

Religion versus Science?

A Throw Down Match: Models of the Universe, Galileo, and The Trial that Shaped our Notions of Faith and Truth



Galileo

- During the 17th century, European scholars increasingly tried to understand the natural world through science
- Galileo was one of these and is sometimes called the Father of Scientific Reason

Perception

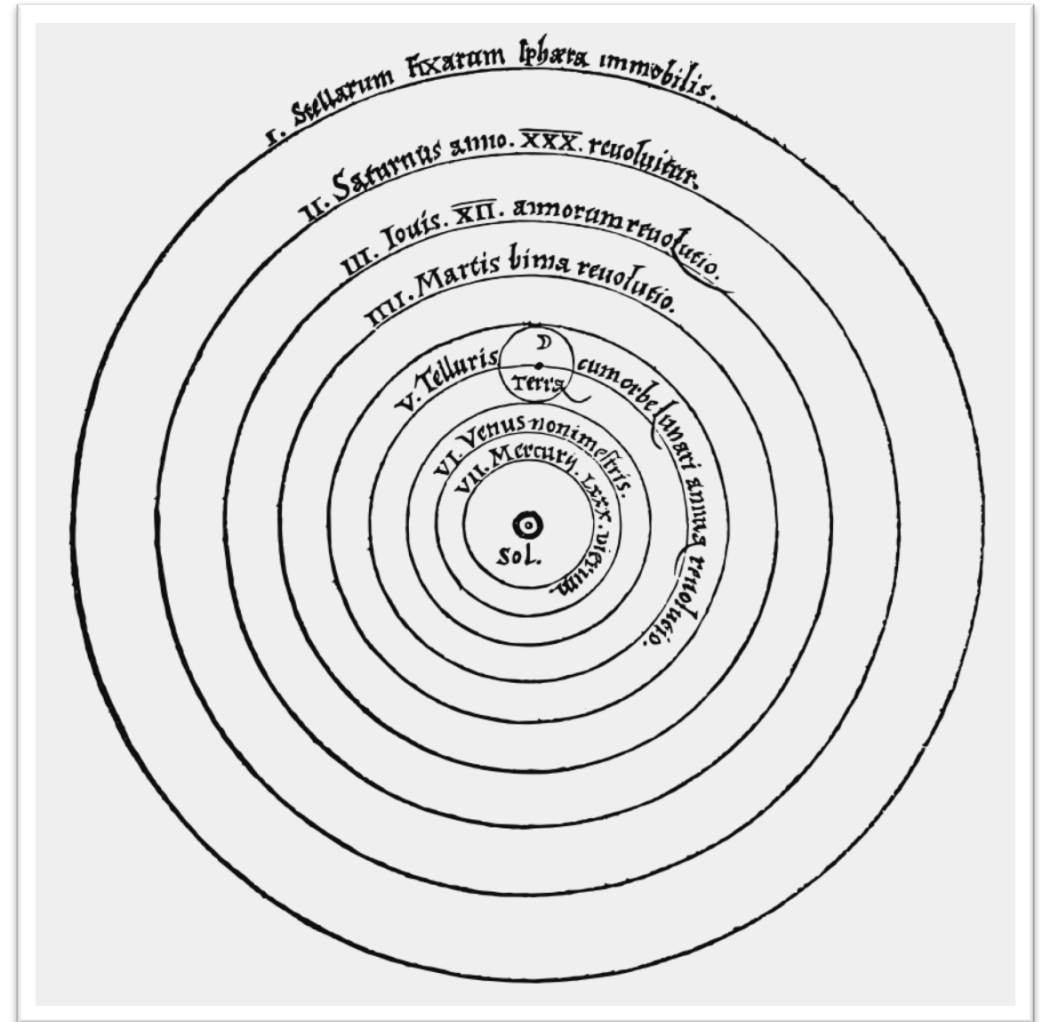
- In early Modern Europe, almost all of the most educated believed that the earth was the center of the universe
- During the Scientific Revolution, some (especially Copernicus began to challenge this belief)
- Galileo shared this belief

Models of the Solar System

Geocentric (earth centered)
Geo = Earth (Greek)



Heliocentric (sun centered)
Helio = Sun (Greek)



The Debate

- We know now that the earth orbits the sun, which is at the center of our solar system
- Some early Greek and Indian astronomers questioned the heliocentric model (as well as some medieval Islamic and western European scholars).
- In Galileo's time and place, nearly everyone believed the earth was at the center

The Problem

The Heliocentric model seemed to challenge the Bible:

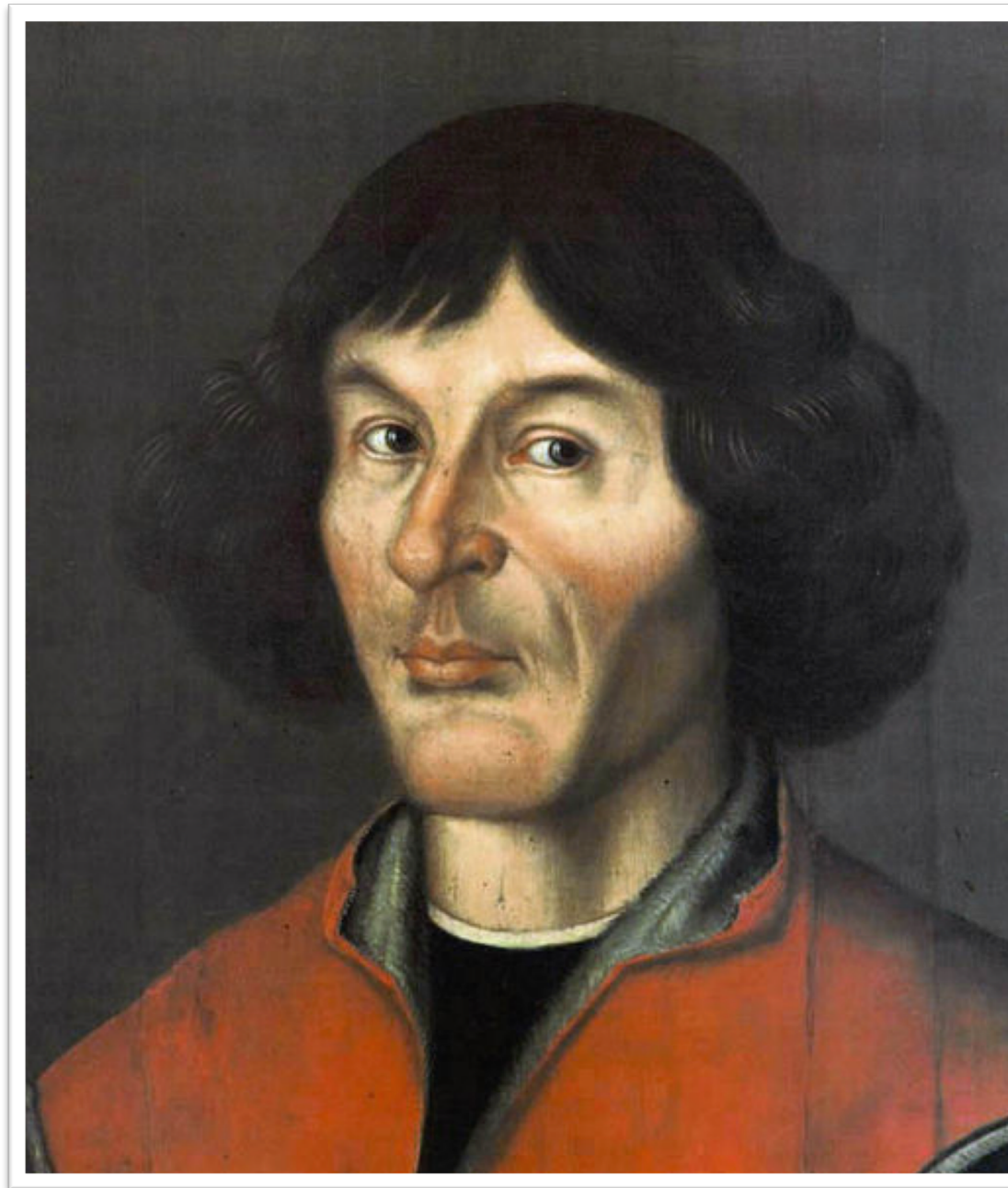
“On the day the Lord gave the Amorites over to Israel, Joshua said to the Lord in the presence of Israel: “Sun, stand still over Gibeon, and you, moon, over the Valley of Aijalon.” So the sun stood still, and the moon stopped, till the nation avenged itself on its enemies, as it is written in the Book of Jashar.”

Joshua 10:12-13

Nicolaus Copernicus

Portrait of Nicolaus Copernicus from 1580

Copernicus challenged the idea of the geocentric model of the universe, but because he knew how controversial it was, he published the work just before his death



The Council of Trent



Painting of the Council of Trent from the late 17th century

The Council of Trent

- Catholic Church convened this council in 1545 to stop the spread of Protestantism and revive Catholic Church
- Establishment of the Holy Office of the Roman Inquisition to persecute heretics

Giordano Bruno

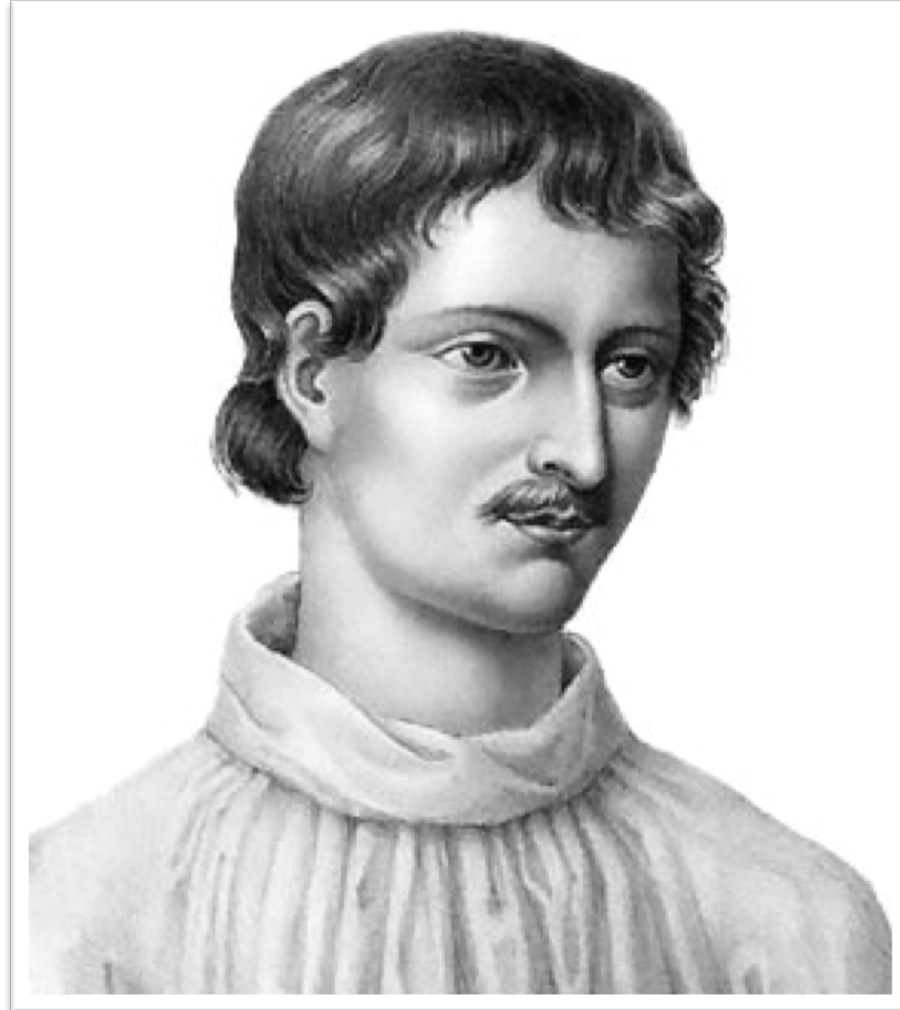


Illustration of Giordano Bruno based on 1700s woodcut

Giordano Bruno

- Another scientist who supported the heliocentric model
- Correctly theorized that the sun is but one of many stars and that the universe contained many stars with orbiting planets
- In 1600 Bruno was tried before the Inquisition and burned at the stake
- We do not know exactly what he was charged with
- He held numerous religious beliefs also counter to the church doctrine

Galileo

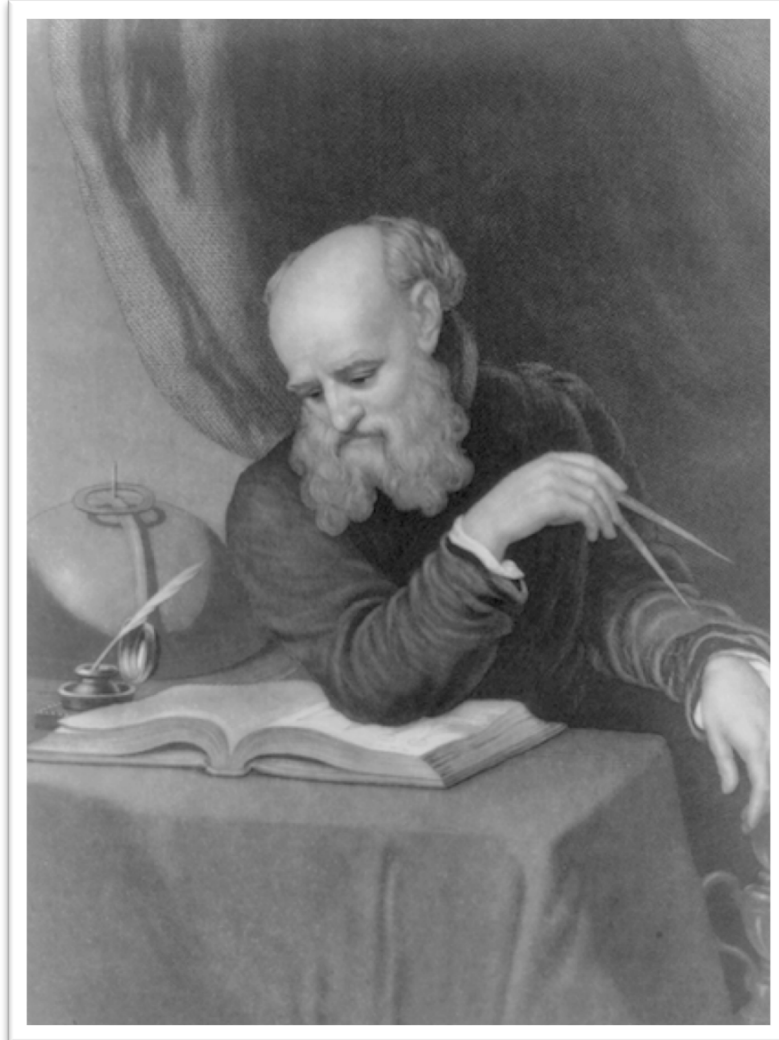


Illustration of Galileo, date unknown

Galileo

- Born in Pisa, Italy in 1564
- Religious man and wished to be a monk at one point
- Studied motion and physics at the university of Pisa
- In 1609 he built a telescope, which confirmed a heliocentric model and he began teaching this to his students

Conflict



*Galileo Galilei Showing
the Doge of Venice
How to Use the
Telescope
-painted in 1858*

Church Warning

- In 1615, the Catholic Church warned Galileo to stop teaching the heliocentric model
- In 1616, the Catholic Church banned the works of Copernicus and others who supported the heliocentric model
- Galileo continued to write and support his ideas though
- Pope Urban VIII told Galileo he could speak of the theory, but could not say it was absolutely true
- His book 'Dialogue Concerning the Two Chief World Systems' resulted in him being brought before the Inquisition as a heretic the following year

Central Historical Question

Was Galileo really a heretic?

What happened to Galileo?



Galileo Facing Roman Inquisition, painted in 1857

After Galileo

1661: Isaac Newton taught Galileo & Copernicus's ideas in England

1758: Catholic Church ended ban on books teaching heliocentrism

1939: Pope Pius XII called Galileo a hero of research

1979: Pope John Paul II ordered an investigation into Church's treatment of Galileo