The Order Of Time Summary

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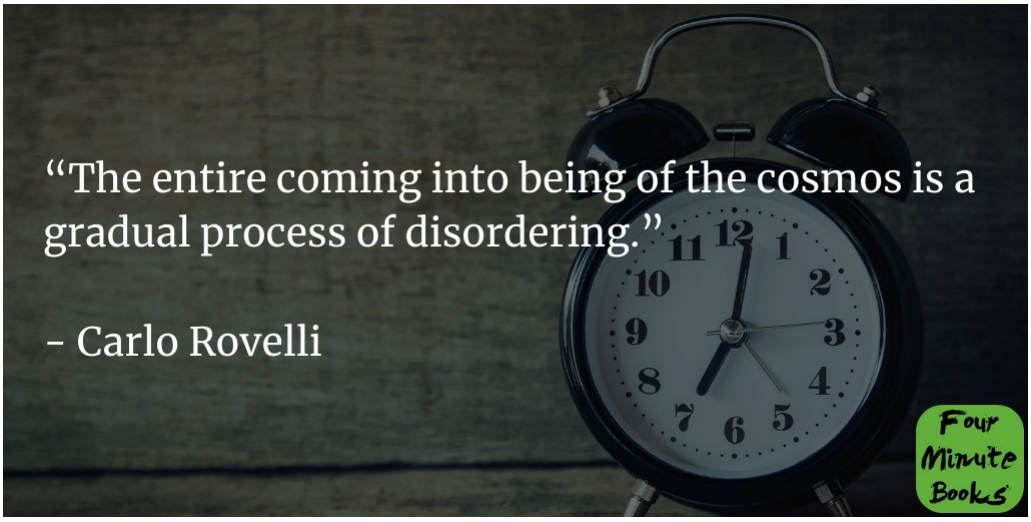
1-Sentence-Summary: *The Order Of Time expands your mind by shattering your commonly held beliefs about time, identifying how the way society views it is merely a construct of the mind and its actual characteristics are a lot more interesting than we all think.*

Read in: 4 minutes

Favorite quote from the author:



Did you ever have a teacher that was really good at explaining a complex topic in a simple and understandable way? For me, it was my college calculus professor, who was so good that I ended up with an A in the class!

Not every field is so easy to describe, however. If you think back to your physics classes you might know what I mean. I was lucky to have a good high-school physics teacher that made me fall in love with it but not all physicists are created equal.

Most often, when we hear lectures or read papers from the greatest, like Einstein, we come away more confused than anything else. Sometimes, however, breaking down our assumptions about how the world works can be a really good thing.

That's why I think you'll really enjoy Carlo Rovelli's *The Order of Time*. He explains what relativity really means in detail and with specific examples. After this one, you're going to be smarter than everyone you know when it comes to the subject of time!

Here are just 3 of the coolest science lessons I discovered from this book:

1. Time doesn't move at the same speed everywhere and we wouldn't have it without heat.
2. Even in the same place, there are cases where time doesn't pass at the same rates.
3. Everything you see is an event, even objects.

Ready to have your mind blown by some crazy physics lessons? Let's go!

Lesson 1: We wouldn't have time without heat, and time doesn't pass at the same speeds everywhere.

Usually, we fall prey to the common idea that if we see something happening a certain way, that's the truth. But your eyes deceive you more than you think. Consider your beliefs about whether the earth is flat or round if you went by sight alone!

Time is another of these things that we think we understand because we can see it. We assume that it moves forward uniformly, in the same way everywhere. But this too is as false a belief as those that still insist that the earth is flat.

The truth is, time moves at a different pace depending on where you are on earth. **I live in the mountains, which means my clocks move faster than those of people who live at sea level.** The difference is microscopic but real.

And time isn't the only thing that becomes slower depending on where you are, everything else does too. Living at a higher elevation, I'm going to age slightly more than my friends who reside at sea level. Even my plants grow faster!

In other words, everywhere you go in the world, time is different. This is the fundamental truth of Einstein's theory of general relativity.

What's even crazier is that time isn't possible without heat. Both of these mechanics can only move forward, time from past to future, and heat from objects that are hotter to colder ones.

We can only distinguish these processes by change, which requires motion, which is essentially just heat. So if you take away heat, nothing moves, and you can't have time!

Lesson 2: Time doesn't move at the same rate even in the same place.

At the beginning of the twentieth century, Albert Einstein found out that time advances differently even in the same location. He discovered that how fast an object or person is moving affects their sense of time.

Think of it this way. When you're moving faster, time slows down. But if you travel slower, then time will speed up. A person standing still experiences time more quickly than someone in motion.

This means that your idea of what's happening "now" doesn't actually make any sense.

Say you've got a brother that lives on a planet four light-years away. You think of him and wonder what he's up to, so you pull out your telescope and look toward his planet.

For one, you won't see what's actually going on at the moment. You'd see the version from four years ago. That's because a light year is how long light travels in a year, which means what you see is actually what happened four years prior.

But what's even stranger is that you can't ever find out what he is doing at the present moment because his present is not the same as yours. And there's no way to find out when his present is relative to yours.

For all you know, by the time you do find out what he was doing, he could already be back on earth!

Lesson 3: Just like a kiss, a rock is an event, not a thing.

According to the ancient philosopher Heraclitus, "The only constant in life is change." Physicists think similarly, but to them, this means that there are no such things as objects. In reality, everything is only experiencing change on different scales.

In the world of physics, entities and substances don't matter. These scientists are more focused on occurrences, processes, and happenings. Everything happens, and nothing just "is."

Our whole world and everything in it is not static but always in a constant state of change and becoming. The only way to distinguish between "things" is with how long they last.

A kiss, for example, is obviously an event. It only happens for a few seconds, most of the time. Rocks, on the other hand, last a lot longer, centuries, even. So how can the rock be an incident too?

To find the answer, we have to zoom out and look at the rock from the perspective of a few thousand years passing. It "began" as something else and will one day become dust again. Then, it might become part of another rock or structure even.

This means that our definition of time as “present” doesn’t really work. That’s because you can’t define the present as one single time all across the globe. Every point in space is, even if just by minuscule amounts, at a different time.

The Order Of Time Review

Science is so cool! The concepts Rovelli teaches in *The Order Of Time* are a little confusing, but I have to say, they’re a lot less confusing the way he puts it than how others do. I think I’m finally beginning to understand, at least in a tiny way, how time actually works in the mind of a physicist.

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Who would I recommend The Order Of Time summary to?

The 58-year-old who has a fascination with science, the 21-year-old who is in a physics class in college, and anyone that’s curious to get a better understanding of the confusing subject of time.