



The Greatest Story Ever Told--So Far

Lawrence M. Krauss

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Internationally renowned, award-winning theoretical physicist, *New York Times* bestselling author of *A Universe from Nothing*, and passionate advocate for reason, Lawrence Krauss tells the dramatic story of the discovery of the hidden world of reality—a grand poetic vision of nature—and how we find our place within it.

*In the beginning there was light.
But more than this, there was gravity.
After that, all hell broke loose...*

In *A Universe from Nothing*, Krauss revealed how our entire universe could arise from nothing. Now, he reveals what that something—reality—is. And, reality is not what we think or sense—it's weird, wild, and counterintuitive; it's hidden beneath everyday experience; and its inner workings seem even stranger than the idea that something can come from nothing.

In a landmark, unprecedented work of scientific history, Krauss leads us to the furthest reaches of space and time, to scales so small they are invisible to microscopes, to the birth and rebirth of light, and into the natural forces that govern our existence. His unique blend of rigorous research and engaging storytelling invites us into the lives and minds of the remarkable, creative scientists who have helped to unravel the unexpected fabric of reality—with reason rather than superstition and dogma. Krauss has himself been an active participant in this effort, and he knows many of them well. *The Greatest Story* challenges us to re-envision ourselves and our place within the universe, as it appears that “God” does play dice with the universe. In the incisive style of his scintillating essays for *The New Yorker*, Krauss celebrates the greatest intellectual adventure ever undertaken—to understand why we are here in a universe where fact is stranger than fiction.

The Greatest Story Ever Told--So Far Details

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From Reader Review The Greatest Story Ever Told--So Far for online ebook

Radiantflux says

72nd book for 2018.

About one-third into the book I started to dislike Krauss, by the two-thirds mark my dislike turned to a mild form of loathing. He comes across as smug and arrogant. He makes no effort to explain complex physics in a manner that would be accessible to average reader. And he peppers the book with stupid rants against religion. The title is beyond ironic.

It's just all an ugly hot mess of a book.

2-stars.

11811 (Eleven) says

This was too smart for me. I'm throwing in the towel halfway through. I imagine this would be more enjoyable for people who don't suck at science.

Lew Watts says

A couple of weeks ago, and shortly after starting this book, I had the benefit of hearing Lawrence Krauss expounding his thoughts at a book launch in Chicago—he speaks as well as he writes, and his explanations are full of humor and allegory. Who can resist this approach to relativity? Krauss is driving his car at (say) 30mph, with his 2 year old daughter in the backseat. Suddenly, she projectile vomits at 10 mph onto his head. The vomit is therefore traveling at 40 mph, but to an observer by the side of the road...I'll let you fill in the next sentences.

While later chapters are, perhaps, less imaginative (though much more rigorous), Krauss is able to introduce and explain some of the most astounding discoveries on the path towards the still-elusive Grand Unified Theory. I found the deeper significance of the Higgs Boson fascinating, that we exist within a scalar Higgs field that is perfectly poised to allow the presence of galaxies, stars, particles and, of course, ourselves. But Krauss goes out of his way not to attribute this to any act of "God," or that the universe "was made for us." Instead, he posits a more humble explanation, that we have evolved "in a universe whose laws exist independently of our own being." I have, however, one complaint—given Krauss' compelling (to me) secular arguments, I found the titles of his 3 major sections ("Genesis," "Exodus," and "Revelations"), and that each chapter is headed by a biblical quote, a little bit distasteful, like rubbing any religious readers' noses in it. The book ends with a critical analysis of what is not known, of some of the uncertainties remaining, some of which are major (dark matter is one). We live in hope that new discoveries can unlock these so that we may enjoy a further edition of this wonderful book. And by the way, how many science books can claim to have been edited by Cormac McCarthy, or partly written in Christopher Hitchens' guesthouse?

Ginger Griffin says

Looking to understand the ultimate nature of reality, but not into drugs? Try particle physics! And start with this book, which provides an excellent introduction to the subject. BTW, just want to say that if the Higgs field condensate transitions to a lower-energy state, well ... this universe was fun while it lasted. ;-)

Nick Mclean says

This book is a fascinating journey through modern particle physics, with an emphasis on the strange, confounding but inspiring world sub atomic physics. Lawrence Krauss structures his book like a scriptural text or one of Homer's epic poems. His decision to begin each chapter with a quote from the Bible is surely a cheeky nod to his own atheism, noting that scientists can use the techniques of religion while discarding its certainty and dogma. The three sections of the book: Genesis, Exodus and Revelation follow a broad trajectory from Newton through Faraday, Einstein and towards modern figures like Glashau, Feynman, and Higgs.

In the Greatest Story Ever Told So Far Krauss manages a delicate balancing act. He writes eloquently and clearly but still captures the science in all its puzzling complexity. Be warned this is not an easy subject. This is not to say it is a laborious tome, just that sub-atomic physics might be the most complex branch of science, and anyone without grounding in these fields will find themselves re-reading passages in this book. Krauss writes for laypeople, but he refuses to condescend to his audience by simplifying incredibly complex material.

Many readers will be at least loosely familiar with Newton and Faraday and Einstein, but Krauss details how scientific progress is painstaking, sometimes whole branches are revealed to be false, other times neglected branches of main fields take on new urgency because of practical discoveries. And technological development enables us to discover things that were invisible to our forebears. Krauss takes readers through quantum mechanics, electromagnetism, and the electroweak force, electrodynamics, supersymmetry and efforts of the Large Hadron Collider (LHC) to discover secrets of the strong force and dark matter. The book ends with the discovery of the Higgs Boson and speculation about the promise and peril of further discoveries at the LHC, and how what is or is not discovered may confirm elegant theories or reignite interest in other theories. Whatever happens, Krauss humorously notes, scientists will be surprised. Having one's theories backed up by evidence is every bit as surprising and unlikely as having to go back to the drawing board. And every answer, every discovery just opens up a new litany of questions and further searching.

It is an enlightening read. Normally I find scientific overviews entertaining, but the least interesting type of science book. Krauss in his professorial way makes complex science accessible by trusting in the intelligence of his audience. I was particularly fascinated by the developments in the latter 20th century. In many ways it was a golden age of physics. Glaschau, Weinberg and Feynmann transformed the field.

The more we learn, the smaller we seem in the great scheme of things. Yet the author notes that the lack of definite answers need not depress us. Knowledge of our ignorance, in this sense, is inspiring. We have so much more to learn. At the end of the book, Krauss reminds us that one of the most exciting things about

science is that the best chapter has yet to be written. Discoveries this century may transform the way we see the universe. Those of us who are not participating can still enjoy the ride.

Charlene says

It doesn't matter that what Krauss wrote about in this book has been well told many times over by other authors. I will read anything he writes because he always writes from a perspective filled with immense awe. It is a particular treat to listen to him narrate his own books in audio version. He comes off as humble, generous, curious, excited, intelligent, and completely inspired. It always makes me wonder how he can be friends with Richard Dawkins. Every time I read or listen to Krauss, I feel certain Dawkins must annoy him often. They are so very different. Whenever Dawkins writes, he is a total name dropper. It's not so much that he is captivated by the work his peers have done, whenever Dawkins name drops, it seems to be with the sole purpose of confirming his affiliation with the neo-Dawinian gang, and I mean gan in the literal sense. Dawkins et al. constantly threaten progressive scientists who challenge their work. When Krauss writes of the work done by others physicists, it is clear he has a deep and genuine appreciation for what they have taught the world. When Krauss challenges the concept of a supernatural man in the sky, he does so without sarcasm or meanness. In every page, it is clear that Krauss is just so very in love with how the universe works, he cannot bear to keep it to himself and is compelled, absolutely compelled, to share The Greatest Story Ever Told with others. And even if you have heard it before, I doubt you can help falling in love right along with him.

Jeff says

I've been a fan of Lawrence Krauss for years. I've heard him on podcasts and read him in Scientific American but have not read any of his books as of yet. When I heard him announce that he wrote a new book I kept an eye out for it at my local B&N so I could get on it right away.

The Greatest Story Ever Told -- So Far: Why Are We Here is primarily the story of the discovery of the building blocks of the universe at the subatomic level which are being used to explain how the universe came about and why it behaves the way it does. The book is divided into three chapters: Genesis, Exodus, and Revelation, and, as the name of the book suggests, the narrative is an analogy between the Bible's "greatest story" and the actual unraveling of man's understanding of the universe based on natural discoveries rather than supernatural explanations. Krauss even adds a Bible verse to the beginning of each chapter for further effect.

The book begins with an excellent prologue which really got my blood pumping and piqued my interest. The first chapter begins with the Allegory of the Cave from Plato's *Republic* which the reader may remember from high school or college science. Krauss refers back to the Cave Allegory throughout the book, relating it to particular discoveries. The book gradually picks up steam as we meet the greatest scientists of all time beginning with Newton and learn the details of the greatest physics discoveries of all time ending with the those of the Large Hadron Collider (LHC).

What I liked about the book were the stories of the numerous scientists who advanced our understanding of physics. For most scientists, Krauss fills in their background, proposals, and discoveries in an interesting and personable way. Krauss knows many of the contemporary scientists personally. He spends a lot of time discussing recent discoveries, notably the Higgs boson which resulted in Peter Higgs winning the Nobel Prize in 2013. And one can't help but have an increased admiration for the giants that went before Higgs such as Faraday, Fermi, Gell-Mann, Planck, and many others.

Probably my favorite part of the book was the section about the LHC, which Krauss states is the "most complicated machine humans have ever constructed". The three pages Krauss uses to list the characteristics of the LHC boggle the mind! For example: the LHC's 27 kilometer tunnel ring, located 175 meters below the pastoral Geneva countryside, utilizes 1,600 super conducting magnets, most weighing over 27 tons EACH; the alignment of the beams used for collisions are so precise that adjustments have to be made for the moon's gravity based on its position to Geneva; and the cooling superfluid used keeps the magnets operating at a temperature less than two degrees above absolute zero, colder than the radiation background in interstellar space. I need to find a book about the incredible LHC.

The book delves deep into complex physics subjects such as quantum theory, antimatter, electromagnetism, relativity, superconductivity, and gauge theory. My only complaint of the book would be that some of the chapters reminded me of how I felt in of my advanced college physics classes - my brain hurt trying to wrap my head around some of the concepts. Much of this is just too complicated for the average reader to grasp.

Overall, it was an interesting book and I learned a lot. The greatest story is still being written and one needs only to pay attention to the latest science news to watch it unfold.

Book says

The Greatest Story Ever Told – So Far: Why Are We Here? by Lawrence M. Krauss

"The Greatest Story Ever Told – So Far" tells the story of our hidden world. Award-winning theoretical physicist and iconic defender of reason, Lawrence M. Krauss takes the reader on a five hundred year journey of progressive scientific understanding of our reality. This interesting 337-page book includes twenty-three chapters broken out by the following three parts: 1. Genesis, 2. Exodus, and 3. Revelation.

Positives:

1. A well-written, well-researched book.
2. A fascinating topic in the masterful hands of Lawrence M. Krauss, revealing our hidden reality. "We cannot understand that hidden world with intuitions based solely on direct sensation."
3. Makes use of a clever analogy between the once "greatest story ever told" the Bible, to what truly is the greatest story, the one told by science. The book is broken out into three parts: Genesis, Exodus, and Revelation. Each chapter begins with a chapter-appropriate Bible verse.
4. Good use of diagrams to complement the narrative.
5. Dr. Krauss may be a great scientist but he also has flair with words. "Surely that is the greatest contribution of science to civilization: to ensure that the greatest books are not those of the past, but of the future."
6. So is there a plan or purpose to the world we find ourselves in? Find out.
7. The value of the scientific method. "Today, Plato's vision of "pure thought" has been replaced by the scientific method, which, based on both reason and experiment, allows us to discover the underlying realities

of the world.”

8. This is also a book of the greatest scientists that ever lived. “I don’t believe in hero worship, but if I did, Faraday would be up there with the best. Perhaps more than any other scientist of the nineteenth century, he is responsible for the technology that powers our current civilization.”

9. The contributions of Maxwell. “After Maxwell, electricity and magnetism were no longer viewed as separate forces of nature. They were different manifestations of one and the same force.”

10. The great Albert Einstein. “Thus, on the surface, Einstein’s Special Theory of Relativity appears to make physical reality subjective and observer dependent, but relativity is in this sense a misnomer. The Theory of Relativity is instead a theory of absolutes. Space and time measurements may be subjective, but “space-time” measurements are universal and absolute. The speed of light is universal and absolute.”

11. An interesting look at light. “In fact, light also behaves like both a particle and a wave, depending on the circumstances under which you choose to measure it.”

12. The Heisenberg uncertainty principle. “The Heisenberg uncertainty principle epitomizes in many ways the complete demise of our classical worldview of nature. Independent of any technology we might someday develop, nature puts an absolute limit on our ability to know, with any degree of certainty, both the momentum and position of any particle.”

13. An interesting look at quantum electrodynamics. “The theory in which these virtual particles are incorporated, along with the electromagnetic interactions of electrons and positrons, called quantum electrodynamics, is the best scientific theory we have so far. Predictions based on the theory have been compared with observations, and they agree to more than ten decimal places. In no other area of science can this level of accuracy be obtained in the comparison between observation and prediction, based on the direct applications of fundamental principles on the most basic scales we can describe.”

14. Provocative facts of science. “The entire stability of the nuclei that make up everything we see, including most of the atoms in our body, is an accidental consequence of the fact that the neutron and proton differ in mass by only 0.1 percent, so that a small shift in the mass of the former, when embedded in nuclei, means it can no longer decay into the latter.”

15. The basis of atomic physics. “In 1925, Wolfgang Pauli proposed the “exclusion principle,” which disclosed that two electrons could not occupy exactly the same quantum state at the same time and place, and which laid the basis of all of atomic physics.”

16. Particle physics. “Over the 1950s, Gell-Mann would produce many of the most important and lasting ideas in particle physics from that time. He was one of two physicists to propose that protons and neutrons were made of more fundamental particles, which he called quarks.”

17. Superconductors. “In other words, Anderson’s nonrelativistic argument in superconductors did carry over to relativistic quantum fields. The universe could behave like a superconductor after all.”

18. Throughout the book, Dr. Krauss namedrops Nobel Prize winners and their discoveries. “But a mere year later, in October 1979, Sheldon Glashow, Abdus Salam, and Steven Weinberg were awarded the Nobel Prize for their electroweak theory, now validated by experiment, that unified two of the four forces of nature based on a single fundamental symmetry, gauge invariance.”

19. The importance of gauge symmetry. “And at the heart of all of the forces governing the dynamical behavior of everything we can observe is a beautiful mathematical framework called gauge symmetry. All of the known forces, strong, weak, electromagnetic, and even gravity, possess this mathematical property, and for the three former examples, it is precisely this property that ensures that the theories make mathematical sense and that nasty quantum infinities disappear from all calculations of quantities that can be compared to experiment.”

20. Discusses key characteristics of the CERN machine.

21. The Standard Model discussed.

Negatives:

1. No formal notes or bibliography!

2. The layperson will have difficulty following this book. There is no kind way to put it, topics like particle physics even at its most basic are very hard to follow.
3. A step down from the masterpiece that was “A Universe From Nothing”.

In summary, this is a very good though more scientifically demanding book. Even at its most basic, the layperson will struggle to follow the scientific progression that Dr. Krauss lays out. Readers with science aptitude will obtain more enjoyment from reading this excellent book than your average person. It's not the masterpiece that “A Universe From Nothing” was but it's a solid sequel worth reading. I recommend it!

Further recommendations: “A Universe From Nothing” by Lawrence M. Krauss, “Farewell to Reality: How Modern Physics Has Betrayed the Search for Scientific Truth” by Jim Baggott, “Spectrums” by David Blatner, “The Elegant Universe” and “Hidden Reality” by Brian Greene, “About Time” by Adam Frank, “Higgs Discovery” and “Warped Passages” by Lisa Randall, “The Grand Design” by Stephen Hawking, “The Quantum Universe” by Brian Cox, “The Blind Spot” by William Byers, and “The Fallacy of Fine-Tuning” by Victor Stenger.

Brian Hayes says

I have discovered a new super dense narrativeless substance, this book. "Unless you are a blind devotee of Krauss, you will most likely not enjoy this book. His dislike for all things not science inappropriately seeps into this science book. He bizarrely opens each chapter with biblical scripture. The title of the book is the closest thing to click bait in the literary world I have come across. I am sucker for the kind of book I thought I was buying, ultimately this book reads like a history of particle physics, and is extremely technical or badly presently in places. I would suggest that you almost need a University level education in physics to truly grasp it . Not for the average popular science lay person. Full disclosure, I did not much like Krauss before reading this book, his latest book has only strengthened my feelings. This book is not without its merits, there is a somewhat good overview of the development of ideas in physics, but ultimately it's done so with no joy, no warmth and takes needless detours into areas which he does not need to. I believe he has published some papers of merit but I think we have all jumped the shark to utter his name in the same sentence has people such a Feynman, Sagan etc. Bad Philosopher, terrible science writer, decent scientist, would be my assessment which I am no way qualified to give.

Phil Livingstone says

Picking up this book in the airport bookshop I half expected it to be generally accessible. What I got was a thought provoking but poorly composed academic text best left on a university library shelf. Although great to get the messages of the book out there, the exposition is terrible.

I can only presume that the editors let it through as they didn't understand it. Even the title includes “why” when the author constantly says never to use that term and ask “how”. Classic academic cash cow material. I've watched a YouTube video on the standard model theory since and gained more knowledge from 10min of that than half a day reading this.

As for the usual Richard Dawkins style of dismiss all other thoughts in favour of science, the book was

typical. Surely any good scientist should recognise that even scientific approaches might be flawed. Evidence of massless and virtual particles for example isn't explained.

To challenge the author's analogy directly, this book doesn't show how far out of the cave of shadows we have come - it shows how far we've dug into it.

If this had been presented as "a brief history of particle physics" then it would have got a stronger rating - that's all it is.

Nina says

So I really like science history and stuff, but so much of this was just so over my head that I had a hard time paying attention. I guess I wish it was just a bit more narrative and maybe a little faster. It was still interesting, but I wanted the more recent stuff to be a little more generally described so I could get a better big picture understanding of what we know now.

Vance J. says

I had great hopes for this book. Even at just 300 pages, however, it seemed 50 pages too long. There's some good stuff here, but if Prof. Krauss had perhaps stuck to the science instead of wandering in and out of attacks on organized religion he would have produced a much tighter book.

These attacks didn't add anything to the book - in my view - and I do remain puzzled why he included Biblical references at the intro to each chapter (plain weird considering his tone throughout the book). I will say his references back to Plato's allegory of the cave - how we grope through trying to make sense of what we see - was clever, but clever does not a great book make. I can sum up Prof Krauss' subtitle: "Why are we here?" To him, it's a total accident. There, I saved you \$30! :)

Nilesh says

This summary, popular science book has almost nothing new to offer and does not have the easiest, most engaging explanations to compensate either.

With a plethora of great books written on relativity/quantum mechanics in the last ten or so years, the task for anyone to come up with something good in telling the story of Galileo/Newton onwards, with a large portion of the book elaborating on the discoveries of the first half of the Twentieth century and then completing with the latest, is extremely difficult. Mr. Krauss traverses this usual journey in the most unremarkable fashion.

The highlight of the book was perhaps in the beginning when the author is dealing with electromagnetic discoveries surrounding Maxwell. From there on, the book continues to decline partly because of the short length (quantum phenomenon and relativity needed more leisurely explanations to drive the points home. As such, a large part of the book in the second half turns incomprehensible) and partly because of the constant shuffle between scientific arguments and arguments on the lives of the scientists.

The author does make occasional great points or draw analogies that make one understand better than in other such books. Yet, such instances are few and far in between.

Billie says

After reading this book, I feel smarter but also still incredibly stupid. I am fascinated by the study of physics and by the amazing discoveries still being made in the field, but, no matter how much I read, I still feel like I just don't really *understand* physics. And that's okay. I'll just keep reading, as long as patient (and passionate) scientists like Krauss continue to write books that attempt to explain the field to laypersons like myself.

Gendou says

This is a wonderful book about the history of the cosmos and of humankind's quest to discover its story, which Krauss and I agree is the greatest ever told (so far).

There's a lot of focus on particle physics, gauge symmetry, and the discovery of a theory which accurately describes the strong and weak nuclear forces.

This book is a must-read for any fan of particle physics!

I did catch Krauss in one tiny mistake. And I'm proud of it. In chapter 10 he says neutrons "... make up most of the mass of heavier nuclei and thus most of the mass in our bodies." So I crunched the numbers, and it turns out this is incorrect! <http://thephysicspolice.blogspot.com/...>
