
Kenneth C. Davis

Don't Know Much About the Universe
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Q: You've written about American History, Geography, the Civil War and the Bible; What is it that drew you to the Universe?

A: I have been a science fiction junkie since I was kid. I love it all—The X-Files, Alien, Star Trek, Planet of the Apes. I still get shivers thinking about one Martian movie in particular that gave me nightmares. But like most people who get their information about space from Hollywood, I knew more fiction than fact. So the first reason for this book is basic necessity—fixing the mistakes and common myths we all have about the universe, whether it is confusing black holes with the Big Bang, calling the Big Dipper a constellation, dreaming of chocolate bars when we hear the word Milky Way, or thinking that a white dwarf is one of Snow White's little friends.

As a writer choosing a topic, I look for subjects that people really should know about, but don't. I grew up during the heyday of the Space Race. I was transfixed when Neil Armstrong walked on the Moon and said, "That's one small step for man." But I didn't learn much about the universe when I was daydreaming my way through school. In fact, I can't recall a single class about astronomy—except for a junior high school field trip to see 2001: A Space Odyssey when it was the rage. By the way, the teachers were just as mystified by the movie as we kids were.

Q: Moving from the Bible to the Universe still seems like a big jump. Was it?

A: The two subjects have more in common than you might think. When you write about Adam and Eve, apples and the six days of Creation, it leads you to think about Heaven. After that, it's not a huge reach to think about the Heavens. When you talk about the Wise Men and a "star in the East" in the Jesus story, you're talking ancient astronomy.

So, in some ways, writing about the Bible led me to write about space. You have this ancient battle between science and belief—a tremendous struggle between religion and the great scientists who led the march of progress. Looking at people like Copernicus, Kepler and Galileo and how they challenged the accepted wisdom of the day and the teachings of the Church is a tremendous story of human achievement. And when you learn about a man like Giordano Bruno, who had a stake driven through his tongue, his mouth clamped shut, and was burned at the stake for believing that the universe was infinite, it gives you a new appreciation of how much that progress sometimes costs.

But I also try to see these "famous guys of science" as real people. Kepler's mother was nearly burned as a witch. Galileo and Einstein had illegitimate children. Most giants of astronomy made a living doing horoscopes. These odd bits and pieces make these people more human instead of dry figures from textbooks. When we see the great thinkers of science as real people, they become a lot more interesting to learn about.

Q: So people have always been fascinated by space. What is it about the world beyond that excites our imaginations?

A: People, by nature, are curious. Going back to the most ancient times in Egypt, Babylon, and Greece, people looked at the skies and attempted to figure out what those lights were and why they moved. Why did the Sun and Moon "rise" and "set" each day? How did the motion of the planets and stars affect our lives—as people have always believed. Why did bad things always seem to happen whenever strange lights flashed through the sky? What did the cycles of the Moon have to do with women's fertility? Those sorts of questions marked our first understanding of the universe and the beginning of science. Everything from our calendars and the days of the week—which are named for planets—to geography, mathematics and most human myths emerged from thinking about the heavens. So to look at how people have viewed the universe gets to the very idea of how civilization has moved ahead.

Then there are the BIG questions that have intrigued people for centuries. How did it all begin and who made it? Where did we come from? How will it end? Is there anybody else out there?

Curiosity may have killed the cat but it got humanity to where we are today. We want to explore over the next horizon. We want to know the unknowable. All that comes together—our science, our myths and religions—in studying the universe.

Q: You mentioned being a science fiction fan. If science fiction is so popular, why is it that most of us know so little about our universe?

A: I am afraid that the best storytellers don't always care about the science. And most of the best scientists can't tell a good story. So the most popular Hollywood versions of space are compelling, but they are filled with "junk science." That's why so many people know about "phasers," "teleporters," and "alien abductions," but have no clue as to what a quasar or comet actually is.

The truth is often stranger—or at least more interesting—than fiction. When a scientist first suggested that an asteroid killed off the dinosaurs, his idea was dismissed as bad fiction. Now it is the most widely accepted explanation of several mass extinctions during Earth's history.

Science Fiction is far more entertaining than having to know "My Very Excellent Mother Just Served Us Nine Pizzas" as a way to memorize the names of planets or knowing what the speed of light is. But that sort of rote list-learning is what passes for education about the universe for most of us. We focus so much on "just the facts" that we miss the bigger picture and the fun and fascination. Did you know that the mysterious Stonehenge is an astronomical calculator? That the man who led America to the Moon was a Nazi? That there were 13 female astronauts who got the ax from NASA because the men didn't want to compete with women? That we have found more than 50 new planets in the past decade? This is the kind of stuff that makes this subject so much bigger than knowing the order of the planets.

The other big problem is that the so-called "experts" usually prefer to talk to each other instead of the rest of us. The scientists and professors who write the textbooks speak a language that the average person just doesn't understand. What I try to do is bridge that

gap by telling good stories about the personalities who shaped our understanding of the universe. But doing it in a way that makes the science accessible, understandable and entertaining.

Q: The Universe is such a huge subject. How did you go about the research and how did you decide what to focus on?

A: The Universe is a big subject. Just thinking about it can hurt your hair. Let's face it. What does a hundred billion stars really mean to most of us? Or that the mass of some stars is more than a hundred of our Sun? The numbers become numbingly incomprehensible.

To get at such a cosmic topic, I use what I call the "household word" approach to understanding the universe. There are all these words, phrases and concepts we've heard of, or think we should know, but we are clueless.

Black Holes. Big Bang. Light years. Auroras. Comets and asteroids. These words pop up in the news, but we don't know what they are or why they matter to us. So I tend to focus on those ideas—in other words, "what you need to know," as opposed to knowing the needless.

These are the ideas and concepts that a reasonable educated person should know to be able to understand the news, help their kids out with homework, and impress their friends while watching "The Weakest Link."

Q: In your books, you often stray from the straight and narrow of the topic you're covering. What are some of the offbeat things that you learned while doing your research for *Don't Know Much About the Universe*?

A: That's true. Nobody has ever accused me of sticking to the straight and narrow. I like to ask offbeat questions because they sometimes get people to think in new ways. People have lots of questions, but are usually afraid to ask them because they don't want to seem dumb.

Another problem is information overload, especially in an area where there is so much new discovery. So I try to act as a filter, or clearinghouse, learning what I can and distilling it in a way that it is far less painful than your high school textbook probably was. From the scientific point of view, the universe is filled with extraordinary oddities. And if you learned about space more than 20 years ago, there is a good chance some of it is just plain wrong!

For instance, we are arguing over whether Pluto is even a planet. The Sun isn't a ball of hot gas but is largely composed of plasma, a fourth form of matter—and you thought that there were only three! Comets aren't large rocks flying around space just waiting to crash into Earth. They are big dirty snowballs, composed of ice and dust. Even with the discovery of new planets and hints of water on Mars, the hunt for ET has turned up empty so far. Is there really no other life out there after all?

We are just beginning to scratch the surface of understanding what is out there. It calls into question some of our most basic premises. Everything from the notion that life on Earth might have been introduced from outer space—a concept called panspermia—to the serious search for extraterrestrials to the idea that Earth is truly a unique place in the universe.

In other words, they've rewritten the books on space, but nobody has bothered to tell those of us who are still stuck with ideas about canals on Mars and a Moon made out of cheese. All of these discoveries and ideas take us down fascinating paths to thinking about who we are and where we are going. They make us question the easy assumptions we all have, which is the real point of the *Don't Know Much About* series.

Q: With your new books *Don't Know Much About Space* and *Don't Know Much About the Solar System*, you are also writing about the Universe for kids. Why the shift to children's book?

A: I am very excited to be bringing the *Don't Know Much About* concept to children's books and two of the first four new children's books relate to the Universe.

As a parent, I was always disappointed with many of the nonfiction books for children. They were often just kid-sized versions of the boring adult books. I wanted to bring the pleasure of curiosity, the excitement of learning to children in the same way I have tried to make these subjects interesting to adults. So this series of new books has fun illustrations, riddles, jokes and to go along with the questions and answer format. Besides exploring *Space*, the children's series is also being introduced with *Don't Know Much About the 50 States*, a picture book that takes kids on a tour of America, and *Don't Know Much About Planet Earth*, which takes the ideas in my book about Geography down to middle grade readers.

I can just envision whole families sitting around and acing out Jeopardy together!