Weapons Of Math Destruction How Big Data Increases Inequality And Threatens Democracy

This interdisciplinary and international handbook captures and shapes much needed reflection on normative frameworks for the production, application, and use of artificial intelligence in all spheres of individual, commercial, social, and public life.

An Observer Book of the Year A Times Science Book of the Year A New Statesman Book of the Year A Financial Times Science Book of the Year 'It is hard to imagine a more timely book ... much of the modern world will make more sense having read it.' The Times A deadly virus suddenly explodes into the population. A political movement gathers pace, and then quickly vanishes. An idea takes off like wildfire, changing our world forever. We live in a world that's more interconnected than ever before. Our lives are shaped by outbreaks - of disease, of misinformation, even of violence - that appear, spread and fade away with bewildering speed. To understand them, we need to learn the hidden laws that govern them. From 'superspreaders' who might spark a pandemic or bring down a financial system to the social dynamics that make loneliness catch on, The Rules of Contagion offers compelling insights into human behaviour and explains how we can get better at predicting what happens next. Along the way, Adam Kucharski explores how innovations spread through friendship networks, what links computer viruses with folk stories - and why the most useful predictions aren't necessarily the ones that come true.

Human rights activist and historian Roxanne Dunbar-Ortiz has been described as “a force of nature on the page and off.” That force is fully present in Blood on the Border, the third in her acclaimed series of memoirs. Seamlessly blending the personal and the political, Blood on the Border is Dunbar-Ortiz’s firsthand account of the decade-long dirty war pursued by the Contras and the United States against the people of Nicaragua. With the 1981 bombing of a Nicaraguan plane in Mexico City—a plane Dunbar-Ortiz herself would have been on if not for a delay—the US-backed Contras (short for los contrarrevolucionarios) launched a major offensive against Nicaragua’s Sandinista regime, which the Reagan administration labeled as communist. While her rich political analysis of the US-Nicaraguan relationship bears the mark of a trained historian, Dunbar-Ortiz also writes from her perspective as an intrepid activist who spent months at a time throughout the 1980s in the war-torn country, especially in the remote northeastern region, where the Indigenous Miskitu people were relentlessly assailed and nearly wiped out by CIA-trained Contra mercenaries. She makes painfully clear the connections between what many US Americans today remember only vaguely as the Iran-Contra “affair” and ongoing US aggression in the Americas, the Middle East, and around the world—connections made even more explicit in a new afterword written for this edition. A compelling, important, and sobering story on its own, Blood on the Border offers a deeply informed, closely observed, and heartfelt view of history in the making.

From a cutting-edge cultural commentator and documentary filmmaker, a bold and brilliant challenge to cherished notions of the Internet as the great democratizing force of our age. The Internet has been hailed as a place where all can be heard and everyone can participate equally. But how true is this claim? In a seminal dismantling of techno-utopian visions, The People's Platform argues that for all that we "tweet" and "like" and "share," the Internet in fact reflects and amplifies real-world inequities at least as much as it ameliorates them. Online, just as off-line, attention and influence largely accrue to those who already have plenty of both. What we have seen in the virtual world so far, Astra Taylor says, has been not a revolution but a rearrangement. Although Silicon Valley tycoons have eclipsed Hollywood moguls, a handful of giants like Amazon, Apple, Google and Facebook still dominate our lives. And the worst habits of the old media model--the

pressure to be quick and sensational, to seek easy celebrity, to appeal to the broadest possible public--have proliferated online, where every click can be measured and where "aggregating" the work of others is the surest way to attract eyeballs and ad revenue. In a world where culture is "free," creative work has diminishing value, and advertising fuels the system, the new order looks suspiciously just like the old one. We can do better, Taylor insists. The online world does offer an unprecedented opportunity, but a democratic culture that supports diverse voices, work of lasting value, and equitable business practices will not appear as a consequence of technology alone. If we want the Internet to truly be a people's platform, we will have to make it so.

A revealing look at how negative biases against women of color are embedded in search engine results and algorithms Run a Google search for “black girls”—what will you find? “Big Booty” and other sexually explicit terms are likely to come up as top search terms. But, if you type in “white girls,” the results are radically different. The suggested porn sites and un-moderated discussions about “why black women are so sassy” or “why black women are so angry” presents a disturbing portrait of black womanhood in modern society. In Algorithms of Oppression, Safiya Umoja Noble challenges the idea that search engines like Google offer an equal playing field for all forms of ideas, identities, and activities. Data discrimination is a real social problem; Noble argues that the combination of private interests in promoting certain sites, along with the monopoly status of a relatively small number of Internet search engines, leads to a biased set of search algorithms that privilege whiteness and discriminate against people of color, specifically women of color. Through an analysis of textual and media searches as well as extensive research on paid online advertising, Noble exposes a culture of racism and sexism in the way discoverability is created online. As search engines and their related companies grow in importance—operating as a source for email, a major vehicle for primary and secondary school learning, and beyond—understanding and reversing these disquieting trends and discriminatory practices is of utmost importance. An original, surprising and, at times, disturbing account of bias on the internet, Algorithms of Oppression contributes to our understanding of how racism is created, maintained, and disseminated in the 21st century.

'A manual for the 21st-century citizen... accessible, refreshingly critical, relevant and urgent' - Financial Times 'Fascinating and deeply disturbing' - Yuval Noah Harari, Guardian Books of the Year In this New York Times bestseller, Cathy O'Neil, one of the first champions of algorithmic accountability, sounds an alarm on the mathematical models that pervade modern life -- and threaten to rip apart our social fabric. We live in the age of the algorithm. Increasingly, the decisions that affect our lives - where we go to school, whether we get a loan, how much we pay for insurance - are being made not by humans, but by mathematical models. In theory, this should lead to greater fairness: everyone is judged according to the same rules, and bias is eliminated. And yet, as Cathy O'Neil reveals in this urgent and necessary book, the opposite is true. The models being used today are opaque, unregulated, and incontestable, even when they're wrong. Most troubling, they reinforce discrimination. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort CVs, grant or deny loans, evaluate workers, target voters, and monitor our health. O'Neil calls on modellers to take more responsibility for their algorithms and on policy makers to regulate their use. But in the end, it's up to us to become more savvy about the models that govern our lives. This important book empowers us to ask the tough questions, uncover the truth, and demand change.

In the wrong hands, math can be deadly. Even the simplest numbers can become powerful forces when manipulated by politicians or the media, but in the case of the law, your liberty -- and your life -- can depend on the right calculation. In Math on Trial, mathematicians Leila Schneps and Coralie Colmez describe ten trials spanning from the nineteenth century to today, in which mathematical arguments were used

-- and disastrously misused -- as evidence. They tell the stories of Sally Clark, who was accused of murdering her children by a doctor with a faulty sense of calculation; of nineteenth-century tycoon Hetty Green, whose dispute over her aunt's will became a signal case in the forensic use of mathematics; and of the case of Amanda Knox, in which a judge's misunderstanding of probability led him to discount critical evidence -- which might have kept her in jail. Offering a fresh angle on cases from the nineteenth-century Dreyfus affair to the murder trial of Dutch nurse Lucia de Berk, Schneps and Colmez show how the improper application of mathematical concepts can mean the difference between walking free and life in prison. A colorful narrative of mathematical abuse, Math on Trial blends courtroom drama, history, and math to show that legal expertise isn't't always enough to prove a person innocent.

#1 INTERNATIONAL BESTSELLER AN ADAM SAVAGE BOOK CLUB PICK The book-length answer to anyone who ever put their hand up in math class and asked, “When am I ever going to use this in the real world?” “Fun, informative, and relentlessly entertaining, Humble Pi is a charming and very readable guide to some of humanity's all-time greatest miscalculations—that also gives you permission to feel a little better about some of your own mistakes.” —Ryan North, author of How to Invent Everything Our whole world is built on math, from the code running a website to the equations enabling the design of skyscrapers and bridges. Most of the time this math works quietly behind the scenes . . . until it doesn’t. All sorts of seemingly innocuous mathematical mistakes can have significant consequences. Math is easy to ignore until a misplaced decimal point upends the stock market, a unit conversion error causes a plane to crash, or someone divides by zero and stalls a battleship in the middle of the ocean. Exploring and explaining a litany of glitches, near misses, and mathematical mishaps involving the internet, big data, elections, street signs, lotteries, the Roman Empire, and an Olympic team, Matt Parker uncovers the bizarre ways math trips us up, and what this reveals about its essential place in our world. Getting it wrong has never been more fun.

A foolproof walkthrough of must-know computer science concepts. A fast guide for those who don't need the academic formality, it goes straight to what differentiates pros from amateurs. First introducing discrete mathematics, then exposing the most common algorithm and data structure design elements, and finally the working principles of computers and programming languages, the book is indicated to all programmers.

NEW YORK TIMES BESTSELLER • A former Wall Street quant sounds the alarm on Big Data and the mathematical models that threaten to rip apart our social fabric—with a new afterword “A manual for the twenty-first-century citizen . . . relevant and urgent.”—Financial Times NATIONAL BOOK AWARD LONGLIST • NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The New York Times Book Review • The Boston Globe • Wired • Fortune • Kirkus Reviews • The Guardian • Nature • On Point We live in the age of the algorithm. Increasingly, the decisions that affect our lives—where we go to school, whether we can get a job or a loan, how much we pay for health insurance—are being made not by humans, but by machines. In theory, this should lead to greater fairness: Everyone is judged according to the same rules. But as mathematician and data scientist Cathy O’Neil reveals, the mathematical models being used today are unregulated and uncontestable, even when they’re wrong. Most troubling, they reinforce discrimination—propping up the lucky, punishing the downtrodden, and undermining our democracy in the process. Welcome to the dark side of Big Data.

The history of what we call finance today does not begin in ancient Mesopotamia, or in Imperial China, or in the counting houses of

Renaissance Europe. This timely and magisterial book shows that finance as we know it--the combination of institutions, regulations, and models, as well as the infrastructure that manages money, credit, claims, banking, assets, and liabilities--emerged gradually starting in the late nineteenth century and coalesced only after World War II. Kevin Brine, a financial industry veteran, and Mary Poovey, a historian, lay bare the history of finance in the United States over this critical period. They show how modern finance made itself known in episodes such as the 1907 Bankers' Panic on Wall Street, passage of the Federal Reserve Act in 1913, and the marginalist tax policies adopted by the federal government in the 1920s. Over its long history, the distinctive feature of modern economics has been its reliance on mathematical modeling; Brine and Poovey show how this reliance came about, and how economists themselves understand it. "Finance in America: An Unfinished Story" provides the long view that we need to advance our national conversation about the place of finance. The story is unfinished because the 2009 financial crisis opened a perilous new chapter in this history, with reverberations that are still felt throughout the world. How we arrived at this most recent crisis is impossible to understand without the kind of history that Brine and Poovey provide here.

The transformation of schooling from a twelve-year jail sentence to freedom to learn. John Taylor Gatto's Weapons of Mass Instruction , now available in paperback, focuses on mechanisms of traditional education which cripple imagination, discourage critical thinking, and create a false view of learning as a byproduct of rote-memorization drills. Gatto's earlier book, Dumbing Us Down , introduced the now-famous expression of the title into the common vernacular. Weapons of Mass Instruction adds another chilling metaphor to the brief against conventional schooling. Gatto demonstrates that the harm school inflicts is rational and deliberate. The real function of pedagogy, he argues, is to render the common population manageable. To that end, young people must be conditioned to rely upon experts, to remain divided from natural alliances and to accept disconnections from their own lived experiences. They must at all costs be discouraged from developing self-reliance and independence. Escaping this trap requires a strategy Gatto calls "open source learning" which imposes no artificial divisions between learning and life. Through this alternative approach our children can avoid being indoctrinated-only then can they achieve self-knowledge, good judgment, and courage.

Weapons of Math Destruction Journal - Notebook - Workbook - 6x9 - 120 Pages - Dot Grid 0.2" - Glossy Softback Cover Funny Math gift with artistic cartoon math joke artwork that reads: 'Weapons of Math Destruction' for a mathematics teacher and funny pun fan who really enjoys funny quotes. 120 duo sided bright white pages 6x9 dimensions, portable size (bag, school, home, work, desk, ...) High quality glossy softbound cover designed with love Makes an ideal present for any gift giving occasion Perfect gift idea for: birthdays, back to school, christmas, thanksgiving, family & friends, notebook & planner lovers, teachers, graduation gifts, co-workers, boss gift, gift baskets, ...

A guide to AI’s thorniest implications that asks: How shall we navigate our brave new world? We are at a monumental turning point in human history. AI is taking intelligence in new directions. The strongest human competitors in chess, go, and Jeopardy! have been beaten by AIs, and AI is getting more sophisticated by the day. Further, AI research is going inside the human brain

itself, attempting to augment human minds. It may even create greater-than-human-level intelligence, leading to a new generation of artificial minds—Minds 2.0. Susan Schneider, a philosopher, argues that these undertakings must not be attempted without a richer understanding of the nature of the mind. An insufficient grasp of the underlying philosophical issues could undermine the use of AI and brain enhancement technology, bringing about the demise or suffering of conscious beings. Examining the philosophical questions lying beneath the algorithms, Schneider takes on AI's thorniest implications.

Over the course of a generation, algorithms have gone from mathematical abstractions to powerful mediators of daily life. Algorithms have made our lives more efficient, more entertaining, and, sometimes, better informed. At the same time, complex algorithms are increasingly violating the basic rights of individual citizens. Allegedly anonymized datasets routinely leak our most sensitive personal information; statistical models for everything from mortgages to college admissions reflect racial and gender bias. Meanwhile, users manipulate algorithms to "game" search engines, spam filters, online reviewing services, and navigation apps. Understanding and improving the science behind the algorithms that run our lives is rapidly becoming one of the most pressing issues of this century. Traditional fixes, such as laws, regulations and watchdog groups, have proven woefully inadequate. Reporting from the cutting edge of scientific research, The Ethical Algorithm offers a new approach: a set of principled solutions based on the emerging and exciting science of socially aware algorithm design. Michael Kearns and Aaron Roth explain how we can better embed human principles into machine code - without halting the advance of data-driven scientific exploration. Weaving together innovative research with stories of citizens, scientists, and activists on the front lines, The Ethical Algorithm offers a compelling vision for a future, one in which we can better protect humans from the unintended impacts of algorithms while continuing to inspire wondrous advances in technology.

Amity Shlaes, author of The Forgotten Man, delivers a brilliant and provocative reexamination of America's thirtieth president, Calvin Coolidge, and the decade of unparalleled growth that the nation enjoyed under his leadership. In this riveting biography, Shlaes traces Coolidge's improbable rise from a tiny town in New England to a youth so unpopular he was shut out of college fraternities at Amherst College up through Massachusetts politics. After a divisive period of government excess and corruption, Coolidge restored national trust in Washington and achieved what few other peacetime presidents have: He left office with a federal budget smaller than the one he inherited. A man of calm discipline, he lived by example, renting half of a two-family house for his entire political career rather than compromise his political work by taking on debt. Renowned as a throwback, Coolidge was in fact strikingly modern—an advocate of women's suffrage and a radio pioneer. At once a revision of man and economics, Coolidge gestures to the country we once were and reminds us of qualities we had forgotten and can use today.

"Witty, compelling, and just plain fun to read . . ." —Evelyn Lamb, Scientific American The Freakonomics of math—a math-world superstar unveils the hidden beauty and logic of the world and puts its power in our hands The math we learn in school can seem like a dull set of rules, laid down by the ancients and not to be questioned. In How Not to Be Wrong, Jordan Ellenberg shows us how terribly limiting this view is: Math isn't confined to abstract incidents that never occur in real life, but rather touches everything we do—the whole world is shot through

with it. Math allows us to see the hidden structures underneath the messy and chaotic surface of our world. It's a science of not being wrong, hammered out by centuries of hard work and argument. Armed with the tools of mathematics, we can see through to the true meaning of information we take for granted: How early should you get to the airport? What does "public opinion" really represent? Why do tall parents have shorter children? Who really won Florida in 2000? And how likely are you, really, to develop cancer? How Not to Be Wrong presents the surprising revelations behind all of these questions and many more, using the mathematician's method of analyzing life and exposing the hard-won insights of the academic community to the layman—minus the jargon. Ellenberg chases mathematical threads through a vast range of time and space, from the everyday to the cosmic, encountering, among other things, baseball, Reaganomics, daring lottery schemes, Voltaire, the replicability crisis in psychology, Italian Renaissance painting, artificial languages, the development of non-Euclidean geometry, the coming obesity apocalypse, Antonin Scalia's views on crime and punishment, the psychology of slime molds, what Facebook can and can't figure out about you, and the existence of God. Ellenberg pulls from history as well as from the latest theoretical developments to provide those not trained in math with the knowledge they need. Math, as Ellenberg says, is "an atomic-powered prosthesis that you attach to your common sense, vastly multiplying its reach and strength." With the tools of mathematics in hand, you can understand the world in a deeper, more meaningful way. How Not to Be Wrong will show you how.

* Our summary is short, simple and pragmatic. It allows you to have the essential ideas of a big book in less than 30 minutes. By reading this summary, you will discover that mathematical models, and more particularly algorithms coupled with information systems, may increase inequalities and threaten democracies. You will also discover that : mathematical models are not neutral, but hide ideologies and personal interests; algorithms promise efficiency and lowest cost, but increase inequalities and injustices; mathematical formulas affect your life choices; your personal data are weapons used by the giants of Tech. At a time when algorithms are king, the decisions that affect your life - which school to go to, which loan to take out - are no longer made by humans, but by mathematical models. In theory, this should promote fairness: everyone is judged by the same level of value. Mathematician Cathy O'Neil argues the opposite. These opaque, unregulated models can cause irreparable damage, like the mortgage payments of American households during the subprime crisis in 2007. Worse: they accentuate discrimination. For example, a student from a modest background who cannot obtain a loan - too risky - will never have access to quality education. These mathematical models support the lucky ones and disadvantage the oppressed: welcome to the dark side of big data, the exponential growth of digital data! *Buy now the summary of this book for the modest price of a cup of coffee!

The gap between theoretical ideas and messy reality, as seen in Neal Stephenson, Adam Smith, and Star Trek. We depend on—we believe in—algorithms to help us get a ride, choose which book to buy, execute a mathematical proof. It's as if we think of code as a magic spell, an incantation to reveal what we need to know and even what we want. Humans have always believed that certain invocations—the marriage vow, the shaman's curse—do not merely describe the world but make it. Computation casts a cultural shadow that is shaped by this long tradition of magical thinking. In this book, Ed Finn considers how the algorithm—in practical terms, "a method for solving a problem"—has its roots not only in mathematical logic but also in cybernetics, philosophy, and magical thinking. Finn argues that the algorithm deploys concepts from the idealized space of computation in a messy reality, with unpredictable and sometimes fascinating results. Drawing on sources that range from Neal Stephenson's Snow Crash to Diderot's Encyclopédie, from Adam Smith to the Star Trek computer, Finn explores the gap between theoretical ideas and pragmatic instructions. He examines the development of intelligent assistants like Siri, the rise of algorithmic aesthetics at Netflix, Ian Bogost's satiric Facebook game Cow Clicker, and the revolutionary economics of Bitcoin. He

describes Google's goal of anticipating our questions, Uber's cartoon maps and black box accounting, and what Facebook tells us about programmable value, among other things. If we want to understand the gap between abstraction and messy reality, Finn argues, we need to build a model of “algorithmic reading” and scholarship that attends to process, spearheading a new experimental humanities.

"Roth [examines] the deep historical roots of [what he sees as conservatives'] anti-egalitarian worldview, and introduces us to its modern-day proponents: the GOP officials pushing to make it harder to cast a ballot; the lawyers looking to scrap all limits on money in politics; the libertarian scholars reclaiming judicial activism to roll back the New Deal; and the corporate lobbyists working to ban local action on everything from the minimum wage to the environment"--

"One of the most mesmerizing and exhilarating, yet alarming modern technology books…an extraordinary tale." —Gillian Tett, Financial Times Pinpoint tells the fascinating story of a hidden system that touches nearly every aspect of modern life. Tracking the development of GPS from its origins as a bomb guidance system to its present ubiquity, Greg Milner examines the technology’s double-edged effect on the way we live, work, and travel. Savvy and original, this sweeping scientific history offers startling insight into how humans understand their place in the world.

When does physics depart the realm of testable hypothesis and come to resemble theology? Peter Woit argues that string theory isn't just going in the wrong direction, it's not even science. Not Even Wrong shows that what many physicists call superstring “theory” is not a theory at all. It makes no predictions, not even wrong ones, and this very lack of falsifiability is what has allowed the subject to survive and flourish. Peter Woit explains why the mathematical conditions for progress in physics are entirely absent from superstring theory today, offering the other side of the story.

An instant New York Times Bestseller! “Unreasonably entertaining . . . reveals how geometric thinking can allow for everything from fairer American elections to better pandemic planning.” —The New York Times From the New York Times-bestselling author of How Not to Be Wrong—himself a world-class geometer—a far-ranging exploration of the power of geometry, which turns out to help us think better about practically everything. How should a democracy choose its representatives? How can you stop a pandemic from sweeping the world? How do computers learn to play Go, and why is learning Go so much easier for them than learning to read a sentence? Can ancient Greek proportions predict the stock market? (Sorry, no.) What should your kids learn in school if they really want to learn to think? All these are questions about geometry. For real. If you're like most people, geometry is a sterile and dimly remembered exercise you gladly left behind in the dust of ninth grade, along with your braces and active romantic interest in pop singers. If you recall any of it, it's plodding through a series of miniscule steps only to prove some fact about triangles that was obvious to you in the first place. That's not geometry. Okay, it is geometry, but only a tiny part, which has as much to do with geometry in all its flush modern richness as conjugating a verb has to do with a great novel. Shape reveals the geometry underneath some of the most important scientific, political, and philosophical problems we face. Geometry asks: Where are things? Which things are near each other? How can you get from one thing to another thing? Those are important questions. The word "geometry"comes from the Greek for "measuring the world." If anything, that's an undersell. Geometry doesn't just measure the world—it explains it. Shape shows us how.

We've come a long way from the Peashooter Era: with the advent of modern household products and office supplies - foldback clips, clothespins, rubber bands, ballpoint pens, toothpicks, paper clips and plastic utensils - the everyday junk drawer can hold all the materials needed to create pocket-sized weaponry. Whether you're slowing dying of boredom in a stuffy office, plotting revenge on your older siblings

or simply looking for a wonderful way to kill some time, this book is for you. Toy designer John Austin provides detailed, step-by-step instructions for each project, including materials and ammo lists, clear pictures, and construction tips, for mayhem-loving MacGyvers. The 35 devices include catapults, slingshots, darts, crossbows, and combustion shooters. Build a tiny trebuchet from paper clips and a D-cell battery. Wrap a penny in a string of paper caps to create a surprisingly impressive "bomb." Several of the projects even include variations where combatants mount laser pointer sights to their shooters to increase their accuracy. The instructions are simple so that anyone can make these wacky innovations in minutes whilst also learning about mechanics and physics in a fun, hands-on way.

WINNER: The 2018 McGannon Center Book Prize and shortlisted for the Goddard Riverside Stephan Russo Book Prize for Social Justice The New York Times Book Review: "Riveting." Naomi Klein: "This book is downright scary." Ethan Zuckerman, MIT: "Should be required reading." Dorothy Roberts, author of Killing the Black Body: "A must-read." Astra Taylor, author of The People's Platform: "The single most important book about technology you will read this year." Cory Doctorow: "Indispensable." A powerful investigative look at data-based discrimination—and how technology affects civil and human rights and economic equity The State of Indiana denies one million applications for healthcare, foodstamps and cash benefits in three years—because a new computer system interprets any mistake as “failure to cooperate.” In Los Angeles, an algorithm calculates the comparative vulnerability of tens of thousands of homeless people in order to prioritize them for an inadequate pool of housing resources. In Pittsburgh, a child welfare agency uses a statistical model to try to predict which children might be future victims of abuse or neglect. Since the dawn of the digital age, decision-making in finance, employment, politics, health and human services has undergone revolutionary change. Today, automated systems—rather than humans—control which neighborhoods get policed, which families attain needed resources, and who is investigated for fraud. While we all live under this new regime of data, the most invasive and punitive systems are aimed at the poor. In Automating Inequality, Virginia Eubanks systematically investigates the impacts of data mining, policy algorithms, and predictive risk models on poor and working-class people in America. The book is full of heart-wrenching and eye-opening stories, from a woman in Indiana whose benefits are literally cut off as she lays dying to a family in Pennsylvania in daily fear of losing their daughter because they fit a certain statistical profile. The U.S. has always used its most cutting-edge science and technology to contain, investigate, discipline and punish the destitute. Like the county poorhouse and scientific charity before them, digital tracking and automated decision-making hide poverty from the middle-class public and give the nation the ethical distance it needs to make inhumane choices: which families get food and which starve, who has housing and who remains homeless, and which families are broken up by the state. In the process, they weaken democracy and betray our most cherished national values. This deeply researched and passionate book could not be more timely.

'Grayling brings satisfying order to daunting subjects' Steven Pinker _____ In very recent times

humanity has learnt a vast amount about the universe, the past, and itself. But through our remarkable successes in acquiring knowledge we have learned how much we have yet to learn: the science we have, for example, addresses just 5 per cent of the universe; pre-history is still being revealed, with thousands of historical sites yet to be explored; and the new neurosciences of mind and brain are just beginning. What do we know, and how do we know it? What do we now know that we don't know? And what have we learnt about the obstacles to knowing more? In a time of deepening battles over what knowledge and truth mean, these questions matter more than ever. Bestselling polymath and philosopher A. C. Grayling seeks to answer them in three crucial areas at the frontiers of knowledge: science, history and psychology. A remarkable history of science, life on earth, and the human mind itself, this is a compelling and fascinating tour de force, written with verve, clarity and remarkable breadth of knowledge. _____ 'Remarkable, readable and authoritative. How he has mastered so much, so thoroughly, is nothing short of amazing' Lawrence M. Krauss, author of A Universe from Nothing 'This book hums with the excitement of the great human project of discovery' Adam Zeman, author of Aphantasia

Human attention is in the highest demand it has ever been. The drastic increase in available information has compelled individuals to find a way to sift through the media that is literally at their fingertips. Content recommendation systems have emerged as the technological solution to this social and informational problem, but they’ve also created a bigger crisis in confirming our biases by showing us only, and exactly, what it predicts we want to see. Data versus Democracy investigates and explores how, in the era of social media, human cognition, algorithmic recommendation systems, and human psychology are all working together to reinforce (and exaggerate) human bias. The dangerous confluence of these factors is driving media narratives, influencing opinions, and possibly changing election results. In this book, algorithmic recommendations, clickbait, familiarity bias, propaganda, and other pivotal concepts are analyzed and then expanded upon via fascinating and timely case studies: the 2016 US presidential election, Ferguson, GamerGate, international political movements, and more events that come to affect every one of us. What are the implications of how we engage with information in the digital age? Data versus Democracy explores this topic and an abundance of related crucial questions. We live in a culture vastly different from any that has come before. In a society where engagement is currency, we are the product. Understanding the value of our attention, how organizations operate based on this concept, and how engagement can be used against our best interests is essential in responsibly equipping ourselves against the perils of disinformation. Who This Book Is For Individuals who are curious about how social media algorithms work and how they can be manipulated to influence culture. Social media managers, data scientists, data administrators, and educators will find this book particularly relevant to their work.

Originally published in hardcover in 2014 by G.P. Putnam's Sons.

A guide to understanding the inner workings and outer limits of technology and why we should never assume that computers always get it right. In Artificial Unintelligence, Meredith Broussard argues that our collective enthusiasm for applying computer technology to every aspect of life has resulted in a tremendous amount of poorly designed systems. We are so eager to do everything digitally—hiring, driving, paying bills, even choosing romantic partners—that we have stopped demanding that our technology actually work. Broussard, a software developer and journalist, reminds us that there are fundamental limits to what we can (and should) do with technology. With this book, she offers a guide to understanding the inner workings and outer limits of technology—and issues a warning that we should never assume that computers always get things right. Making a case against technochauvinism—the belief that technology is always the solution—Broussard argues that it's just not true that social problems would inevitably retreat before a digitally enabled Utopia. To prove her point, she undertakes a series of adventures in computer programming. She goes for an alarming ride in a driverless car, concluding “the cyborg future is not coming any time soon”; uses artificial intelligence to investigate why students can't pass standardized tests; deploys machine learning to predict which passengers survived the Titanic disaster; and attempts to repair the U.S. campaign finance system by building AI software. If we understand the limits of what we can do with technology, Broussard tells us, we can make better choices about what we should do with it to make the world better for everyone.

Longlisted for the National Book Award New York Times Bestseller A former Wall Street quant sounds an alarm on the mathematical models that pervade modern life -- and threaten to rip apart our social fabric We live in the age of the algorithm. Increasingly, the decisions that affect our lives--where we go to school, whether we get a car loan, how much we pay for health insurance--are being made not by humans, but by mathematical models. In theory, this should lead to greater fairness: Everyone is judged according to the same rules, and bias is eliminated. But as Cathy O'Neil reveals in this urgent and necessary book, the opposite is true. The models being used today are opaque, unregulated, and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination: If a poor student can't get a loan because a lending model deems him too risky (by virtue of his zip code), he's then cut off from the kind of education that could pull him out of poverty, and a vicious spiral ensues. Models are propping up the lucky and punishing the downtrodden, creating a "toxic cocktail for democracy." Welcome to the dark side of Big Data. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort r sum s, grant (or deny) loans, evaluate workers, target voters, set parole, and monitor our health. O'Neil calls on modelers to take more responsibility for their algorithms and on

policy makers to regulate their use. But in the end, it's up to us to become more savvy about the models that govern our lives. This important book empowers us to ask the tough questions, uncover the truth, and demand change. -- Longlist for National Book Award (Non-Fiction) -- Goodreads, semi-finalist for the 2016 Goodreads Choice Awards (Science and Technology) -- Kirkus, Best Books of 2016 -- New York Times, 100 Notable Books of 2016 (Non-Fiction) -- The Guardian, Best Books of 2016 -- WBUR's "On Point," Best Books of 2016: Staff Picks -- Boston Globe, Best Books of 2016, Non-Fiction

One of the most persistent concerns about the future is whether it will be dominated by the predictive algorithms of AI – and, if so, what this will mean for our behaviour, for our institutions and for what it means to be human. AI changes our experience of time and the future and challenges our identities, yet we are blinded by its efficiency and fail to understand how it affects us. At the heart of our trust in AI lies a paradox: we leverage AI to increase our control over the future and uncertainty, while at the same time the performativity of AI, the power it has to make us act in the ways it predicts, reduces our agency over the future. This happens when we forget that that we humans have created the digital technologies to which we attribute agency. These developments also challenge the narrative of progress, which played such a central role in modernity and is based on the hubris of total control. We are now moving into an era where this control is limited as AI monitors our actions, posing the threat of surveillance, but also offering the opportunity to reappropriate control and transform it into care. As we try to adjust to a world in which algorithms, robots and avatars play an ever-increasing role, we need to understand better the limitations of AI and how their predictions affect our agency, while at the same time having the courage to embrace the uncertainty of the future.

A fascinating exploration of how insights from computer algorithms can be applied to our everyday lives, helping to solve common decision-making problems and illuminate the workings of the human mind All our lives are constrained by limited space and time, limits that give rise to a particular set of problems. What should we do, or leave undone, in a day or a lifetime? How much messiness should we accept? What balance of new activities and familiar favorites is the most fulfilling? These may seem like uniquely human quandaries, but they are not: computers, too, face the same constraints, so computer scientists have been grappling with their version of such issues for decades. And the solutions they've found have much to teach us. In a dazzlingly interdisciplinary work, acclaimed author Brian Christian and cognitive scientist Tom Griffiths show how the algorithms used by computers can also untangle very human questions. They explain how to have better hunches and when to leave things to chance, how to deal with overwhelming choices and how best to connect with others. From finding a spouse to finding a parking spot, from organizing one's inbox to understanding the workings of memory, Algorithms to Live By transforms the wisdom of computer science into strategies for human living.

Now that people are aware that data can make the difference in an election or a business model, data science as an occupation is gaining ground. But how can you get started working in a wide-ranging, interdisciplinary field that's so clouded in hype? This insightful book, based on Columbia University's Introduction to Data Science class, tells you what you need to know. In many of these chapter-long lectures, data scientists from companies such as Google, Microsoft, and eBay share new algorithms, methods, and models by presenting case studies and the code they use. If you're familiar with linear algebra, probability, and statistics, and have programming experience, this book is an ideal introduction to data science. Topics include: Statistical inference, exploratory data analysis, and the data science process Algorithms Spam filters, Naive Bayes, and data wrangling Logistic regression Financial modeling Recommendation engines and causality Data visualization Social networks and data journalism Data engineering, MapReduce, Pregel, and Hadoop Doing Data Science is collaboration between course instructor Rachel Schutt, Senior VP of Data Science at News Corp, and data science consultant Cathy O'Neil, a senior data scientist at Johnson Research Labs, who attended and blogged about the course.

'One of the best books yet written on data and algorithms. . .deserves a place on the bestseller charts.' (The Times) You are accused of a crime. Who would you rather determined your fate - a human or an algorithm? An algorithm is more consistent and less prone to error of judgement. Yet a human can look you in the eye before passing sentence. Welcome to the age of the algorithm, the story of a not-too-distant future where machines rule supreme, making important decisions - in healthcare, transport, finance, security, what we watch, where we go even who we send to prison. So how much should we rely on them? What kind of future do we want? Hannah Fry takes us on a tour of the good, the bad and the downright ugly of the algorithms that surround us. In Hello World she lifts the lid on their inner workings, demonstrates their power, exposes their limitations, and examines whether they really are an improvement on the humans they are replacing. A BBC RADIO 4- BOOK OF THE WEEK SHORTLISTED FOR THE 2018 BAILLIE GIFFORD PRIZE AND 2018 ROYAL SOCIETY SCIENCE BOOK PRIZE

"Few of us really appreciate the full power of math--the extent to which its influence is not only in every office and every home, but also in every courtroom and hospital ward. In this ... book, Kit Yates explores the true stories of life-changing events in which the application--or misapplication--of mathematics has played a critical role: patients crippled by faulty genes and entrepreneurs bankrupted by faulty algorithms; innocent victims of miscarriages of justice; and the unwitting victims of software glitches"--Publisher marketing.

“Irresistible is a fascinating and much needed exploration of one of the most troubling phenomena of modern times.” —Malcolm Gladwell, author of New York Times bestsellers David and Goliath and Outliers “One of the most mesmerizing and important books I've read in quite some time. Alter brilliantly illuminates the new obsessions that are controlling our lives and offers the tools we need to rescue our businesses, our families, and our sanity.” —Adam Grant, New York Times bestselling author of Originals and Give and Take Welcome to the age of behavioral addiction—an age in which half of the American population is addicted to at least one behavior. We obsess over our emails, Instagram likes, and Facebook feeds; we binge on TV episodes and YouTube

videos; we work longer hours each year; and we spend an average of three hours each day using our smartphones. Half of us would rather suffer a broken bone than a broken phone, and Millennial kids spend so much time in front of screens that they struggle to interact with real, live humans. In this revolutionary book, Adam Alter, a professor of psychology and marketing at NYU, tracks the rise of behavioral addiction, and explains why so many of today's products are irresistible. Though these miraculous products melt the miles that separate people across the globe, their extraordinary and sometimes damaging magnetism is no accident. The companies that design these products tweak them over time until they become almost impossible to resist. By reverse engineering behavioral addiction, Alter explains how we can harness addictive products for the good—to improve how we communicate with each other, spend and save our money, and set boundaries between work and play—and how we can mitigate their most damaging effects on our well-being, and the health and happiness of our children. Adam Alter's previous book, Drunk Tank Pink: And Other Unexpected Forces that Shape How We Think, Feel, and Behave is available in paperback from Penguin.

In WEAPONS OF MASS DESTRUCTION AND TERRORISM, 2/e, Dr. James Forest and Brigadier General (Retired) Russell Howard have collected original and previously published seminal articles and essays by scientists, academics, government officials, and members of the nation’s security and intelligence communities. The editors and several of the authors write from practical field experience in nonproliferation and counterterrorism efforts. Others have had significant responsibility for developing government policies to address the threat of weapons of mass destruction and terrorism. The contributors include many significant names in the field including Bruce Hoffman, Ashton Carter, William Perry, Brian Jenkins, Jonathan Tucker, Charles Ferguson, David Albright, Gary Ackerman, and Gregory Koblentz. Unit I of the book introduces key terms and addresses important strategic and policy debates. Authors explain how the new forms of terrorism affect the post-9/11 security environment and how weapons of mass destruction could give terrorists short-term, asymmetric attack advantages over conventional military forces. Unit II offers detailed accounts of the characteristics, availability, and dangers of specific types of WMD, along with five case studies that associate theory with practice—an important feature of this volume. Unit III is focused on key dimensions of the WMD threat to critical infrastructure. Unit IV deals with past, present, and future national and international responses to—and defenses against—the threat of WMD terrorism. And in the final section of the volume, authors provide several analytical frameworks for predicting future WMD threats, and draw from historical events to identify lessons and strategies for the future. Appendices include U.S. national strategy documents on countering terrorism and standards for controlling WMD materials and technologies.

Crucial information on nuclear, chemical, and biological weapons From the diseased animal carcass hurled over the wall of a besieged castle to the nuclear suitcase bomb carried by a clandestine operative, the threat of unconventional weapons has always been a feature of warfare. Today's danger comes mainly from the potential use of nuclear, biological, and chemical (NBC) weapons of mass destruction (WMD) by international terrorists or rogue states. False alarms and misinformation about these weapons have abounded in the jittery post-9/11 atmosphere. To understand and deal with the actual threat posed requires basing response plans, policy, and reporting on actual facts. Introduction to Weapons of Mass Destruction separates fact from fiction

about NBC weaponry by providing clear, technically precise information. For each family of weapon, coverage in this handbook includes: * History and background information * Agent types and delivery mechanisms * Effects of exposure * Protection * Safe storage and handling * Decontamination * Medical treatments Drawing from a broad array of military, scientific, and safety resources, this text offers both accessibility to the general public and accuracy and depth for professional emergency responders. Additional resources include a bibliography of references and a list of addresses and telephone numbers of federal and military agencies and professional organizations of interest. With full coverage of WMDs, from high-tech, genetically modified organisms to rudimentary radiological "dirty bombs," Introduction to Weapons of Mass Destruction is an essential reference for understanding and responding to these dangerous warfare agents.

Utilizing easy-to-find and inexpensive materials, this handy resource teaches desktop warriors how to build a multitude of medieval siege weapons for the modern era. Novice combatants will learn to build 35 defense weapons, including a marshmallow catapult, a chopstick bow, a bottle cap crossbow, and a clothespin ballista. In addition to beefing up their Dark Age arsenal, would-be warriors are provided with a number of targets on which to practice their shooting skills. Clear diagrams, instructions, and safety tips for each project are included, making construction of each of these weapons simple, safe, and fun.