

Heliocentric and Geocentric Models

The heliocentric and geocentric models fall under the heading of cosmology. Cosmology is the study of the universe and humanity's place in the universe.

The geocentric model of the universe holds that earth is the center of the universe and other objects orbit around it. This belief system was popular in ancient Greece. The majority of ancient philosophers (like Aristotle and Ptolemy) thought that the sun, moon, stars, and planets revolved around Earth.

This geocentric model was based on two different perceptions. The first perception was that stars seemed like they revolved around Earth because the stars near the equator would rise and set each day and then circle back to their original starting point. The second perception was that Earth is a stable mass- it does not feel like it is moving.

The very first mention of a heliocentric version of the universe is attributed to Aristarchus (somewhere between 312-230 B.C.). Aristarchus also measured the distances between planets and the sizes of planets. His measurements were way too small, but he correctly identified that the sun is bigger than Earth. Aristarchus' theories controlled western thought for several centuries.

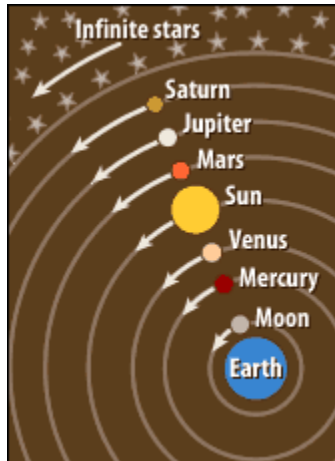
Even though he was not the first to think of a universe that revolved around the sun, Copernicus is credited with being the first major astronomer to formulate the heliocentric model. The heliocentric model holds that the sun is the center of the universe and Earth and the other planets actually revolve around the sun. In 1514, Copernicus distributed the *Commentariolus*, which was a six page hand-written text describing his ideas about a heliocentric universe.

Galileo Galilei also helped advance the theory of a heliocentric universe. He was credited with improving the telescope, and his improvements allowed for more accurate astronomical observation. He supported Copernicus' heliocentric theory. Galileo's support of the heliocentric model was controversial during the time in which he lived. In fact, the Catholic Church prohibited supporting a heliocentric model of the universe, because they said it was not empirically proven and contradicted scripture. Galileo was forced to recant heliocentrism and spent his last years of life under house arrest by order of the Roman Inquisition.

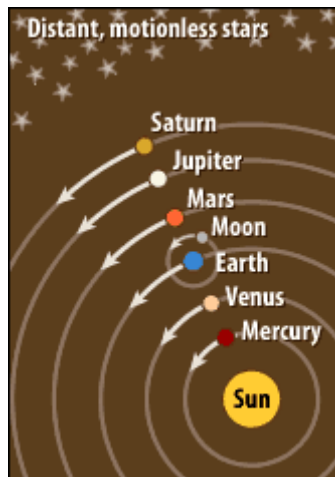
After Galileo, heliocentrism started to become more widespread. Scientists like Kepler helped to further advance the theory. The heliocentric model eventually completely replaced the geocentric model.

Heliocentric and Geocentric Models (Cont'd)

The geocentric model would have been depicted similar to this:



The heliocentric model would have been depicted like this:



The heliocentric model is now accepted as the correct model of our universe.

Name _____

Date _____

Heliocentric and Geocentric Models Questions

Multiple Choice:

1. The study of the theory of the universe and humanity's place in the universe is known as:
 - a. heliocentrism
 - b. astronomy
 - c. geocentrism
 - d. cosmology
2. This man was credited with improving the telescope:
 - a. Pluto
 - b. Galileo
 - c. Ptolemy
 - d. Aristotle

True or False:

- ___ 3. The heliocentric model was the popular model in ancient Greece.
- ___ 4. Copernicus distributed his six page heliocentric theory in the early 18th century.
- ___ 5. The geocentric model was based on the thought that the stars revolved around the Earth.
- ___ 6. Kepler was a geocentrist.

Fill Ins:

7. _____ was credited with improving the telescope.
8. The very first mention of a heliocentric version of the universe is attributed to _____.
9. The _____ model holds that the sun is at the center of the universe, and stars and planets revolve around the sun.
10. The _____ model holds that Earth is at the center of the universe, and sun and planets revolve around Earth.
11. Galileo was forced to recant heliocentrism and spent his last years of life under house arrest by order of the _____.
12. _____ is credited with being the first major astronomer to formulate the heliocentric model.

Heliocentric and Geocentric Models Answers

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