked mirror in which we can see the true story of the Jews in twentieth-century Russia. (Part of the Jewish Encounters series)

In 2006, an eccentric Russian mathematician named Grigori Perelman solved one of the world's greatest intellectual puzzles. The Poincare conjecture is an extremely complex topological problem that had eluded the best minds for over a century. In 2000, the Clay Institute in Boston named it one of seven great unsolved mathematical problems, and promised a million dollars to anyone who could find a solution. Perelman was awarded the prize this year - and declined the money. Journalist Masha Gessen was determined to find out why. Drawing on interviews with Perelman's teachers, classmates, coaches, teammates, and colleagues in Russia and the US - and informed by her own background as a math whiz raised in Russia - she set out to uncover the nature of Perelman's astonishing abilities. In telling his story, Masha Gessen has constructed a gripping and tragic tale that sheds rare light on the unique burden of genius.

A young woman stages her own death and flees from her abusive husband to a small Midwestern town where she discovers love and happiness, until her vengeful husband uncovers her secret

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