

Phil. 401: Discussion Questions

January 17th, 2017

Readings: T. S. Kuhn. *The Copernican revolution: Planetary astronomy in the development of Western thought*. Harvard University Press, 1957, Chapter 5.

Goals: By the end of the class, students should be able to compare and contrast the ways in which Aristotle's cosmology is consistent/coherent with (i) Ptolemaic astronomy and (ii) Copernican astronomy respectively.

1 Review

Find your group from last time and review your answers to the first two questions below.

1. According to post-Copernican astronomy, the universe has the following three features:
 - (a) The earth is moving.
 - (b) The earth is not at the center of the universe.
 - (c) There may be other planets that are like the Earth.

Using Aristotle's theory of the elements and theory of motions, explain why we should expect all three of these claims to be false.

2. Is Ptolemy's explanation of the motion of planets consistent with Aristotle's theories of the elements and motion? Explain why or why not.

2 Ptolemy vs. Copernicus

Form a new group of five students.

1. Compare and contrast Copernicus and Ptolemy's theories along the following dimensions:
 - (a) The use of epicycles

- (b) The use of eccentrics
 - (c) The use of equants
 - (d) The size of the universe
 - (e) Accuracy of theory with respect to data about planetary positions
 - (f) Explanation of retrograde motion
 - (g) Explanation of why Venus and Mercury never appear far from the sun
 - (h) Explanation of the order of planets
 - (i) Simplicity
2. In what ways are both Copernicus' and Ptolemy's astronomical views at odds with Aristotle's theory of natural motion and place?
 3. In what ways is Copernicus' theory more hostile to Aristotelianism?
 4. Are there any ways in which Copernicus' theory is less at odds with Aristotle's views than is Ptolemy's?