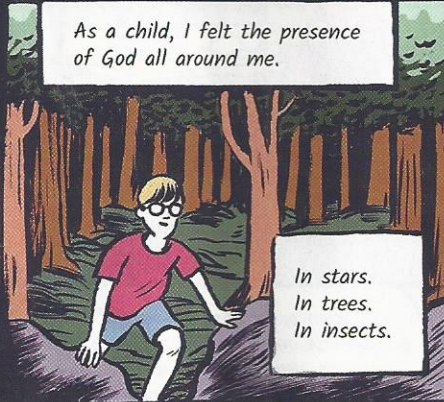


How did the **UNIVERSE** B E G I N ?

Professor Barth Netterfield's lifelong journey into faith, physics and astronomy

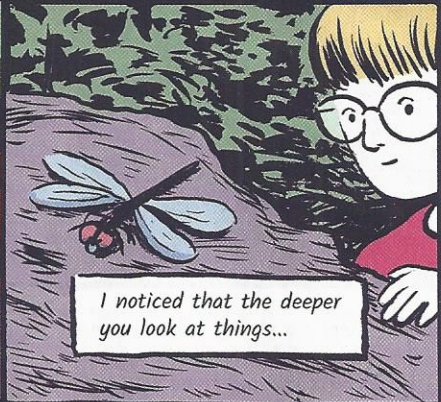
By Barth Netterfield • Illustrated by Jonathan Dyck

I come from two worlds.
One is the world of science.
The other is the world of faith.

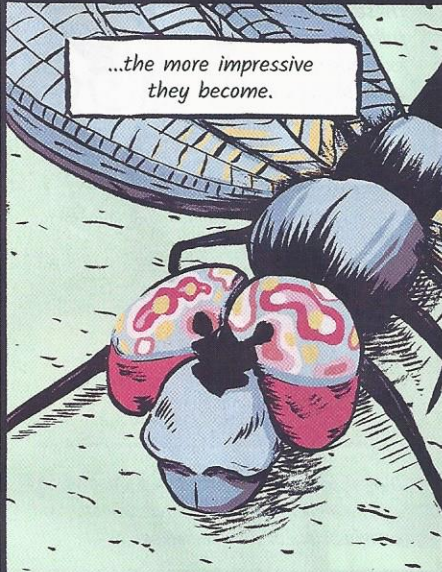


As a child, I felt the presence of God all around me.

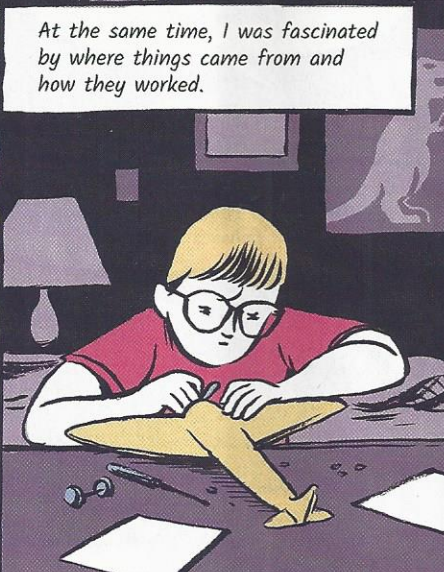
In stars.
In trees.
In insects.



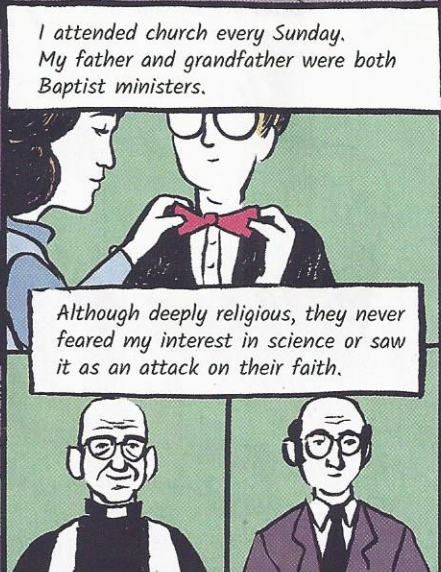
I noticed that the deeper you look at things...



...the more impressive they become.

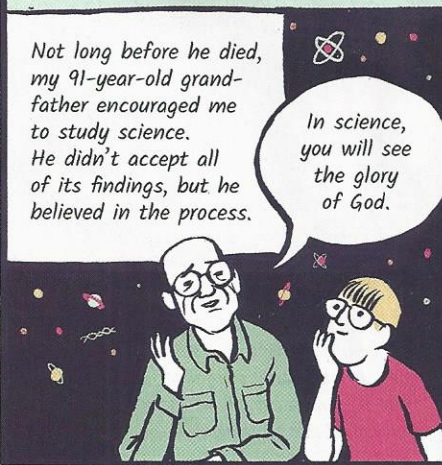


At the same time, I was fascinated by where things came from and how they worked.



I attended church every Sunday. My father and grandfather were both Baptist ministers.

Although deeply religious, they never feared my interest in science or saw it as an attack on their faith.

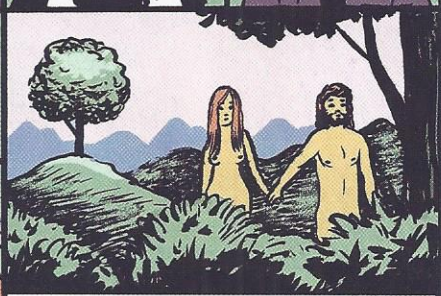


Not long before he died, my 91-year-old grandfather encouraged me to study science. He didn't accept all of its findings, but he believed in the process.

In science, you will see the glory of God.



I enrolled at a Christian liberal arts college in Minnesota, where I studied physics - and religion.



I was taught that the Bible was never meant to be taken as a scientific account of how God created the world. God left that up to us to discover - through science.

At grad school, a friend and I often didn't see eye to eye on religion.

If God is real, why doesn't he make himself obvious? Why doesn't he spin my chair around three times right now?

If that happened, would you believe it was God - or highly advanced aliens playing a joke on you?

Probably advanced aliens.

See! No matter what evidence we could find for God's existence, you would say there was some other explanation.

In science, we base our view of the universe on observations. But using science, you'll never be able to prove the existence of God. Doesn't that bother you?

What is my purpose? What is consciousness? Physics can't answer these questions. To fully understand our existence, we need both physics and metaphysics.

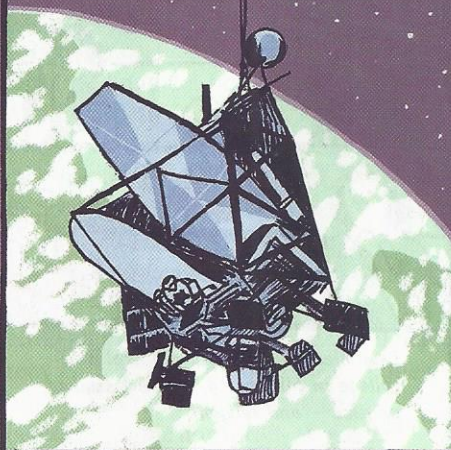
Of course! But science can only describe how the universe behaves. It can't explain why it behaves that way.

Now as an astronomer I use huge balloons to raise telescopes 35 km above the Earth - to avoid the atmosphere and get a clear view of deep space.

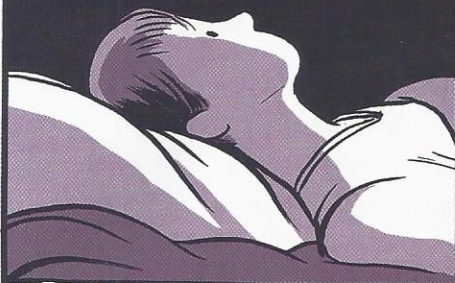
In one experiment, we studied the cosmic microwave background - the faint afterglow of the Big Bang.

Our observations helped put an end to questions about the age, geometry and composition of the universe.

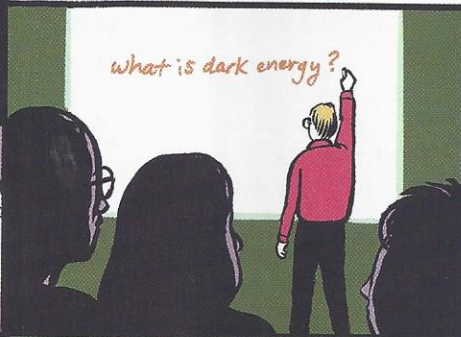
We can now say that the universe is 13.7 billion years old, that it's geometrically flat (which is not the same as flat as a pancake, but that's another story) and that it's made up of ordinary matter, dark matter and dark energy.



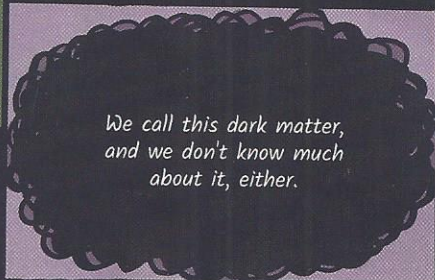
But nothing we or anyone else has discovered explains why the universe exists, or what purpose it serves.



And, as I tell my students, there's still so much we don't know. We've observed that the expansion of the universe is accelerating. But we have no idea why. It's as if empty space has hidden energy. This is what we call dark energy.



We know that about 85 per cent of the mass of the universe is made of particles that we can't directly observe.



We call this dark matter, and we don't know much about it, either.

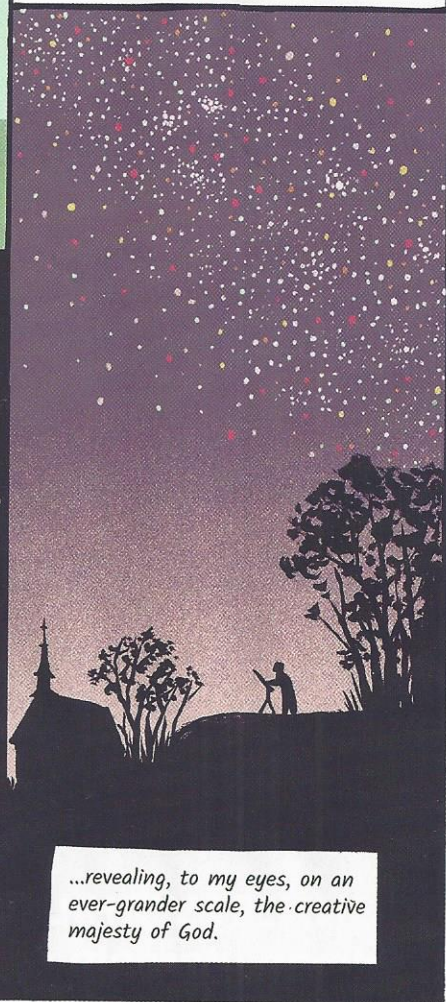
We don't know what happened in the first moments of the universe. And we don't know if our universe is one of many.



What we do know is that, compared to the age of the universe, all of human history is but a moment.



And that the universe is vast beyond comprehension. Our own galaxy, the Milky Way, has a hundred billion stars and billions of planets...



...and the Milky Way is just one of hundreds of billions of galaxies.

As we look deeper and deeper into the universe, peering back to the beginning of time...

...the more mysterious and breathtaking it becomes...

...revealing, to my eyes, on an ever-grander scale, the creative majesty of God.