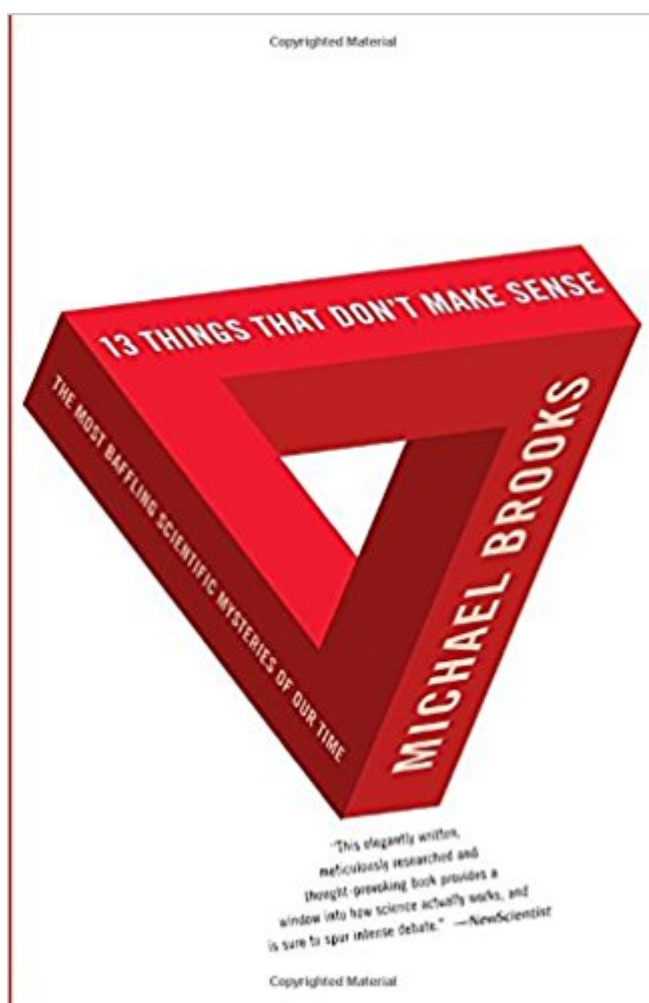


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13 Things That Don't Make Sense: The Most Baffling Scientific Mysteries Of Our Time



Synopsis

Spanning disciplines from biology to cosmology, chemistry to psychology to physics, Michael Brooks thrillingly captures the excitement of scientific discovery. Science's best-kept secret is this: even today, there are experimental results that the most brilliant scientists cannot explain. In the past, similar "anomalies" have revolutionized our world. If history is any precedent, we should look to today's inexplicable results to forecast the future of science. Michael Brooks heads to the scientific frontier to confront thirteen modern-day anomalies and what they might reveal about tomorrow's breakthroughs.

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Product Description When we look to the "anomalies" that science can't explain, we often discover where science is about to go. Here are a few of the anomalies that Michael Brooks investigates in *13 Things That Don't Make Sense*: Homeopathic remedies seem to have biological effects that cannot be explained by chemistry Gases have been detected on Mars that could only have come from carbon-based life forms Cold fusion, theoretically impossible and discredited in the 1980s, seems to work in some modern laboratory experiments It's quite likely we have nothing close to free will Life and non-life may exist along a continuum, which may pave the way for us to create life in the near future Sexual reproduction doesn't line up with evolutionary theory and, moreover, there's no good scientific explanation for why we must die Science starts to get interesting when things don't make sense. Science's best-kept

secret is this: even today, there are experimental results and reliable data that the most brilliant scientists can neither explain nor dismiss. In the past, similar "anomalies" have revolutionized our world, like in the sixteenth century, when a set of celestial anomalies led Copernicus to realize that the Earth goes around the sun and not the reverse, and in the 1770s, when two chemists discovered oxygen because of experimental results that defied all the theories of the day. And so, if history is any precedent, we should look to today's inexplicable results to forecast the future of science. In *13 Things That Don't Make Sense*, Michael Brooks heads to the scientific frontier to meet thirteen modern-day anomalies and discover tomorrow's breakthroughs. *13 Things* opens at the twenty-third Solvay physics conference, where the scientists present are ready to throw up their hands over an anomaly: is it possible that the universe, rather than slowly drifting apart as the physics of the big bang had once predicted, is actually expanding at an ever-faster speed? From Solvay and the mysteries of the universe, Brooks travels to a basement in Turin to subject himself to repeated shocks in a test of the placebo response. No study has ever been able to definitively show how the placebo effect works, so why has it become a pillar of medical science? Moreover, is 96 percent of the universe missing? Is a 1977 signal from outer space a transmission from an alien civilization? Might giant viruses explain how life began? Why are some NASA satellites speeding up as they get farther from the sun? and what does that mean for the laws of physics? Spanning disciplines from biology to cosmology, chemistry to psychology to physics, Brooks thrillingly captures the excitement, messiness, and controversy of the battle over where science is headed. "In science," he writes, "being stuck can be a sign that you are about to make a great leap forward. The things that don't make sense are, in some ways, the only things that matter." .com Exclusive: Anahad O'Connor Reviews *13 Things That Don't Make Sense* Anahad O'Connor, The New York Times' Science Times "Really?" columnist and author of *Never Shower in a Thunderstorm*, reviews *13 Things That Don't Make Sense* exclusively for : Michael Brooks opens *13 Things That Don't Make Sense* with an anecdote about watching three Nobel laureates struggle to figure out a hotel elevator. It's an amusing story that illustrates at least two things. One, three heads are not always better than one. And two, as every science and health reporter learns their first day on the job, even the world's greatest minds cannot always sort through the problems we expect them to conquer. It is this latter theme that is at the core of Mr. Brooks' fascinating new book – except in this case, the problems are 13 stubborn mysteries that have stumped top scientists for decades and, in some cases, centuries. Spun out of a popular article that appeared in *New Scientist* – an article that quickly became one of the most forwarded articles in the magazine's online history – Mr. Brooks' book takes its readers on a lively journey through the

cosmos, physics, biology and human nature. Along the way he explores questions such as why scientists cannot account for 90 percent of the universe (hint: dark matter has something to do with it), whether we have already been contacted by alien life but paid little mind, why humans rely on a form of sexual reproduction that, from an evolutionary perspective, is extremely inefficient, and why we are routinely deceived by the placebo effect. Mr. Brooks expertly works his way through these and other hotly debated quandaries in a smooth, engaging writing style reminiscent of Carl Sagan or Stephen Jay Gould. At times, as I was deeply engrossed in parts of this book, I found myself as captivated and wide-eyed as I was decades ago when I picked up my first science books and found my calling. Mr. Brooks has the ability to make his readers forget their surroundings – in my case a hectic newsroom – and train their minds' eyes on images as foreign as a vast Martian landscape or as distant as a roiling, infant universe. Every mystery is brought to life in vivid detail, and wit and humor are sprinkled throughout. To be sure, some of the chapters are more entertaining than others. A section on cold fusion, for example, while understandably necessary in a book on scientific mysteries, may not turn out to be quite as captivating for some readers as the chapters that precede and follow it. That may have something to do with the notion that cold fusion has been unfairly maligned and ridiculed by scientists despite its continuing promise, an argument Mr. Brooks lays out well. But it is ultimately in his chapters on the Big Bang, dark matter, and other issues that relate to the cosmos where Mr. Brooks, who holds a Ph.D. in quantum physics, really works his magic. No surprise then that Mr. Brooks is also co-writing a TV series for the Discovery Channel that explores the universe through the eyes of none other than Stephen Hawking. If 13 Things That Don't Make Sense is any indication, the series will find an enraptured audience.

(Photo © Lars Klove) --This text refers to an alternate Paperback edition.

“This elegantly written, meticulously researched and thought-provoking book provides a window into how science actually works, and is sure to spur intense debate.”

“A boundless enthusiasm resounds through this homage to the outstanding problems of science.”

“You will be amazed and astonished you when you learn that science has been unable to come up with a working definition of life, why death should happen at all, why sex is necessary, or whether cold fusion is a hoax or one of the greatest breakthroughs of all time.”

Richard Ellis, author of *The Empty Ocean* and *Tuna: A Love Story*

“Fascinating. . . . Brooks expertly works his way through . . . hotly debated quandaries in a smooth, engaging writing style reminiscent of Carl Sagan or Stephen Jay Gould.”

Anahad O'Connor, author of *Never Shower in a Thunderstorm*

13 Things That Don't Make Sense: The Most Baffling Scientific Mysteries of Our Time by Michael Brooks

is a provocative look at 13 scientific wide-ranging mysteries. Michael Brooks holds a PhD in Quantum Physics, editor and now consultant for New Scientist magazine, takes the reader on the wonderful journey of scientific mysteries. Since the publishing of this book a few of these mysteries have been resolved. This provocative 256-page book includes the following thirteen mysteries/chapters: 1. The Missing Universe, 2. The Pioneer Anomaly, 3. Varying Constants, 4. Cold Fusion, 5. Life, 6. Viking, 7. The Wow! Signal, 8. A Giant Virus, 9. Death, 10. Sex, 11. Free Will, 12. The Placebo Effect, and 13. Homeopathy.

Positives: 1. A well-written, well-researched and entertaining book. 2. The writing is fair and even-handed almost too much so. 3. The fascinating topic of scientific mysteries in the capable hands of Dr. Brooks. 4. Excellent format! Each chapter is about a specific scientific mystery and the author cleverly leads the end of the previous chapter into the next one. 5. Interesting facts spruced throughout the book. 6. Profound and practical practices in science. 7. Provocative questions that drive the narrative. 8. An interesting look at cold fusion. 9. One of the deepest concepts, the concept of what constitutes life. 10. It never hurts to quote some of the greatest thinkers, consider the late great Carl Sagan, 11. Color is our way of interpreting the frequency of radiation. When we see a rainbow, what we see is radiation of varying frequencies. The violet light is a relatively high-frequency radiation, the red is a lower frequency; everything else is somewhere in between. 12. They won't embrace the extraordinary until they rule out the ordinary. 13. Have the laws of physics remained the same for all time? 14. To get energy out of atoms, you either have to break up their cores a process called nuclear fission or join different atoms together by nuclear fusion. 15. If creating life is "simply" a matter of putting the right chemicals together under the right conditions, there's still no consensus about what "right" actually is for the chemicals or the conditions. 16. We live on a hunk of rock and metal that circles a humdrum star that is one of 400 billion other stars that make up the Milky Way Galaxy which is one of billions of other galaxies which make up a universe which may be one of a very large number, perhaps an infinite number, of other universes. That is a perspective

on human life and our culture that is well worth pondering. [↵](#) 11. Is there life on Mars? Find out about some of the attempts made. [↵](#) “One of the strongest arguments against life existing on Mars has always been the harshness of the environment: low temperatures, a wispy thin atmosphere, and the lack of liquid water all count against the development of living organisms. [↵](#) 12. A look at Occam’s razor applied to aliens. [↵](#) “Occam’s razor, and it says that, given a number of options, you should always go for the simplest, most straightforward one. [↵](#) 13. A fascinating look at the Giant Virus. [↵](#) “There were the eukaryotes, the advanced organisms like animals and plants whose large and complex cells contained a nucleus that held inheritable information. The other branch was the simpler prokaryotes, such as bacteria, which have cells without a nucleus. [↵](#) 14. A look at death. [↵](#) “Over the years, though, evidence mounted up supporting Kirkwood’s idea that aging is due to a slow, steady buildup of defects in our cells and organs. [↵](#) 15. Why the need for sex? [↵](#) “In general, the random genetic drift due to chance variation offers the best hope of explaining the apparent advantage of sex. [↵](#) 16. Homosexuality in the animal kingdom. [↵](#) “Bruce Bagemihl’s ten-year labor of love, *Biological Exuberance: Animal Homosexuality and Natural Diversity*, reports that more than 450 species have been documented engaging in nonprocreative sexual behavior [↵](#) including long-term pairings. [↵](#) 17. A fascinating look at free will. [↵](#) “The lesson we learn from all this is that our minds do not exist separately from the physical material of our bodies. Though it is a scary and entirely unwelcome observation, we are brain-machines. We do not have what we think of as free will. [↵](#) • [↵](#) “In the illusion of free will, it seems we have been equipped with a neurological sleight of hand that, while contrarational, helps us deal with a complex social and physical environment. [↵](#) 18. So what about the placebo effect? [↵](#) “The general conclusion here, it seems, is that the placebo effect is due to chemistry. [↵](#) 19. Why is homeopathy still in existence? [↵](#) “According to the World Health Organization, it now forms an integral part of the national health-care systems of a huge swath of countries including Germany, the United Kingdom, India, Pakistan, Sri Lanka, and Mexico. [↵](#) • [↵](#) “An assessment of homeopathy using the criteria of known scientific phenomena says it simply cannot work; no wonder Sir John Forbes, the physician to Queen Victoria’s household, called it “an outrage to human reason. [↵](#) 20. Notes and sources provided. **Negatives:** 1. Since the book was released in 2008 some of the anomalies have been resolved if not really not taken seriously. As an example, the Pioneer Anomaly was resolved; feel

free to look it up.² I felt Dr. Brooks was a little too generous toward the wrong side of scientific consensus. As example, the discarded homeopathy.³ Lack of charts and diagrams that would have complemented the sound narrative.⁴ Though immersed to various degrees here and there I would have liked to see Dr. Brooks be clearer on what the scientific consensus is for each chapter. In summary, I really liked this book. The book holds up quite well despite being released in 2008. My only gripe is not making perfectly clear what the scientific consensus is for each mystery, also, I would have discarded homeopathy as a scientific mystery. That said, a fun book to read, I recommend it! Further suggestions: *“At the Edge of Uncertainty”* by the same author, *“The Big Picture”* by Sean Carroll, *“Now: The Physics of Time”* by Richard A. Muller, *“13:8: The Quest to Find the True Age of the Universe and the Theory of Everything”* by John Gribbin, *“Know This: Today’s Most Interesting and Important Scientific Ideas, Discoveries, and Developments”* by John Brockman and *“The Island of Knowledge”* by Marcelo Gleiser.

We think we understand the basics, the foundations of science are what we think of a solid! Think again. Mainstream science has far too many assumptions and we all know what happens when we assume anything. The young minds out there have got their work cut out for them just staying open enough to challenge those pesky assumptions.

This is an outstanding book. It’s a thought-provoking examination of thirteen problems in science that have puzzled-- and sometimes embarrassed and angered-- scientists for years. Though it is scientifically rigorous, it is at the same time very readable. The book is a greatly expanded version of an article that the author wrote for *New Scientist* magazine. Brooks considers a wide range of issues, including what dark matter and dark energy might be, if they are anything at all; why the Pioneer spacecraft is apparently violating the rules of physics as it leaves the solar system; why scientists decided that the Viking landers on Mars didn’t detect life, despite consistent evidence that they did; whether an alien civilization has already contacted us but we weren’t listening carefully enough to notice; why death and sex exist, despite their nearly complete lack of evolutionary advantage; how experiments continue to show that cold fusion may be a real phenomenon, despite abundant proof that it can’t exist; why the placebo effect works, despite evidence that it doesn’t actually exist; and more. All of this is tied together by a theme: The world’s best experts can’t always

figure things, out, even when large numbers of them agree; indeed, sometimes those experts prevent things from being properly examined, let alone figured out. The general tone and style of the book reminded me of Carl Sagan, Stephen Jay Gould, and John McPhee. There is a LOT to chew on here, but the bites are correctly sized and very tender. The author has a PhD in quantum physics, but he's also a good magazine feature writer. The balance of real science and entertainment is perfect. I enjoyed this book very much, and I think it will easily repay any reader for the time and money invested in it.

Having aligned myself with "scientific thinking" for most of my adult life, I find it refreshing to realize those deep thinkers before (and "above") me were (and continue to be) as unclear about the "facts" as I was/am.

Some very amazing stories that are factual, well narrated with careful pronunciation. If you like this one you'll enjoy: "That's not in MY American History book!" (unrelated author/publisher)

And maybe once or twice more for the thinking and theorizing it inspires in this old mind. Check it out and see if it doesn't do the same for you!

A great little intro to some confounding issues to modern science. I liked the length of each chapter, just enough to convey the point, not overwritten. I also liked the author's writing style. You understand the topic, and the thing that doesn't make sense about it. Great book.

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