

Reading Guide: Galileo's *Dialogue*

Recommended Order of Reading

1. Dewitt, ch. 17 (Required summary of Galileo's new thoughts and discoveries in astronomy and dynamics.)
2. PS, pp. 100-104 (Required; this reading gives an especially nice, quick summary of the "Galileo Affair" - i.e., Galileo's encounter with the Catholic church.)
3. PS, 2.9, 2.10 (Required primary source reading; both excerpts come from Galileo's *Dialogue Concerning the Two Chief World Systems*.)
4. PS, 2.8, 2.11; [SEP: "Galileo Galilei"](#) (Recommended; the first two are also taken from Galileo's *Dialogue* and are very highly recommended.)

Galileo's Dialogue Concerning the Two Chief World Systems (2.9: "A Moving Earth Is More Probable Than the Alternative")

Both of this week's primary source readings come from Galileo's most well-known work: *The Dialogue Concerning the Two Chief World Systems*. The characters of Galileo's fictional dialogue are Salviati (typically the mouthpiece of Galileo - a convinced Copernican who is clearly the most clever of the three), Sagredo (an honest inquirer who is open to hearing the best arguments from both sides of the debate - i.e., from proponents of both of the two "chief world systems"), and Simplicio (somewhat of a simpleton who is a proponent of Ptolemaic astronomy and Aristotelian / Peripatetic dynamics). Most of the dialogue consists of Salviati devastating the pro-Ptolemaic arguments of Simplicio and putting forward strong arguments in favor of a Copernican worldview. Read more from the secondary sources to hear more about this work and more about the characters of the dialogue.

1. Describe, in your own words, the "true method of investigating whether any motion can be attributed to the earth," according to Galileo.
2. Sagredo challenges Salviati and suggests that there are no observable consequences of the earth's annual motion -- as opposed to its diurnal motion. In response, Salviati refers to the "correspondence with which such a movement **is** reflected in all the other heavenly bodies." What do you think Galileo is referring to here?
3. **Key task in understanding this reading well:** Throughout the rest of this excerpt from the dialogue, Salviati presents seven arguments for thinking that it is more probable that the earth should be in motion than that it is at rest. Identify each of these seven arguments and do your best to rephrase each argument in your own words.
4. Which of the seven arguments do you find the most convincing?

Galileo's Dialogue Concerning the Two Chief World Systems (2.10: "The Ship and the Tower")

As we have seen in class and other readings, by far the greatest hindrance to accepting Copernicus's astronomical theory before Galileo was the fact that it clashed with Aristotelian dynamics. Thus, if Copernican astronomy was really going to catch on, a new dynamics was needed! Galileo provides it (not in its finished form, but he provides the key ingredients and arguments of this new dynamics that are relevant to this debate). This reading is important in this regard.

This reading interacts in particular with the powerful Aristotelian argument (that we saw both in Aristotle and in Ptolemy) from the behavior of things on earth (e.g., the fact that things thrown vertically upward return to the same point from which they were thrown) to the conclusion that the earth must be at rest.

1. Galileo's (Salviati's) first argument against this Aristotelian argument for the stability of the earth essentially argues that Aristotle begs the question. (This argument takes up pp. 144-45.) How does Aristotle's argument beg the question, according to Salviati? And do you agree?
2. Note that, in the midst of this first argument (middle of first column on p. 145), Salviati gets Simplicio to admit that a wind would have little to no observable effect on the motion of a cannon ball or "very heavy rock". This is an ingenious development in the dialogue by Galileo, because while Salviati shows that this consideration has no real power in this part here, he uses it very powerfully in his own argument coming up. Thus, effectively, he gets Simplicio to admit here to the truth of one of his premises in his upcoming argument!

Contextual note: The rest of this excerpt from the dialogue (beginning on p. 146) is a very famous passage in which Salviati uses Simplicio's belief that "whatever is seen to occur [on a moving ship] must also take place on the terrestrial globe [if it is moving]" against him. In accord with Aristotelian dynamics, Simplicio assumes that a stone dropped from the top of a mast on a moving ship will land some distance away from the base of the mast depending on how fast the ship is moving. He then points out that a stone dropped from the top of a tower lands at the foot of the tower. This difference shows that the earth, unlike the ship, must be at rest.

3. Galileo (through Salviati) turns this argument on its head against Aristotelians (through Simplicio). Read carefully through the argument and describe how he does this.
4. Page 147 and on really gives you a feel for how ingenious Galileo is with regards to thinking about dynamics. He uses the idea of a perfectly spherical and hard ball on a frictionless, inclined plane to prove to Simplicio that a stone dropped from the top of a mast on a moving ship will land at the base of the mast. Again, here you need to take your time and work hard to understand Galileo's reasoning and argument.