

## SCIENTIFIC REVOLUTION: GALILEO'S INQUISTION

During the 17<sup>th</sup> century, European scholars increasingly tried to understand the natural world through science. Galileo Galilei was one of these scientists and he is sometimes called the Father of the Scientific Reason.

**Geocentrism** is a model that places the earth at the center of the astronomical system.

**Heliocentrism** is a model that places the sun at the center of the astronomical system. In this model, other bodies in space orbit around the earth.

Early Greek, Indian, Egyptian, and Islamic astronomers had theorized about the stars, the sky, and the "heavenly bodies" for centuries. In 17<sup>th</sup> century Italy, people didn't know that the solar system was but a tiny piece of a much larger galaxy and universe. Most people at the time agreed with the geocentric theory, because they could not feel the earth move, so therefore it was stationary.

**Nicholas Copernicus** was one of the first European scientists to challenge this idea, but he knew how radical his theory was, so he did not publish his findings until right before his death. The Church declared that the earth was the center of the of the solar system, and few people dared to question that.

In 1545, the Catholic Church convened at the Council of Trent to attempt to stop the spread of Protestantism, which began when Martin Luther nailed his **95 Theses** – complaints against corruption in the Catholic Church - to a church door in Wittenberg. The Council decreed that only the Catholic Church can interpret the Bible, and that the Holy Office of the Roman Inquisition could persecute heretics. A **heretic** is someone whose beliefs go against the Church's official beliefs.

In the late 1500s, Giordano Bruno, a believer in the heliocentric theory, theorized that the sun is just one of many moving stars, and that the universe contains many planets orbiting other stars. He was tried before the Roman Inquisition and was burned at the stake as a heretic.

**Galileo** was born in Italy in 1564. He was a religious man who wanted to be a monk at one point. Instead, he studied motion and physics at the University of Pisa. The more he studied, the more he believed the heliocentric theory. In 1609, he built a telescope. The observations made from that telescope convinced him that Copernicus's heliocentric model was right, and Galileo began teaching the model to his students.

In 1615, the Church warned Galileo to stop teaching the heliocentric model. In 1616, the Church banned the works of Copernicus and others that supported heliocentrism. Galileo continued to write and teach about his theories and ideas. His 1632 book, *Dialogue Concerning the Two Chief World Systems*, came too close to arguing the theory was true, and he was brought before the Inquisition as a heretic the following year.

Using these facts and the two following documents, decide for yourself: *Was Galileo really a heretic?*

## **Document A: Galileo's Letter**

1. (Sourcing) When was this document written?
2. (Contextualization) Look at your timeline. Why might Galileo write a letter defending himself at this time?
3. (Close reading) According to Galileo, why do some people think his teachings are heretical?
4. (Close reading) How does Galileo defend himself against these charges?
5. (Context) Using the information on your timeline, do you think the Catholic Church would accept Galileo's defense? Explain why or why not.

## **Document B: Cardinal Bellarmine**

1. (Close reading) Explain two reasons Cardinal Bellarmine gave for believing the geocentric theory.
  - a.
  - b.
2. (Close reading) How did Cardinal Bellarmine respond to the following arguments from Galileo?
  - a. The Bible passages about the sun standing still should not have been interpreted literally.
  - b. The model of the universe (heliocentric or geocentric) is not a matter of salvation.
3. (Context) Why do you think the Catholic Church was so committed to defending the literal meaning of Bible passages?

## Judgment of Galileo

Imagine you are a member of the Inquisition at Galileo's trial. You have the following evidence: Heliocentrism and the Catholic Church Timeline, Document A, and Document B. That is all the evidence you have. Truly try to place yourself in 1633. Decide your answer to the question, using only the evidence at hand: Was Galileo really a heretic? Explain your responses below.

Galileo \_\_\_\_\_ (was/was not) a heretic because:

1. Reason 1:

Quote from document to support your reason

2. Reason 2:

Quote from document to support your reason

## Heliocentrism and the Catholic Church Timeline

- 1543:** Nicolas Copernicus published a book supporting the heliocentric theory.
- 1545:** Pope Paul III called the Council of Trent to stop the spread of Protestantism and to revive the Catholic Church. It said only the Church could interpret the Bible, and it set up the Inquisition to combat heresy.
- 1564:** Galileo Galilei was born.
- 1600:** The Inquisition tried Giordano Bruno and burned him at the stake for heresy. He supported the heliocentric theory.
- 1609:** Galileo invented a telescope that convinced him of the heliocentric model.
- 1615:** The Catholic Church told Galileo to stop sharing his theory in public.
- 1615:** Paolo Antonio Foscarini published a book defending Copernicus and arguing the heliocentric model did not go against the Bible.
- 1616:** The Catholic Church added Copernicus's work (and others supporting the heliocentric model) to its list of banned books.
- 1632:** Galileo published *Dialogue Concerning the Two Chief World Systems*.
- 1633:** The Inquisition charged Galileo with heresy and tried him in Rome.
- 1642:** Galileo died.
- 1661:** Isaac Newton began teaching Galileo and Copernicus's ideas in England.
- 1758:** The Catholic Church ended the ban on books teaching the heliocentric model.
- 1939:** Pope Pius XII called Galileo a hero of research.
- 1979:** Pope John Paul II ordered an investigation into the Church's treatment of Galileo.

## Document A: Galileo's Letter (Modified)

*Galileo wrote the following letter to Duchess Christina of Tuscany in 1615. In this letter, he defends himself against the charges of heresy.*

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Some years ago I discovered in the heavens many things that had not been seen before our own age. The **novelty** of these things . . . stirred up several professors against me. They hurled various charges and published numerous writings filled with **vain** arguments, and they made the grave mistake of sprinkling these with passages taken from places in the Bible, which they failed to understand properly.

The reason given for attacking the opinion that the earth moves and the sun stands still is that in many places in the Bible one may read that the sun moves and the earth stands still. Since the Bible cannot **err**, it follows that anyone who claims that the sun is motionless and the earth movable takes an **erroneous** and heretical position.

With regard to this argument, I think in the first place that it is very **pious** to say and **prudent** to affirm that the holy Bible can never speak untruth—whenever its true meaning is understood. But I believe nobody will deny that the Bible is often very complex, and may say things which are quite different from what its bare words **signify**. . . .

I do not believe that the same God who has given senses, reason and intellect has intended us to not to use them. . . . He would not require us to deny sense and reason in physical matters of direct experience. . . . Can an opinion be heretical and yet have no concern with the salvation of souls?

**Source:** Galileo Galilei, "Letter to the Grand Duchess Christina of Tuscany," 1615.

### Vocabulary

novelty: original or unusual

vain: conceited

err: to be wrong

erroneous: wrong

pious: devoutly religious

prudent: wise

signify: mean

## Document B: Cardinal Bellarmine

*Cardinal Robert Bellarmine was in charge of dealing with difficult issues connected to the Church's power and beliefs during the Galileo controversy. He wrote the following letter to Paolo Antonio Foscarini in response to Foscarini's book defending Galileo. Historians don't believe Bellarmine ever saw Galileo's 1615 letter (Document A).*

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As you know, the Council [of Trent] prohibits interpreting the Scriptures **contrary** to the common agreement of the holy Fathers. And if you would read not only the Fathers but also the commentaries of modern writers on **Genesis, Psalms, Ecclesiastes and Joshua**, you would find that all agree in explaining that the sun is in the heavens and moves swiftly around the earth, and that the earth is far from the heavens and stands immobile in the center of the universe. . . .

It would be just as heretical to deny that Abraham had two sons and Jacob twelve, as it would be to deny the virgin birth of Christ, for both are declared by the Holy Ghost through the mouths of the **prophets** and **apostles**. . . .

I say that if there were a true demonstration that the sun was in the center of the universe and the earth in the third sphere, and that the sun did not travel around the earth but the earth circled the sun, then it would be necessary to proceed with great caution in explaining the passages of **Scripture** which seemed contrary, and we would rather have to say that we did not understand the Scripture than to say that something was false which has been demonstrated. But I do not believe that there is any such demonstration; none has been shown to me. . . . [One] clearly experiences that the earth stands still and that his eye is not deceived when it judges that the moon and stars move.

**Source:** Cardinal Robert Bellarmine, "Letter on Galileo's Theories," 1615.

### Vocabulary

contrary: against or the opposite of something

Genesis, Psalms, Ecclesiastes and Joshua: sections of the Bible

prophets: someone who speaks for God

apostles: religious messengers

scripture: text from the Bible