

Reading Guide: Ptolemy's *Almagest*

This week's reading goes hand in hand with last week's. Recall that last week, we read about Aristotle's dynamics as applied especially to questions about the structure of the cosmos generally. In particular, we saw Aristotle give multiple arguments about the shape, position, and motion (or lack thereof) of the earth. This week, we will read Ptolemy's discussion of the same issues. You'll see that Ptolemy is very much working within the same mindset as Aristotle. However, at the same time, you'll see that Ptolemy is not merely repeating Aristotle's own ideas and arguments; Ptolemy, it turns out, is a genuinely creative and powerful thinker in his own right (we'll especially see that this is true next week!).

Recommended order of reading

1. Dewitt, ch. 10 (required; this reading will be tremendously helpful to you as you prepare to read Ptolemy. Dewitt provides an easily understandable summary of most of the key arguments given by Ptolemy in his preface to the *Almagest*.)
2. PS, 1.12 – Excerpts from Ptolemy's *Almagest* (required.)

Excerpts from the Preface to Ptolemy's *Almagest* (PS 1.12).

1. Ptolemy begins by discussing the motions of the stars. What does he mean by the "ever-visible stars"? What does he mean by the "single common point" or the "pole of the heavenly sphere"?
2. In the first section, Ptolemy supports the hypothesis that the stars / heavens move like a sphere by considering and refuting three alternative hypotheses. What are these three hypotheses and what are Ptolemy's arguments against each of them?
3. Ptolemy argues next for the hypothesis that the earth is spherical. He gives two positive arguments for this conclusion. What are they?
4. To support this same hypothesis (that the earth is spherical), Ptolemy also carefully considers four different alternative hypotheses (pertaining to various other possible shapes) and systematically refutes each one. Do your best to understand Ptolemy's reasons for rejecting each of these four hypotheses.
5. In the next section, Ptolemy argues that the earth has the ratio of a point to the heavens. Again, do your best to understand the reasoning that Ptolemy gives in support of this hypothesis and against the alternative hypothesis (i.e., the hypothesis that "the earth is of perceptible size in relation to the distance of the heavenly bodies").
6. This Ptolemaic (and Aristotelian) belief pertaining to the relative size of the earth does not sit well with part of Dewitt's discussion pertaining to "the argument from stellar parallax." Try to find where Dewitt goes wrong in his discussion and fails to account for this Ptolemaic belief.
7. Ptolemy's case for believing that the earth is located at the center of the universe is not so easy to spot or summarize as the other arguments he gives. Find his argument(s) for this conclusion. What is assumed by Ptolemy in this part?
8. The fact that Ptolemy didn't believe what we believe now about the structure of the universe is not due to his not considering such beliefs. In the last section of this reading, we see him consider the hypothesis that the earth spins on its axis once per day, and we see him consider the hypothesized existence of something like an atmosphere (that gets carried along with the earth in its daily motion). What are his arguments against these hypotheses? What do you think of Ptolemy's arguments

9. Notice that Ptolemy consistently follows a pattern of reasoning / argumentation each time that he defends a particular hypothesis in this reading. Describe this pattern. That is, how does Ptolemy argue for the truth of hypotheses throughout this passage?
10. **KEY INVESTIGATIVE QUESTION:** We have seen arguments similar to these before. You should recognize the conclusions of these arguments (that the earth is spherical and stationary at the center of the universe) from Aristotle's *On the Heavens*. But you should also recognize many of the *arguments* that Ptolemy gives for these conclusions as taken straight from Aristotle. Compare and contrast Aristotle's and Ptolemy's arguments for these conclusions. Which of Aristotle's arguments are simply repeated by Ptolemy? Which of these are based on Aristotle's arguments but changed to some degree (and how are they changed)? Which arguments are new to Ptolemy? And which of Aristotle's arguments are not used at all by Ptolemy?