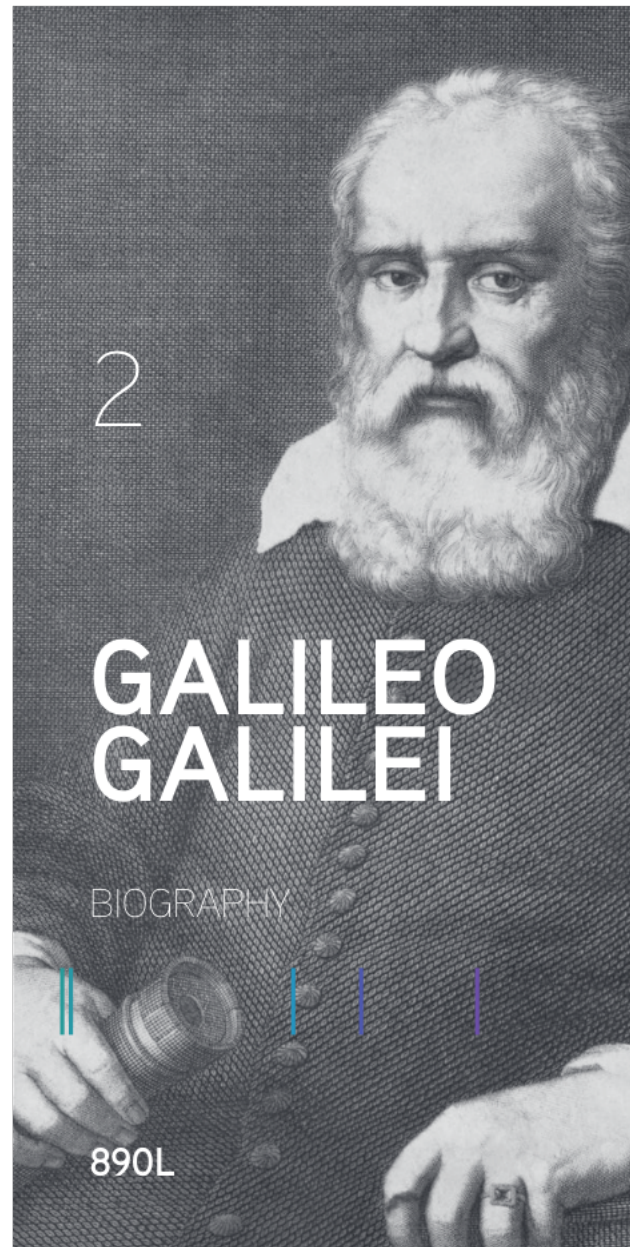




BIG HISTORY PROJECT



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# GALILEO GALILEI

BIOGRAPHY

890L

# GALILEO GALILEI

THE FATHER OF MODERN  
OBSERVATIONAL ASTRONOMY

**Born**  
February 15, 1564  
Pisa, Italy

**Died**  
January 9, 1642  
Florence, Italy

By Cynthia Stokes Brown, adapted by Newsela

An Italian Renaissance man, Galileo used a telescope of his own invention to collect evidence that supported a Sun-centered model of the Solar System.

Galileo Galilei was born in Pisa, Italy, on February 15, 1564. He was the first of seven children. Galileo's father was a musician — a lute player — from a noble background.

Galileo wanted to become a priest, but his father pushed him to study medicine at the University of Pisa.

University courses at this time were based on Aristotle's teachings. But Galileo made sharp observations and began to question some of Aristotle's ideas.

For example, Aristotle had said that objects of different sizes fall at different speeds. Galileo observed hailstones all hitting the ground at the same time. He decided that Aristotle was wrong.

## Is the Earth or the Sun at the center of it all?

Galileo became a professor of mathematics, first in Pisa, then in Padua. He also gave private lessons in military architecture, fortification, surveying, and mechanics.

Galileo began studying tides, and became interested in astronomy.

At this time, most scholars still agreed with Ptolemy and Aristotle that all heavenly bodies revolve around Earth (a geocentric model).

But other views were being considered. Nicolaus Copernicus claimed that all bodies revolve around the Sun (a heliocentric model). Danish astronomer Tycho Brahe believed that Earth was fixed but other planets orbited around the Sun.

In 1597, Galileo read a book by German astronomer Johannes Kepler that argued for a heliocentric universe. Galileo wrote a letter to Kepler, saying he agreed, but was keeping quiet, because he didn't want to be mocked.

## Galileo looks at the sky

Galileo's first known astronomical observation occurred in 1604 a supernova was visible in the sky. A supernova is the explosive death of a large star.

Aristotle had said that no change could ever take place in the sky. This event proved him wrong. From then on, Galileo began to observe the sky, perform experiments, and make his own conclusions.

In 1609, the Dutch had made an early telescope. A friend who saw it showed it to Galileo as having two lenses, one on each end of a 4-foot tube. About a month later, Galileo had made a telescope three times as powerful as the Dutch device. Galileo continued to work on his telescope, making improvements.

Using the telescope, Galileo saw four moons orbiting Jupiter. This contradicted Ptolemy's idea that the Earth is the center of all orbiting bodies.

Galileo published his findings in March 1610 as *The Starry Messenger*. The general public was excited by his work. However, most professional astronomers disagreed with Galileo and said the moons weren't real.

Galileo stopped teaching and became a mathematician for the royal court in Florence. It was there that he began to observe Venus.

His observations demonstrated that Venus orbits the Sun. This supported Copernicus' theory and Ptolemy was wrong. Galileo believed that the Earth orbits the Sun, but he had not proved it yet.

## The Inquisition targets Galileo

In the 16th century, the Catholic Church was facing many problems. Some people broke from the Church because of a disagreement and became Protestants. Printers in many European cities helped ideas spread quickly. Some of these ideas went against the teachings of the Church.



An undated engraving of Galileo and his telescope

To fight the spread of these ideas, the Pope set up a system of trials or courts. It was called the Inquisition.

In 1616, Inquisition authorities banned Copernicus's book *On the Revolutions of the Heavenly Spheres* because it argued for a Solar System with the Sun at the center. They also banned any other books that agreed with Copernicus, which included Galileo's work.

Galileo traveled to Rome. He thought the Church was making a mistake that would hurt its reputation. He believed the Catholic Church should separate science and religion completely. The Church did not agree with Galileo. In the end, he agreed to obey the ban.

Galileo got permission from Pope Urban VIII to write a book, but he was not allowed to take sides in the Earth versus Sun debate. Galileo wrote his book for six years. In the book, one character argued for a heliocentric model, and another character argued for a geocentric model. A third character was a regular person, listening to both sides.

The book appeared in Florence in March 1632. In August, an order came from the Roman Inquisition to stop all sales.

Leaders in the Catholic Church felt that Galileo's book was arguing for a heliocentric model, even though the book wasn't supposed to do that.

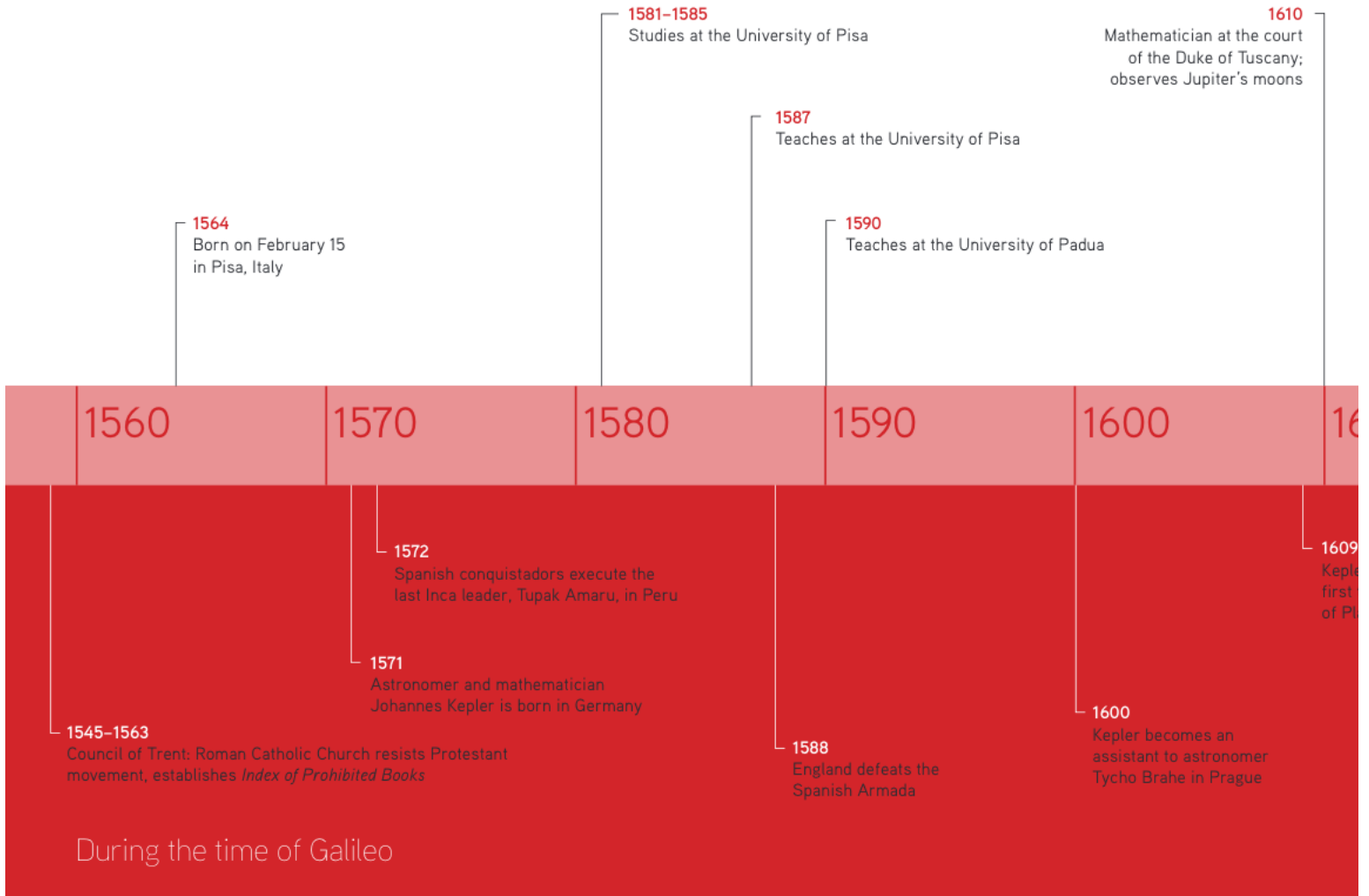
In September 1632, Galileo was charged with "heresy" — disagreement with the Church. He was ordered to come to Rome for a trial.

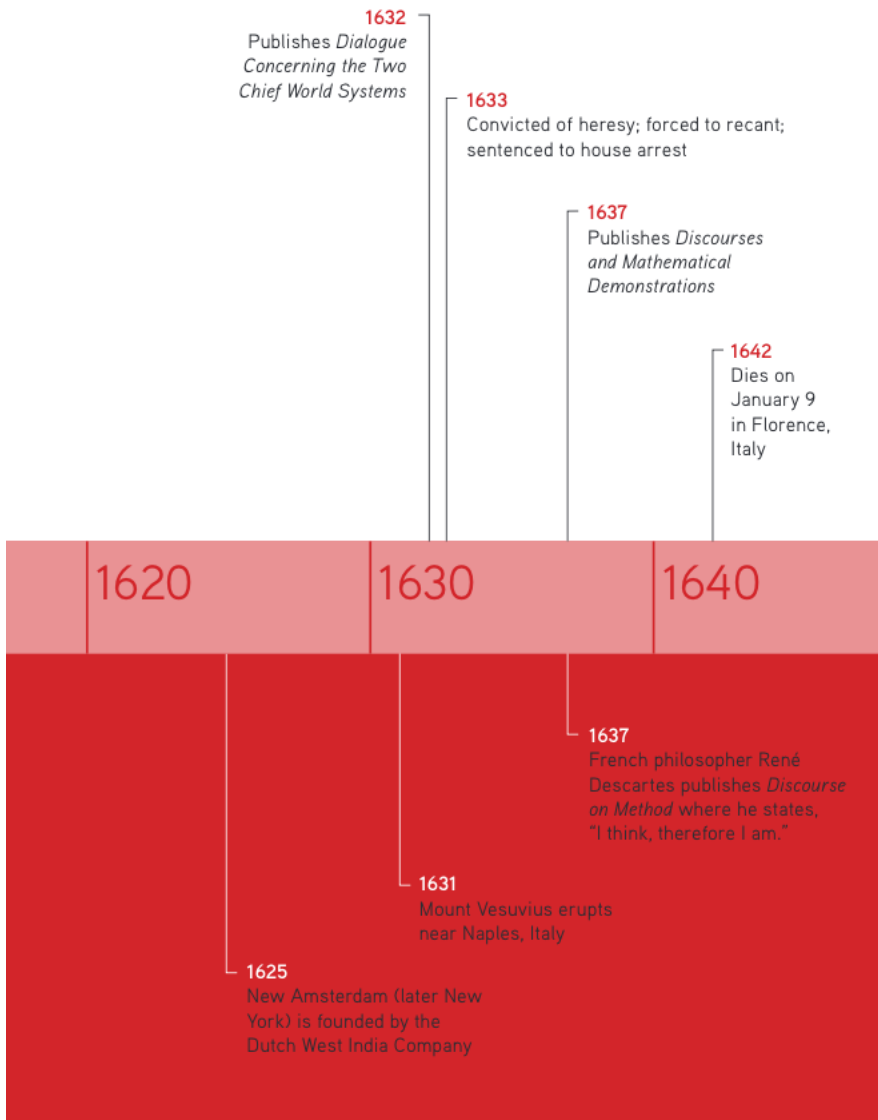
Galileo tried to argue that his book showed both sides, but finally he admitted that maybe the book leaned toward the Sun-centered argument.

He was threatened with torture. He had to publicly admit he was wrong. His book was banned.

Legend has it that as Galileo left the courtroom he whispered, "Eppur si muove [Still it (Earth) moves]," but this was most likely invented.

# Timeline of Galileo's life





Galileo was crushed by the harsh verdict. The Inquisition put him in house arrest at his villa outside Florence. He was ill with a hernia, palpitations, and insomnia. A few months after his return home, his daughter, Maria Celeste, who he was very close to, died.

The following year, Galileo's book was published in Latin in France, outside the grasp of the Catholic Inquisition. This allowed his ideas to reach a wide audience.

## Blindness and a legacy of truth

Galileo bounced back from these serious setbacks. In 1637, he wrote a book summarizing all his ideas. The book was translated into French and Isaac Newton read it in 1666.

By 1638, Galileo had become totally blind. He wrote many letters dictating them to others. He died on January 9, 1642, in Florence, at the age of 77.

The Catholic Church didn't end the ban on Galileo's book for 200 years — not until 1835. In 1992, Pope John Paul II expressed regret that the Church treated Galileo.

Galileo's own insights about his blindness may be the best way to remember him. The following lines have been adapted from a letter he wrote to a friend:

Well, your friend Galileo has been blind these last few months. Through my remarkable discoveries and observations, I have greatly expanded our past ideas of our Universe. But now, the whole Universe for me is shrunk down to my own sensations: what I can hear, touch, smell, taste...

## Sources

- Drake, Stillman. *Galileo: A Very Short Introduction*. New York: Oxford University Press, 1980.
- Galilei, Galileo. *Dialogue Concerning the Two Chief World Systems*. Trans. by Stillman Drake. 2nd ed. Berkeley: University of California Press, 1967.
- Heilbron, John L. *Galileo*. New York: Oxford University Press, 2005.
- Reston, James, Jr. *Galileo: A Life*. New York: HarperCollins, 1994.
- Sharratt, Michael. *Galileo: Decisive Innovator*. Oxford and Cambridge, MA: Blackwell, 1994.

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