SCIENCE, THEOLOGY & THE COPERNICAN REVOLUTION

BIG HISTORY PROJECT

780L
SCIENCE, THEOLOGY & THE COPERNICAN REVOLUTION
Why is there such resistance to science by so many religious believers? It is partly because faith has always been closely tied to a particular age’s picture of the natural world.
When Galileo announced that the Sun was at the center of our Solar System, people were shocked. Many people felt the news contradicted their religious beliefs.

Poet John Donne was a committed Christian. He wrote these lines in 1612:

> And new philosophy calls all in doubt,
> The element of fire is quite put out...

The “new philosophy” Donne mentions is science. Donne wrote those words two years after Galileo Galilei published The Starry Messenger. In this book, Galileo presented a world that was very different than what people had believed.

Copernicus had thought about the Earth revolving around the Sun. At the time, though, people thought he was just doing a thought experiment. Galileo knew that this was how the world really worked.

The Catholic Church famously called Galileo wrong. It forced him to spend the rest of his life confined to his house.

The Church now regrets its mistake. It insists there is no real conflict between science and faith. However, for many religious people, new scientific discoveries can bring worry.

A crossroads for science and theology

Why do so many religious believers seem to be against science? It is partly because religion paints a picture of the natural world. Science can disturb this picture.

For example, in biblical times, people thought of the Universe in three levels. First were the heavens above. They were perfect and unchanging. Below the heavens was the Earth. Below the Earth was the underworld, the land of the dead.

A 1661 engraving of the Copernican model of the Solar System

In the 1600s, most religious believers took the Bible word for word. It seemed to support the idea that Earth was at the center of the Universe. So had Ptolemy and Aristotle. Galileo and Copernicus seemed to be going against the Bible.

Galileo believed the Bible was special. But he didn’t think it should be read for scientific information. The Catholic Church now agrees with him.

Some assume that because Galileo argued with the Church, he saw a conflict between science and faith. This is not true. For him, science and religion were almost completely separate.

But the discoveries of Copernicus and Galileo did affect spirituality.

Life has unavoidable difficulties. “Spirituality” is what gives people courage, hope, and happiness to face those difficulties. For centuries, people were comforted by Ptolemy’s view of an orderly Universe.
In this view, planets traveled on perfectly circular paths. The Sun and Moon were perfect spheres. In this perfection, people saw a hint of the unending beauty that lies beyond our world.

The new science put this all in doubt. Copernicus, Brahe, Kepler, and Galileo were making new astronomical measurements. Their findings showed the heavens were not so “perfect” after all.

Their discoveries greatly changed spiritual life.

The final blow

In ancient astronomy, philosophy and religion, the skies beyond the Moon were special. They seemed unchanging, indestructible. The skies above seemed permanent and perfect. They pointed to a better and more permanent world than the one here on Earth.

Aristotle called the heavens a fifth kind of reality. The heavens were better than the four common elements down here — earth, air, fire and water. While all things on Earth change and eventually die, the heavens showed the unchanging, never-ending nature of God.

Modern astronomy gradually showed that the heavens weren’t perfect. They weren’t a reflection of a perfect God anymore.

Other scientists helped to end the idea that the heavens are perfect and unchanging. Johannes Kepler showed that planets move in oval patterns. Previously, people thought they moved in perfect circles. Tycho Brahe showed that comets and exploding stars were out beyond the Moon. He shocked people by showing changing heavens. Galileo showed that the Moon is covered with craters. He pointed out that the Sun has dark spots on it.

Careful observation showed that the heavens are ordinary after all.

Finding perfection in change

Galileo was religious, but he was not bothered by these imperfections. What’s so great about not changing, he asked. And what is so bad about the dirty, changing Earth where we live? Look carefully at what lies beneath our feet and not just over our heads!

Isn’t life a better symbol of perfection than changeless heavens could ever be?

A photograph of Io, one of Jupiter’s moons
John F. Haught

John F. Haught is a Roman Catholic theologian and senior research fellow at the Woodstock Theological Center at Georgetown University, in Washington, D.C. He established the Georgetown Center for the Study of Science and Religion and is the author of numerous books, including *Science and Faith: A New Introduction* (Mahwah, NJ: Paulist Press, 2012).

Image credits

A simulation of a black hole produced for research at CERN's Large Hadron Collider facility
© 2006 CERN

A plate from the *Harmonia Macrocospymica* atlas by Andreas Cellarius
© CORBIS

A 1999 photograph of Jupiter’s moon Io taken by the Galileo spacecraft, NASA/JPL/University of Arizona

NEWSELA

Articles leveled by Newsela have been adjusted along several dimensions of text complexity including sentence structure, vocabulary and organization. The number followed by L indicates the Lexile measure of the article. For more information on Lexile measures and how they correspond to grade levels: http://www.lexile.com/about-lexile/lexile-overview/

To learn more about Newsela, visit www.newsela.com/about.

The Lexile® Framework for Reading

The Lexile® Framework for Reading evaluates reading ability and text complexity on the same developmental scale. Unlike other measurement systems, the Lexile Framework determines reading ability based on actual assessments, rather than generalized age or grade levels. Recognized as the standard for matching readers with texts, tens of millions of students worldwide receive a Lexile measure that helps them find targeted readings from the more than 100 million articles, books and websites that have been measured. Lexile measures connect learners of all ages with resources at the right level of challenge and monitors their progress toward state and national proficiency standards. More information about the Lexile® Framework can be found at www.Lexile.com.