

## Wonders Of Nuclear Fusion Creating An Ultimate Energy Source Barbara Guth Worlds Of Wonder Science Series For Young Readers

What does it take to be a STEM genius? Check out these exciting, highly readable profiles of a dozen contemporary women who are on the cutting edge of scientific research. Searching the cosmos for a new Earth. Using math to fight human trafficking. Designing invisible (and safer) cars. Unlocking climate-change secrets. All of this groundbreaking science, and much more, is happening right now, spearheaded by the diverse female scientists and engineers profiled in this book. Meet award-winning aerospace engineer Tiera Fletcher and twelve other science superstars and hear them tell in their own words not only about their fascinating work, but also about their childhoods and the paths they traveled to get where they are—paths that often involved failures and unexpected changes in direction, but also persistence, serendipity, and brilliant insights. Their careers range from computer scientist to microbiologist to unique specialties that didn't exist before some amazing women profiled here created them. Here is a book to surprise and inspire not only die-hard science fans, but also those who don't (yet!) think of themselves as scientists. Back matter includes reading suggestions, an index, a glossary, and some surprising ideas for how to get involved in the world of STEM.

Explains the nuclear fusion process, examines the claims of room temperature controlled fusion in the laboratory, and discusses the impact of the discovery

Chronicles the last half century's haphazard attempt to harness fusion energy, describing how governments and research teams throughout the world have employed measures ranging from the controversial to the humorous.

This book is a history of the future. It shows how our contemporary understanding of the Net is shaped by visions of the future that were put together in the 1950s and 1960s.

The Harlot and the Beast is the embodiment of Adam and Eve and the fabled Garden of Eden -- solving the final mystery of God foretold by St. John of Revelation (Rev. 10:7). Harlots are about individuals, institutions, and governments positioned to benefit Mankind, but instead, exploit and strip everyone of their innocence. The harlot receives her power from the beast that is the rule of law, ordinances, and traditions. Society is St. John's "Mystery Babylon" that gives birth to the harlots (Rev. 17:5). Six, Six, Six is characterized as the unholy trinity of Man -- psychological, social, and political, further symbolizing the harlot and the beast. The new-world order of 1989 began the relentless march towards a one-world government. The new-world order proves to be the reunification of Adam, Eve, the Serpent, the Tree of Knowledge of Good and Evil, and the Tree of Life that forms unholy, nationalist trade alliances. For forty years, the unholy unification evolves into a seven-year apocalypse, ending the 2,000-year grace period after Christ's death. The life, death, and resurrection of Christ provide the clues for what all of Mankind has to do to overcome his nemesis, 6,6,6, during apocalypse to receive immortality or face eternal death.

All around us we see the wonders of our earth. Man has worked for centuries to solve some of the puzzles locked within creation: how the atmosphere maintains a healthy balance for human life; how tides exist; how humans and plants cycle through oxygen and carbon dioxide; how the sun creates energy through nuclear fusion; how bees pollinate the plants of our favorite foods; how ocean currents keep our climate in check; how animals instinctively follow food chains; and many more. These mysteries are presented in this study book as part of God's original design for earth. To contrast, snapshots of our earth today are studied. The reader is asked to consider how man's actions have negatively impacted the original design. By man's free will, can we make changes now that will improve this planet for future generations? God's Good Earth is arranged as 15 lessons, for the purposes of study in a small group. However, an individual could simply follow the "lessons" as chapters in any non-fiction book. The subtitle, an Environmental Bible Study, refers to the use of numerous bible references pertinent to aspects of creation. These and the questions posed are not particular to any denomination or belief system. Ultimately this book's goal is to increase awareness and encourage action to improve the condition of the earth.

The Gribbins relate the developments in 20th-century astronomy that have led to the shattering realization that all life is made of stardust scattered across the universe in great stellar explosions from supernovae. The authors eloquently explain how the physical structure of the universe has produced conditions ideal for life. 22 illustrations.

Science starts to get interesting when things don't make sense. Even today there are experimental results that the most brilliant scientists can neither explain nor dismiss. In the past, similar anomalies have revolutionised our world: in the sixteenth century, a set of celestial irregularities led Copernicus to realise that the Earth goes around the sun and not the reverse. In 13 Things That Don't Make Sense Michael Brooks meets thirteen modern-day anomalies that may become tomorrow's breakthroughs. Is ninety six percent of the universe missing? If no study has ever been able to definitively show that the placebo effect works, why has it become a pillar of medical science? Was the 1977 signal from outer space a transmission from an alien civilization?

Spanning fields from chemistry to cosmology, psychology to physics, Michael Brooks thrillingly captures the excitement and controversy of the scientific unknown.

**#1 NEW YORK TIMES BEST SELLER** • In this urgent, authoritative book, Bill Gates sets out a wide-ranging, practical—and accessible—plan for how the world can get to zero greenhouse gas emissions in time to avoid a climate catastrophe. Bill Gates has spent a decade investigating the causes and effects of climate change. With the help of experts in the fields of physics, chemistry, biology, engineering, political science, and finance, he has focused on what must be done in order to stop the planet's slide to certain environmental disaster. In this book, he not only explains why we need to work toward net-zero emissions of greenhouse gases, but also details what we need to do to achieve this profoundly important goal. He gives us a clear-eyed description of the challenges we face. Drawing on his understanding of innovation and what it takes to get new ideas into the market, he describes the areas in which technology is already helping to reduce emissions, where and how the current technology can be made to function more effectively, where breakthrough technologies are needed, and who is working on these essential innovations. Finally, he lays out a concrete, practical plan for achieving the goal of zero emissions—suggesting not only policies that governments should adopt, but what we as individuals can do to keep our government, our employers, and ourselves accountable in this crucial enterprise. As Bill Gates makes clear, achieving zero emissions will not be simple or easy to do, but if we follow the plan he sets out here, it is a goal firmly within our

reach.

Game-changing trends are coming in business, technology, workforce, economy, security, and environment. Climate change, energy demand, and population growth will redefine global risk and power. Exponential new technologies will emerge in digital money, mobile commerce, and big data. An explosive new middle class of over one billion consumers will enter the marketplace. Every nation, job, business, and person will be transformed. To thrive in this future you have to become predictive, adaptive, and agile—to become Future Smart. Dr. James Canton, a renowned global futurist and visionary business advisor, illuminates the pivotal forces and global power shifts that everyone must understand today to thrive in a rapidly changing landscape: Regenerative medicine will extend our lifetimes and rebuild our bodies Robots and drones will drive our cars, teach our kids, and fight our wars Smart machines will design, manage, and service 40% of all global businesses—energy, commerce, finance, and manufacturing—without humans Digital consumers who live always connected will challenge every business to change its strategy Climate change wars will redefine security and resources Most of us are not prepared to meet the challenges the future will bring, but these changes are coming fast. Armed with knowledge, those who are Future Smart can take action to reinvent themselves, their businesses, and their world.

Within the last forty years, scientific discoveries and knowledge about our universe contain unprecedented theological implications. They imply that the creator exists, more so than ever before. These discoveries have developed a worldview that challenges both theologians and scientists to engage in a mutually fruitful dialogue. From Creation to Re-Creation uniquely presents God's accomplishments as author Daniel Lazich transports himself to a time when authors wrote creation narratives to depict the contrast between the ancient epics and biblical narrative. It forcefully asserts that the creation of this world and humankind was accomplished by the Creator, who loves humanity selflessly. This assertion is backed by the most advanced study and research concerning our universe's nature. Lazich writes that the final observer in quantum cosmology and God in the Bible are the same. From Creation to Re-Creation employs unprecedented theological implications to assert that the creator's existence is necessary for the universe and humankind in it to exist.

Originally published in 1983, this book presents both the technical and political information necessary to evaluate the emerging threat to world security posed by recent advances in uranium enrichment technology. Uranium enrichment has played a relatively quiet but important role in the history of efforts by a number of nations to acquire nuclear weapons and by a number of others to prevent the proliferation of nuclear weapons. For many years the uranium enrichment industry was dominated by a single method, gaseous diffusion, which was technically complex, extremely capital-intensive, and highly inefficient in its use of energy. As long as this remained true, only the richest and most technically advanced nations could afford to pursue the enrichment route to weapon acquisition. But during the 1970s this situation changed dramatically. Several new and far more accessible enrichment techniques were developed, stimulated largely by the anticipation of a rapidly growing demand for enrichment services by the world-wide nuclear power industry. This proliferation of new techniques, coupled with the subsequent contraction of the commercial market for enriched uranium, has created a situation in which uranium enrichment technology might well become the most important contributor to further nuclear weapon proliferation. Some of the issues addressed in this book are: A technical analysis of the most important enrichment techniques in a form that is relevant to analysis of proliferation risks; A detailed projection of the world demand for uranium enrichment services; A summary and critique of present institutional non-proliferation arrangements in the world enrichment industry, and An identification of the states most likely to pursue the enrichment route to acquisition of nuclear weapons.

. . . human kind cannot bear very much reality. T. S. ELIOT, Four Quartets When I was a little child, I lived in an old and somewhat rickety house by the sea. When the winter wind blew, the house would shake and tremble, and cold drafts would whistle through cracks in the walls. You might have thought that lying in bed in a dark room on such cold, windy nights would have frightened me. But it had just the opposite effect: having known this environment since birth, I actually found the shaking of the house, the whistling of the wind, and the crashing of the sea to be comforting, and I was lulled to sleep by these familiar sounds. They signaled to me that all was right with the world and that the forces of nature were operating in the normal way. But I did have a problem. On the dimly lit landing of the staircase leading up to my bedroom, there was a large and dark picture of a male lion, sitting as such lions do with his massive paws in front of him and his head erect, turned slightly to the right, and staring straight out at you with yellow blazing eyes. I had great difficulty getting past that lion. Someone would have to hold my hand and take me up to bed, past the dreaded picture.

IN THE NEWS Podcast — Building the H Bomb: A Personal History Hosted by Milt Rosenberg (1590 WCGO), 25 June 2015 Building the H-Bomb: The Big Idea APS News, June 2015 (Volume 24, Number 6) Behind the Making of a Super Bomb The Washington Post, 22 May 2015 Hydrogen Bomb Physicist's Book Runs Afoul of Energy Department The New York Times, 23 March 2015 More In this engaging scientific memoir, Kenneth Ford recounts the time when, in his mid-twenties, he was a member of the team that designed and built the first hydrogen bomb. He worked with — and relaxed with — scientific giants of that time such as Edward Teller, Enrico Fermi, Stan Ulam, John von Neumann, and John Wheeler, and here offers illuminating insights into the personalities, the strengths, and the quirks of these men. Well known for his ability to explain physics to nonspecialists, Ford also brings to life the physics of fission and fusion and provides a brief history of nuclear science from the discovery of radioactivity in 1896 to the ten-megaton explosion of “Mike” that obliterated a Pacific Island in 1952. Ford worked at both Los Alamos and Princeton's Project Matterhorn, and brings out Matterhorn's major, but previously unheralded contribution to the development of the H bomb. Outside the lab, he drove a battered Chevrolet around New Mexico, a bantam motorcycle across the

country, and a British roadster around New Jersey. Part of the charm of Ford's book is the way in which he leavens his well-researched descriptions of the scientific work with brief tales of his life away from weapons. Contents: The Big Idea The Protagonists The Choice The Scientists, the Officials, and the President Nuclear Energy Some Physics Going West A New World The Classical Super Calculating and Testing Constructing Matterhorn Academia Cowers New Mexico, New York, and New Jersey The Garwin Design Climbing Matterhorn More Than a Boy Readership: A memoir for general readership in the history of science. Key Features: It contains real physics, clearly presented for non-specialists Combining historical scholarship and his own recollections, the author offers important insights into the people and the work that led to the first H bomb Personal anecdotes enliven the book Keywords: Nuclear Weapons; Atomic Weapons; H Bomb; Thermonuclear Weapons; Nuclear Physics; Nuclear History; Thermonuclear History; Los Alamos; Edward Teller; Stanislaw Ulam; John Wheeler; Project Matterhorn Reviews: "It was a great treat to read a book that's well-written, informative, and gets the science right. It is these personal recollections and descriptions; the fact that it is a personal and first-hand account of a unique time in history and a remarkable scientific and technical achievement that made this book so enthralling. This is an engaging account of a young scientist involved in a remarkable project." P Andrew Karam The Ohio State University "Ford's book is a valuable resource for anyone interested in the history of the H bomb and its role in the Cold War, and in how that work affected the life and career of an individual involved." Physics Today "Personal memories are the book's greatest strength. Ford doesn't glorify, or apologize for, his work on the H-bomb. He simply tells it as it was. As a result, this is an engagingly human glimpse into the world of physics in the US in the early 1950s." Physics World

From a young, award-winning scientist, a look at one of the most compelling and historic turning points of our time—the race to harness the power of the stars and produce controlled fusion, creating a practically unlimited supply of clean energy. The most important energy-making process in the universe takes place inside stars. The ability to duplicate that process in a lab, once thought out of reach, may now be closer than we think. Today, all across the world teams of scientists are being assembled by the world's boldest entrepreneurs, big business, and governments to solve what is the most difficult technological challenge humanity has ever faced: building the equivalent of a star on earth. If their plans to capture star power are successful, they will unlock thousands, potentially millions, of years of clean, carbon-free energy. Not only would controlled nuclear fusion go a long way toward solving the climate crisis, it could help make other highly desired technological ambitions possible—like journeying to the stars. Given the rising alarm over deterioration of the environment, and the strides being made in laser and magnetic field technology, powerful momentum is gathering behind fusion and the possibilities it offers. Arthur Turrell is an award-winning young plasma physicist with a unique talent for making complex science accessible. In *The Star Builders*, he describes fascinating star machines with ten times as many parts as the NASA Space Shuttle, and structures that extend over 400 acres. And he spotlights the individuals, firms, and institutions racing for the finish line: science-minded entrepreneurs like Jeff Bezos and Peter Thiel, companies like Goldman Sachs and Google, universities like Oxford and MIT, and virtually every rich nation. It's an exciting and game-changing international quest that, when completed, will make all of us winners.

In this enlightening and provocative exploration, Dave Prueett sets out a revolutionary new understanding of our place in the universe, one that reconciles the rational demands of science with the deeper tugs of spirituality.

*The Creation* by T.S. Hue Van Le All scientists and physicists around the world still depend upon the old and obsolete quantum theory of photons created by Albert Einstein and other physicists for a long time ago; light is the most vital source of energy to support life and prosperity of all nature in the whole Universe required to be correctly understood and applicable in modern physics. Photons do not have anything to do with mass in motion either as Albert Einstein's theory of mass in motion. The tiny piece of matter split from proton to proton, extreme collision, is not God's particle; it is a dark matter that does not have atomic or subatomic particularity. The Dark Energy solely brings supernatural science and physical science together with a unique goal of finding the truth (God) that scientists and physicists hesitate to do so. It discovers the new technique applicable to figure out the true value of the relativity of mass in linear motion and in angular motion applicable in any space without limitation set forth by Einstein. We also find out the new quantum theory of photons that could create the major changes in modern physics regarding photon effects and energy field in the future.

Like detectives sleuthing out the greatest mystery of all, scientists over the centuries have uncovered clues about the structure and origins of the universe. The work of Galileo, Newton, Einstein, and a host of other tenacious researchers and thinkers reveals a cosmos of almost unimaginable wonder and beauty. If we then honestly follow the evidence of science wherever it leads, where do we end up? Karl Giberson takes us on a fascinating guided tour of planets and protons, galaxies and gamma rays. We discover that if gravity were slightly stronger, neutrons a tiny bit lighter, the size of our sun somewhat larger or a dozen other factors altered by fractions, there would be no life. The author shows that for many observers, even those who do not embrace religious faith, all of this looks suspiciously like the expression of a grand plan--a cosmic architecture capable of both supporting life such as ours, and inspiring observers like us to seek out hints of a creator. Join this cosmic expedition and discover the wonder of it all.

For more than thirty years, the prospect of unlimited fusion energy has attracted scientists and the public. Joan Lisa Bromberg's book documents the history of the American magnetic fusion reactor program. It is also a lively account that will inform interested citizens of limited technical background who are concerned with the nation's energy strategy. The book carries the story from the program's inception under the auspices of the Atomic Energy Commission in 1951 to its operations under the then-new Department of Energy in 1978. Fusion concentrates on the four federally funded laboratories where most of the money has been spent (about \$2 billion so far): Oak Ridge, Los Alamos, Lawrence Livermore, and Princeton. It recounts the crucial experiments along the way - the ones that succeeded, the ones that failed, the ones that showed "promise." And it explains and diagrams the various magnetic configurations and devices that were developed and tested: the "stellarator," the "pinch," the "mirror," the "tokamak." With the government and the public constantly looking over the scientists' shoulders, it is no surprise that

research directions were heavily influenced by extrascientific pressures: "the major decisions in fusion research have always emerged from a medley of technical, institutional, and political considerations." The intermingling of science and politics is demonstrated in specific detail. The magnetic fusion reactor project is, of course, ongoing. Latest target date for producing commercial power: 2050. Estimated total cost: \$15 billion. Dr. Bromberg has written extensively on topics in the history of modern science.

Provides a comprehensive overview of nuclear fusion, focusing on its applications as a viable form of energy and discussing how scientists have approached and developed fusion.

Engineers at the U.S. Department of Energy's Princeton Plasma Physics Laboratory are using the process shown here to create a super-strong weld for the upgrade of a key component of the Lab's experimental nuclear fusion reactor.

Offers an account of child genius Taylor Wilson's successful quest to build his own nuclear reactor at the age of 14, and an exploration of how gifted children can be nurtured to do extraordinary things. 35,000 first printing. Illustrations.

Nuclear Fusion and Fission delves into nuclear physics and the scientists responsible for the discovery of splitting and fusing an atom. The book begins with the very basic building blocks of science, breaking down the different types of energy and how we use them, the materials that make up an atom, and our search for the perfect renewable energy source. Set against the cultural backdrop of World War II, later chapters follow each significant theory that led to the creation of the world's most dangerous weapon as well as some of its most widely used medical and food production processes today.

Science fiction is a literary genre based on scientific speculation. Works of science fiction use the ideas and the vocabulary of all sciences to create valid narratives that explore the future effects of science on events and human beings. Science Fact and Science Fiction examines in one volume how science has propelled science-fiction and, to a lesser extent, how science fiction has influenced the sciences. Although coverage will discuss the science behind the fiction from the Classical Age to the present, focus is naturally on the 19th century to the present, when the Industrial Revolution and spectacular progress in science and technology triggered an influx of science-fiction works speculating on the future. As scientific developments alter expectations for the future, the literature absorbs, uses, and adapts such contextual visions. The goal of the Encyclopedia is not to present a catalog of sciences and their application in literary fiction, but rather to study the ongoing flow and counterflow of influences, including how fictional representations of science affect how we view its practice and disciplines. Although the main focus is on literature, other forms of science fiction, including film and video games, are explored and, because science is an international matter, works from non-English speaking countries are discussed as needed.

During the course of two years living outdoors in Alaska Garrison Clifford Gibson wrote philosophical essays on cosmology and Christianity considering how spirit and the Universe are reconciled with reason. The author's interests reading popular cosmology, the Bible, philosophy and history yielded construction of a synthesis of logic, epistemology, philosophy of language and the gospel into a world view examining transcendence of mass and energy through the Spirit.

A riveting look at how an alternative source of energy is revolutionising nuclear power, promising a safe and clean future for millions, and why thorium was sidelined at the height of the Cold War In this groundbreaking account of an energy revolution in the making, award-winning science writer Richard Martin introduces us to thorium, a radioactive element and alternative nuclear fuel that is far safer, cleaner, and more abundant than uranium. At the dawn of the Atomic Age, thorium and uranium seemed to be in close competition as the fuel of the future. Uranium, with its ability to undergo fission and produce explosive material for atomic weapons, won out over its more pacific sister element, relegating thorium to the dustbin of science. Now, as we grapple with the perils of nuclear energy and rogue atomic weapons, and mankind confronts the specter of global climate change, thorium is re-emerging as the overlooked energy source as a small group of activists and outsiders is working, with the help of Silicon Valley investors, to build a thorium-power industry. In the first book mainstream book to tackle these issues, Superfuel is a story of rediscovery of a long lost technology that has the power to transform the world's future, and the story of the pacifists, who were sidelined in favour of atomic weapon hawks, but who can wean us off our fossil-fuel addiction and avert the risk of nuclear meltdown for ever.

This carefully researched book presents facts and arguments showing, beyond a doubt, that nuclear fusion power will not be technically feasible in time to satisfy the world's urgent need for climate-neutral energy. The author describes the 70-year history of nuclear fusion; the vain attempts to construct an energy-generating nuclear fusion power reactor, and shows that even in the most optimistic scenario nuclear fusion, in spite of the claims of its proponents, will not be able to make a sizable contribution to the energy mix in this century, whatever the outcome of ITER. This implies that fusion power will not be a factor in combating climate change, and that the race to save the climate with carbon-free energy will have been won or lost long before the first nuclear fusion power station comes on line. Aimed at the general public as well as those whose decisions directly affect energy policy, this book will be a valuable resource for informing future debates.

There has been an increase in interest worldwide in fusion research over the last decade and a half due to the recognition that a large number of new, environmentally attractive, sustainable energy sources will be needed to meet ever increasing demand for electrical energy. Based on a series of course notes from graduate courses in plasma physics and fusion energy at MIT, the text begins with an overview of world energy needs, current methods of energy generation, and the potential role that fusion may play in the future. It covers energy issues such as the production of fusion power, power balance, the design of a simple fusion reactor and the basic plasma physics issues faced by the developers of fusion power. This book is suitable for graduate students and researchers working in applied physics and nuclear engineering. A large number of problems accumulated over two decades of teaching are included to aid understanding.

Recent books have raised the public consciousness about the dangers of global warming and climate change. This book is intended to convey the message that there is a solution. The solution is the rapid development of hydrogen fusion energy. This energy source is inexhaustible and, although achieving fusion energy is difficult, the progress made in the past two decades has been remarkable. The physics issues are now understood well enough that serious engineering can begin. The book starts with a summary of climate change and energy sources, trying to give a concise, clear, impartial picture of the facts, separate from conjecture and sensationalism. Controlled fusion -- the difficult problems and ingenious solutions -- is then explained using many new concepts. The bottom line -- what has yet to be done, how long it will take, and how much it will cost -- may surprise you. Francis F. Chen's career in plasma has extended over five decades. His textbook *Introduction to Plasma Physics* has been used worldwide continuously since 1974. He is the only physicist who has published significantly in both experiment and theory and on both magnetic fusion and laser fusion. As an outdoorsman and runner, he is deeply concerned about the environment. Currently he enjoys bird photography and is a member of the Audubon Society.

The essential book for understanding the challenges and technologies that will shape the next few decades How will we live in the future? And what will the human race become? Will we nurture designer babies, be served by intelligent robots, have personal 3D printers, and grow products on the vine using synthetic biology? Or will shortages of oil, fresh water and other natural resources constrain our lifestyles and lead to industrial decline? In this fascinating guide, futurist Christopher Barnatt examines 25 known challenges and technologies that will help shape the next few decades. From Peak Water to vertical farms, nanotechnology to augmented reality, and electric cars to space travel, a startling picture is painted of future possibilities that no individual or business will be able to ignore. Highlighting life-changing research and innovation from over 250 companies, universities and non-profit organizations around the globe, *25 Things You Need to Know About the Future* is a startling, frightening and powerful blueprint for anybody who wants to future gaze or future shape.

This book explores and explains scientific mysteries and principles, leavened with tongue-in-cheek humor and an abundance of illustrations. Chapters are short, but give an understanding of technology and science not available elsewhere. Questions include: • What holds a satellite up while it goes around the Earth? • Why is the sky (made out of clear air!) blue instead of green, or just black as night like the sky that high altitude jumper Felix Baumgartner saw? • How is laser light different from “normal” light? • Did Columbus really discover that the Earth is round? • Which one invention will assuredly survive our civilization? • Why can't you travel back in time? If you often feel embarrassed because you don't have a clue about lasers, the difference between volts, amps and watts, or how jet planes really work – but you would like to understand the physical principles of our modern world, whether you're a teen or a parent – this book is for you! To understand the basics of quantum mechanics, or of protons, neutrons and electrons, you don't need algebra, calculus, or a lot of equations or technical buzzwords. Too many people have been soured on science by science teachers who have made simple concepts seem complex. This book is the antidote: all it requires is your curiosity. Advance praise for *No Wonder You Wonder!*: “From beginning to end, and with laugh after laugh, I enjoyed every single word of this remarkable book. Phipps is a hell of a good writer, and the kind of physics teacher that I would have loved as a young student. *No Wonder You Wonder* can be engrossing for anyone with a bit of curiosity, not just the scientific minded.” – Christophe Bonnal, Chief Engineer, CNES (French Space Agency) “*No Wonder You Wonder* is a fantastic book. Covering topics such as space, matter, and the energy within the universe, this book does an excellent job of clarifying these topics. It's a great read for young scientists and aspiring physicists.” – August R., high school freshman

Alan Butler provides scientific evidence for time travel not only being real, but having already happened. Many key events in the history of humankind show evidence of having been intended by human beings from the future, who took specific actions that would steer the world in a particular direction. This 'intervention' theory is based on sound mathematical and scientific arguments, consistent with Einstein's demonstration of the possibility of time travel. Time travellers - some of them anonymous, some celebrated in history - have made alterations to our planetary and global environment (the creation of the Moon, the extinction of the dinosaurs) that were necessary to allow us to exist and to develop as an intelligent species. They have also left us markers that show what steps we need to take to progress further. All these interventions were placed retroactively within the 'timeline' for future generations, not for those immediately affected. Key interventions include: The creation of the Moon If the Moon did not exist, nor would we. The author demonstrates that the Moon was built to make it possible for the Earth to become an incubator of life. The metal revolution The development of humanity's mastery over metal is a mystery, since the required temperatures for smelting metal exceeded anything that Neolithic man would have needed for any purpose. So how and why did smelting start? Add to that the fact that the first usable metal, bronze, is an alloy of copper and the much rarer tin and we begin to see the scale of the puzzle. Intervention supplies a convincing answer. The megalithic yard Neolithic peoples created a sophisticated, fully integrated system of measurements based on the actual size and mass of the Earth - a 'marker' for future scientific developments, surfacing again, apparently out of the blue, in 18th-century Washington, DC. But the most spectacular revelation lies in our future. By looking at the mathematics underlying many of the inventions, we discover, with unexpected precision, when our first contact with our future selves will happen. This will occur within the lifetime of most readers of this extraordinary book.

This book provides for the first time an insider's view into ITER, the biggest fusion reactor in the world, which is currently being constructed in southern France. Aimed at bringing the “energy of the stars” to earth, ITER is funded by the major economic powers (China, the EU, India, Japan, Korea, Russia and the US). Often presented as a “nuclear but green” energy source, fusion could play an important role in the future electricity supply. But as delays accumulate and budgets continue to grow, ITER is currently a star partially

