



# How to Fake a Moon Landing: Exposing the Myths of Science Denial

*Darryl Cunningham , Andrew C. Revkin (Introduction)*

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**A collection of "lively, plain-language debunkings of seven cases of quack or fraudulent science and . . . antiscientific bias in general" (*Booklist*).**

Is hydro-fracking safe? Is climate change real? Did the moon landing actually happen? How about evolution: fact or fiction? Author-illustrator Darryl Cunningham looks at these and other hot-button science topics and presents a fact-based, visual assessment of current thinking and research on eight different issues everybody's arguing about. His lively storytelling approach incorporates comics, photographs, and diagrams to create substantive but easily accessible reportage. Cunningham's distinctive illustrative style shows how information is manipulated by all sides; his easy-to-follow narratives allow readers to draw their own fact-based conclusions. A graphic milestone of investigative journalism!

"Cartoonist Darryl Cunningham . . . is a welcome voice, shedding some much needed light on the darker areas of science and culture. . . . Cunningham does a remarkable job with difficult material and for high school students, just opening their eyes to the world around them, this is a terrific primer." --ComicMix

## How to Fake a Moon Landing: Exposing the Myths of Science Denial Details

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# From Reader Review How to Fake a Moon Landing: Exposing the Myths of Science Denial for online ebook

## Emilia P says

Oh Darryl. The preaching to choir-iest of choir preachers. I'm reading this on the heels of his book on Ayn Rand and the Financial Crisis, and appreciate that this touches on more varied subjects more briefly, and uses photographic panels to some effect, but like his other thing, there's a lot of monotonous and ineffective panel work and a whole bunch of Science Is The Only Thing That Could Ever Possibly Be Right. But the stuff about homeopathy and chiropractic practice as quack science kiiiind of blew my mind. I know there are other elements to it, but the whole diluting in water business was super fascinating and ridiculous. Anyway, interesting but a little too grating.

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## Charlie says

I really liked the book "How to Fake a Moon Landing," by Darryl Cunningham, because of how many unique sections of the book there are. Some of these sections include "homeopathy," "climate change," and "evolution". My favorite though, has to be, "The Moon Hoax." This section includes great use of language just like all the other sections, but also we are learning about space in science which relates to "The Moon Hoax," which is awesome. Basically I loved the way the book was written and what it is about. This book is a graphic novel so didn't think it would have much good use of language, but it definitely does. In the book it says, "the united states flag ripples and bends, as if in a breeze." this is imagery, because the author uses words like "ripples" and "bends" which help the reader create a mental picture of the flag. I also like the contents of this book, because it relates to science class. In science class we are learning about moon phases and such. This knowledge can be applied when reading to enjoy this book even more. The book also focuses on conspiracies which is interesting, because of all the outlandish stories people can come up with. In the book it says, the moon landing was fake, illness can be cured by homeopathy, chiropractic remedies could heal most illnesses, etc. Those two reasons are why I loved reading this book, the first is that the author uses more elevated language than I expected because it is a graphic novel. Also the topics are great in my opinion, some of it relates to science class which is neat, because i can apply my knowledge and finally there are many conspiracies brought up which are fun to listen to.

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## David Schwan says

Very similar to the author's book Science Tales (a UK book), with the addition of a chapter on Fracking for the US version.

It's interesting to see all the negative reviews of this book. Plenty of people want to hide in their ignorance. The scientific method is not perfect but over time bad ideas are weeded out and we are left closer to the truth. The author provides more than sufficient references at the end of the book for those who wish to dig deeper.

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## **Nikki Stafford says**

This book — aside from the fact that the graphic novel format isn't used to the best of its capacity — is a study in contradictions. Cunningham sets out, as he says in the introduction, to show the difference between science and pseudoscience in an attempt to show us that in the 21st century, with a wealth of information at our fingertips, we need to question everything we read. We need to be wary of those who rely on information they gleaned from the internet or who use anecdotes.

And then... he proceeds to write a book where the Bibliography at the back is filled with internet articles, and relies on mostly anecdotal information. Often told in a pedantic Socratic method, with either himself as the questioner or the answerer, and the other person as a newscaster or a penguin, he shows us where the misinformation comes from, and then goes on to debunk it. In some cases — like global warming, the moon landing, or evolution (really?) — he's preaching to the converted, and simply regurgitating things that have been said for decades. The moon landing one, granted, is a good chapter, and would be a great one to show to conspiracy theorists to show how a person can lay out all of the doubts and then go through and debunk them in a reasonable manner. But then he turns to things like chiropractic, and at that point I wasn't entirely sure what his agenda is. Science — yes, science — has shown that chiropractic treatment, in many cases, has been proven to stave off more invasive treatments like back surgery, but he actually says at one point that no chiropractic care has been able to do something that a handful of painkillers and spinal surgery couldn't have also done. (??!!) I'm by no means an advocate of chiropractic — I've wrenched my back a few times and decided to go the doctor-recommended route, which is to lie on my back for a week and take copious amounts of tylenol, and by golly, it works. And there have been times where I've decided forget it, I'll go and get a chiropractor to fix it, and he does so in one visit and I'm pain-free. Yes, it ended up costing \$40, but it worked much more quickly. But then again, I've gone to chiropractors and come away feeling worse. So I get it: it's not an end-all, be-all. But at the end of that chapter he says that friends of his were shocked he was including chiropractic in the list of conspiracy theories in his book and that they'd actually had tremendous relief, and he draws himself turning to the reader and saying, "But I'm not going to rely on a few anecdotes, I'm relying on SCIENCE."

And then he talks about fracking, and... relies on a lot of anecdotal evidence. At one point he quotes scientists saying there aren't environmental hazards related to fracking, but then counters it by saying he saw a YouTube video of people lighting water on fire. Waitamminute... in a book that explicitly says we need to question everything we see, you're using a YOUTUBE video to quash what other experts are saying? Uh...

And finally, his last chapter talks about how the only reliable sources of scientific information are peer-reviewed journals... and then you turn the page to look at the sources, where there is nary a peer-review journal listed. It's like he wrote down that advice, but assumed it didn't apply to him. Even the foreword, which is written by a science writer from the New York Times, warns the reader about the chiropractic chapter and says he didn't agree with his conclusions in that chapter, nor did he handle the material correctly. When do you ever read a foreword to a book where it questioned the book itself?

I agree with the author's thesis: we have to question everything we see or read. And nowhere is that more important than when reading this particular book.

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## **Raina says**

I just do not connect with Cunningham's work. I'm actually pretty surprised that I gave Psychiatric Tales three stars, because I don't remember liking it at all.

This one has been getting a lot of buzz, and has a great cover, so I decided to try it (and suggest it for a book group I'm in) despite my negative feelings about his previous work.

And yeah, I learned a few things. About the history of Homeopathy, and Chiropractic treatment - oh, and about how the moon landing couldn't have been faked, too (part of his argument revolves around a Mythbusters episode).

It's not that I disagree with anything he says (when I know enough about the subject to have an opinion). It's just that the title is a mis-sell, and his delivery is SO DRY, and he doesn't use the graphic novel medium very effectively.

Each chapter feels like an essay. Not like any kind of original thought. And there's no real narrative through-line. I found the Preface (written in prose) more engagingly written and enlightening than most of the chapters. And I stopped most of the way through the penultimate chapter. Cunningham presents facts (and/or his opinions) - he is not a storyteller. At least, not in my experience. I believe he's got it in him, but I wish... I wish I'd skipped this one.

Honestly, I'd go on, but I have other books to review.

SO freaking meh.

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## **Jessica says**

This book is basically a collection of anti-science hoaxes debunked (or at least argued against). There are chapters on the moon landing, fracking, chiropractic, homeopathy, climate change, evolution, and vaccinations. It is very brief and it moves along at a steady clip without getting too deep into any of the topics. Each chapter more or less stands on its own as a short snippet into how each topic relates to science denialism, why it's a problem, and how exactly it is incorrect.

I suppose Cunningham's point is to emphasize that "the other side" is sometimes based upon nothing but faith and fear, and promote the scientific method. The topics discussed here are not controversial if you pay attention to facts - as the author points out - but only if you take little doubts and believe them wholeheartedly without any evidence (faith, right?), and in fact in stark opposition to all available evidence. In a world where trials are based upon reaching a conclusion without a shadow of a doubt, I can see why some of these theories would gain traction in the same vein.

My major criticism with this book is the format, which does little to aid the point. There's no reason for this book to be a graphic novel rather than a prose book, except maybe that it would be a very very short book whereas this is a normal length graphic novel. It's really just an illustrated text, and the pictures add little to the content. The one plus is that the format may make the content more accessible for younger readers - high school and maybe middle school. On that note, the art reminds me quite a lot of Guy Delisle or maybe Emmanuel Guibert - simple, basic, lightly colored, and clear. It's inoffensive and doesn't get in the way of the text, but also doesn't add much in this case (where it does generally with the aforementioned authors).

I wish some topics had been covered in more detail at the expense of topics that weren't covered quite as convincingly. Apparently the research on fracking leaves something to be desired, if some other reviews are

correct.

While this book does get into a little bit of complicated thinking it, it is pretty basic and easy to comprehend. I'd recommend it to middle and high schoolers interested in science and curious about why so many science topics are controversial. I suppose it has a liberal bias, but that bias (as Cunningham also discusses) is sort of fabricated on the back of faith-based fact-denial. The bias is pretty light I think, so maybe it will help to sway some people back to a science-believing, fact-based point of view?

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### **Steve Scott says**

An outstanding cartoon presentation for middle school aged kids to adults. Cunningham takes on pseudo-science, global warming deniers, the anti-vaccination movement, and other whacked out notions that threaten our health and/or insult our intelligence. It's a very pro-science book and one badly needed.

Now that I've finished it I'm going to donate it to one of our middle school libraries.

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### **Leigh Collazo says**

More reviews at Mrs. ReaderPants.

**WHAT I LIKED:** The format. It's graphic nonfiction. Very readable and interesting and accessible for reluctant readers. I hope we see many more books like this published in the coming years.

It has classroom applications. I would love to use this with a high school global perspectives or debate class. I'd divide the students into groups of four, and let each group pick and debate their favorite issue. This would be an excellent segue into a position paper or even an IB Extended Essay topic. A science teacher might even partner with the art teacher to have students create their own "myth debunks" in comic format. So many ways to use in the classroom!

### **WHAT I DIDN'T LIKE:**

How to alienate your audience when making an argument:

Fail to identify who your audience is.

Be as condescending as possible. Bonus points for smugness.

Rant and lecture.

Use blogs, opinion articles, and YouTube videos to back up your arguments.

Ugh, the arrogance. That little guy with the glasses (the author?) walks around inside the panels and tells all the middle school readers out there just how stupid they are if they don't agree with the science. Yes, this book is grounded in science. And for the most part, I agree with the author. But I did not feel like some of

the issues got a fair shake.

My biggest problem with this book is audience. I can't imagine this was written for adult readers--it looks like a middle school graphic novel to me. If it were written for adults, then why does it look so juvenile? Why use a cute little penguin to tell us about the evils of global warming denial? No, this is written in a way that your average 12-year old would pick it up. So considering that, I did not like the tone of the little guy with the glasses. It feels like he is telling the impressionable young readers about how they--and likely their parents--are wrong about vaccines and chiropractors and evolution because they "don't believe the science."

It's too bad the other side to these issues isn't fairly represented. Despite the enormous scientific research that exists about these topics, the bibliography is full of blogs, opinion articles, and one-sided organizations.

The author discusses an anecdotal YouTube video of someone lighting their water on fire to prove the evils of fracking. Yes, I agree that fracking pollutes ground water. But is that really the best you've got? Methinks you do not question nearly as much as you think you do. Surely there is better science to back up the arguments. These are popular topics that are truly grounded in science; it shouldn't be too difficult to reference more authoritative sources.

**THE BOTTOM LINE:** Love the format and the topics, but I'm not a fan of the condescending tone and failure to fairly represent all sides to the argument. Bibliographic sources are not the best available on these topics.

**STATUS IN MY LIBRARY:** We have it. Now that I have read it, I plan to use it as a "what not to do" when presenting an argument.

**READALIKES:** *Evolution: The Story of Life on Earth* (Hosler); *Nathan Hale's Hazardous Tales* series (Hale)

**RATING BREAKDOWN:**

Overall: 2/5

Creativity: 3/5

Characters: 1/5--ugh, that glasses guy!

Engrossing: 4/5

Writing: 3/5

Appeal to teens: 3/5

Appropriate length to tell the story: 5/5

**CONTENT:**

Language: none

Sexuality: none

Violence: none

Drugs/Alcohol: mild; medicinal drugs

Other: Librarians should know that evolution is presented as fact. Could cause some ruffled feathers.

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## Jennifer says

This book caught my eye on a recent trip to the bookstore, and I bought it on impulse. A non-fiction graphic "novel" about science denialism and various quackery? I mean, how could I resist?

Cunningham chose topics that are intentionally controversial. The kinds of things that cause comment wars in science blogs over and over again: The Moon Hoax, Homeopathy, Chiropractic, The MMR Vaccination Scandal, Evolution, Fracking, and Climate Change. Which is exactly how they appear in the table of contents, though there is also a final chapter on Science Denialism in general.

This was a fast read, visceral and concise. That makes the essays great nuggets for urging on a science-denying friend, but I sometimes wished for a little *less* brevity, particularly in the Moon Hoax chapter. But what I do particularly like about this book is that Cunningham does not try to set himself up as the ultimate authority on any of these issues. Rather, what he is promoting is the scientific method itself -- which, by its very nature is open to new conclusions should new evidence become available.

So, yes. There are a few chapters that I'm yearning to find a tactful way to force on some particular friends who jumped instantly to mind. If that process is successful, this book will have paid for itself in spades. Until then, I suppose it can find a happy enough spot on my shelves.

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## Joey Roberts says

How To Fake a Moon Landing by Darryl Cunningham is a book with a bunch of smaller stories inside. Streaks enjoyed this type of reading because you wouldn't be reading about the same thing for a long time. The art style reminded me of the "Dummies" books and games and fit the tone of the book. The writing style was like a debate, stating facts from both sides of the argument. I would recommend this book because the difficult topics are made simple with the writing and art style.

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## Miri says

Three and a half stars, maybe, but I don't mind rounding up to balance out all the reviews that hate it *way* more than I think is warranted. I can see not *loving* it—the writing is sometimes unclear and I dislike the way humans are illustrated in it. But it reads pretty straightforwardly to me, and nowhere did I think Cunningham was insulting or condescending. There are panels where you can sense his bias—which is fine, because as this a graphic novel and not a scientific paper, the author is allowed to share his own opinions.

The best chapter was the last, on science denial in general, and how American culture is set up to create as much confusion as possible.

This book is actually a good companion read (from the science angle, instead of politics, and in a very

different style) to Jane Mayer's *Dark Money*. In fact, I think Cunningham used one of her articles as a source.

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## Amy says

dang - it sounded like a good idea... sort of the opposite thing to what the science or history channel puts out these days (conspiracy theories and fantastical claims investigated with too much benefit of the doubt). Who doesn't love to hear crazy conspiracy stuff "the moon landing was faked!" and find out what the line of thinking is there, and then to take it apart reasonably and rationally!? And it's a graphic novel!? count me in! Unfortunately, except for a couple of the items addressed (moon landing and vaccine-autism link), there really isn't much of a laying out of the facts... but more of an axe to grind against non-Western medicine. By which I mean anything that isn't an M.D. prescribing drugs or enacting a surgery on someone.... and i get that some of that stuff gets pretty unscientific pretty fast, but talk about baby with the bathwater! It undermines his credibility significantly which is sort of the opposite thing you should be doing as a myth-buster. Then he gets worse with his fracking, climate change and evolution portions as, while they present more factual sounding laying out of the problems and the two sides of the arguments, his documentation and references are incredibly poor (essential 'stuff I read on the internet') while he sniffs about how irrational the opposition is. Maybe he just figured he was preaching to the choir (to some degree true) but ya can't lay down an argument that 'Science. Facts. The End.' should rule when you don't back up your facts appropriately. I think he got a little distracted with how much he hates the opposition. Also - crap for graphics.

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## Melki says

**"Everyone is entitled to their own opinion; however, everyone is not entitled to their own facts."**

Michael Specter, an intelligent man

Facts.

You can't argue with 'em, but **DAMN!** some people sure do try...

In this book that is meant to *build a case for critical thinking and the scientific process itself*, Cunningham chews through the myth of homeopathy, slices and dices chiropractors and vaccination naysayers, and grinds to a pulp evolution and climate change deniers.

I appreciated the chapter on the dangers of fracking, as this is occurring almost in my own backyard.

The author uses a mix of drawings and photos to demonstrate science denial. He also sheds light on how conspiracy theories and weird beliefs get started and explains how Big Business manipulates data to its own advantage.

*Science builds and organizes knowledge in the form of testable explanations and predictions. Science is the most successful tool ever devised for explaining our universe.*

I can think of several members of Congress who desperately need to read this book.

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## Sesana says

This was quite an unusual book by me. Cunningham uses the graphic novel format to use science to refute some sadly common areas of severe misinformation. There's the moon landing hoax stuff that the title mentions, plus quite a few other things, including chiropractic, immunizations, evolution, and even fracking. I greatly appreciated the fracking article, because I felt like it did a good job of explaining exactly what the process is as well as any concerns about it. I hadn't known much at all about fracking beforehand. Now, I'm pretty up to date with most of the other topics here, so I can say that Cunningham has done his research and does a good job of presenting the facts clearly and succinctly. I'm not crazy about the art style, but I like the idea of doing this sort of book as a graphic novel. Let's face it, the people who really need to see this are slightly more likely to pick this up than another, similar book.

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## Jien says

This loses two stars for inaccuracies in one section. Overall, I liked this book. The information was not new to me, all subjects I have previously researched extensively through legitimate, well-established scientific journals. The comic style was fun and narratives well written, the chapter on fracking however had some serious issues. For one thing, when I examined the sources listed in the back of the book, I was surprised and how few fracking sources were peer-reviewed science (many coming from the mainstream media he criticized for lack of good science in the last chapter). The overall tone of the fracking chapter was also odd. Unlike the rest of the book, here he suddenly sounded like the paranoid conspiracy theorists he had criticized throughout the book.

He even wrote "Well, I've seen footage of people setting fire to their drinking water because the water is so full of flammable methane gas." This is exactly in line with the arguments he tears down such as "I've heard from a few people who have told me that chiropractic therapy eased or even cured their back pain. To which I would say that their subjective experience, however positive, does not trump the whole of science." His comments on fracking, such as the video statement above, do not constitute an accurate scientific understanding. Watching a video of someone lighting tap water on fire does not automatically mean that fracking is bad. The people in the video may be faking it, there may be other circumstances (such as other gas mining techniques), there may be a local leak from another cause... I am not making an argument that fracking is safe and perfect, I am arguing against the authors methodology for framing his position. Nearly all of the specific problems and dangers he cites are not given any context. Another example would be his mention of formaldehyde as a common chemical in fracking processes. The human body produces formaldehyde as a natural byproduct of digestion, the amounts however are extremely small so it does no harm whatsoever. The also extremely small amounts of formaldehyde in some vaccines also does no harm whatsoever. And a fraction of a fraction of a percent of formaldehyde that may be used in fracking does not automatically mean death.

From my own research (avoiding anything large companies have to say on the matter) is that the safety of fracking is equal to or greater than the safety of other techniques of gas mining. I do not, however like this industry at all. I don't like gas, coal, or oil mining and its overall effect on the environment. In this chapter on fracking, Cunningham steps away from rationality in the formation of his arguments. At no point did he compare fracking to other forms of mining, or other alternatives (or even give real context for his statistics).

Just saying the word "formaldehyde" and moving on to make a scary point does not constitute a good scientific argument. "Yeah, well I saw a video once" is not a good argument for anything.

Otherwise, the rest of the book was good.

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