

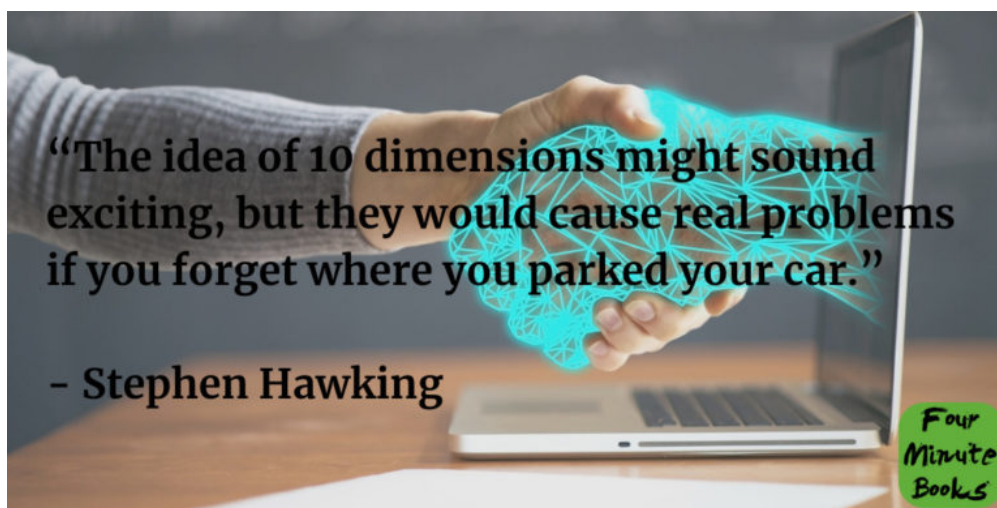
The Grand Design Summary

 fourminutebooks.com

1-Sentence-Summary: *The Grand Design* explains the history of mankind from a scientific perspective, including how we came into existence and started to use science to explain the world and ourselves with laws like Newton's and Einstein's and more recent theories like quantum physics.

Read in: 4 minutes

Favorite quote from the author:



It's pretty remarkable to think about the strides humanity has made in the last few thousand years. If you asked someone from 1000 BC how the earth and the stars were formed? They'd probably tell you that it was the work of gods.

Remarkably, we now not only have a pretty good idea of how the universe was formed billions of years ago. But we even have a pretty good guess of how it will end. Not only do we understand how our world came to be. But we can also explain phenomena all around us on earth and in the skies.

The best part is that we learn more every single day. In physicists Stephen Hawking and Leonard Mlodinow's best-selling pop-science book *The Grand Design*, we get all of this cutting-edge science and more. Readers get to witness the fascinating story of how scientists have unraveled the biggest mysteries of our universe. With that, we get an exciting hint at what we may discover next.

These are 3 of the most interesting lessons I got out of this book:

1. Reality depends on where you are and how you see things.
2. Our understanding of space and time is a lot deeper because of Einstein.

3. We got fortunate to be where we are in this expanding universe.

Are you excited to get a better understanding of *The Grand Design*? Let's get right into it!

Lesson 1: Your reality is unique to your perspective and may differ from what others perceive as reality.

In 2004, the city of Monza, Italy, made an interesting law. It says that people could no longer keep goldfish in a curved bowl. Why? They decided that the way curved glass distorts a goldfish's vision of the world is cruel.

Interesting, if you think about it. I mean, how do we know we are living in the true, undistorted version of reality? **Truth be told, all of us see things in our own unique reality based on the information our senses send to our brain.** This means no two realities are the same.

For example, if you see a building, this is your retina catching the way light is scattered by a building-like form, and your brain gives you the mental image of a building. You believe the things you see are reality is only that people used those same senses you have and created scientific laws that are accepted as correct. Since your sight abides by these laws, you believe your reality is the correct one.

So by this definition of reality, who's to say the goldfish isn't living in reality as accurate and correct as ours? Hypothetically speaking, if that goldfish were to conduct experiments and create laws that govern the world around them, they would differ from our laws. But they would function in his own version of reality.

In short, the reality you experience and believe to be accurate isn't any more valid than any other organism. Though they will all see and experience the world differently, they all have the potential to make scientific laws that accurately explain their experiences.

Lesson 2: Einstein took our understanding of space and time to a much deeper level.

At the age of just 26, Albert Einstein single-handedly revolutionized physics as we know it. His Theory of Special Relativity proved that the way each one of us experiences time is relative.

How is this possible? Picture out you are in an airplane flying nearly the speed of light. As you fly, a beam of light pulsing continually from the plane's tail to the nose. From what you can see, this light is always going at a normal speed. But for a person on the ground watching you fly by, the light will instead be moving at a forward angle each time it bounces.

But the thing is, the speed of light should be the same for everyone, regardless of how fast you might be traveling. So when you think about the fact that $\text{speed} = \text{distance} / \text{time}$ and the speed of light is the same for both you in the plane and the person on the ground, it doesn't make sense you see the light differently.

This means your perception of time is different. **In short, the faster you're moving, the slower time gets for you. Compared to someone standing still.**

Then we have Einstein's Theory of General Relativity, which changed everything we know about gravity. Einstein believed that dimension is a combination of both space and time, which he called space-time.

To get a grasp of this, picture a billiard table. With no gravity, the table would be straight, and things on it could move around freely. Because of gravity, there is a weight in the table's center, making it warp and causing everything to move around the center. This is how the gravity of a large star like our sun can make a solar system of the planets orbit around it.

Lesson 3: Our place in this expanding universe is unique enough to allow us to exist.

It's pretty crazy to think that it was up until recently that we finally explained how our universe started. Not only did we get a good idea of how and where it began, but we also know now that it is still expanding.

This idea came about in 1929 when astronomer Edwin Hubble discovered that pretty much every galaxy around us is moving away from earth. He also found that as they get further, the speed they travel is getting faster. **The only explanation was that our universe is growing, and because it's growing, scientists realized it must have been smaller at one time.**

From here, scientists could rewind the expansion of the universe all the way to the point when all the matter of the universe was tightly packed into a small area of unimaginably high density and temperature. They believe that an explosion or the Big Bang set the universe in motion.

After this explosion and the expansion, it was nothing more than good fortune that our Earth was a place suitable for life to begin. Earth lives in the "habitable zone," which is the perfect area that is both a good distance from the sun and out of the way from large and destructive meteorites.

This perfect distance from the sun, not too close or too far. Also, it ensures that most of the water on our planet isn't boiling or icy. Some may explain our perfect position in the universe as the hand of God. Most astronomers and physicists today, the authors included, believe it was just plain old luck that got us here. Either way, it is pretty remarkable.

The Grand Design Review

There's just so much to this science that it gets hard to wrap your head around all of it. Still, I like discovering these ideas so I can at least begin to understand them. The authors do a fairly good job at explaining things for your average person. *The Grand Design* is a fascinating book that I really enjoyed, especially because of the new perspective.

Who would I recommend The Grand Design summary to?

The 75-year-old with interest in philosophy. Also, to a 21-year-old who wonders about our place in the universe and anyone who's into physics and astronomy.