



The Scientific Revolution: Its Classical and Christian History with Dr. Ted Davis

Lecture 12.3: Copernicus Moves the Earth: What He Did and What it Meant, Part 3

Outline:

Copernicus Moves the Earth: What It Meant

- Some examples of Biblical texts relevant to the motion of the earth:
 - The sun also rises, and the sun goes down, and hastens to his place where he arose. —Eccles. 1:5
 - The Lord reigns, he is clothed with majesty; the Lord is clothed with strength, wherewith he has girded himself: the world also is established, that it cannot be moved. —Psalm 93:1
 - Who laid the foundations of the earth, that it should not be removed forever. —Psalm 104:5
 - Then spake Joshua to the LORD in the day when the LORD delivered up the Amorites before the children of Israel, and he said in the sight of Israel, Sun, stand thou still upon Gibeon; and thou, Moon, in the valley of Ajalon. And the sun stood still, and the moon stayed, until the people had avenged themselves upon their enemies. Is not this written in the book of Jasher? So the sun stood still in the midst of heaven, and hasted not to go down about a whole day. —Joshua 10:12-13
- Even before Copernicus' book was published, his ideas became known and elicited objections based on the Bible. For example, Martin Luther famously commented off the cuff at dinner with some of his students in 1539. This was recorded in Table Talk (1566), of which two versions exist.
 - Neither version names Copernicus, but both clearly refer to him. The version by Johann Aurifaber, all in German, calls Copernicus "Der Narr," the "ass" or "fool." This could be an embellishment by Aurifaber, who is not seen as a very reliable source. The version by Anton Lauterbach, in a mixture of German and Latin, simply says, "So it goes now. Whoever wants to be clever must agree with nothing that others esteem. He must do something of his own. That is what that fellow does [ille facit] who wishes to turn the whole of astronomy upside down. Even in these things that are thrown into disorder I believe the Holy Scriptures, for Joshua commanded the sun to stand still and not the earth."



- Either way, Luther clearly did not agree with Copernicus, and partly for biblical reasons. Yet, he also reflected the scholarly consensus at the time—no one outside Copernicus' tiny circle had yet accepted heliocentrism. Luther's impression, that Copernicus' novel idea was outrageous and drew publicity only for that reason, was widely shared.
- Luther's leading disciple, Philipp Melancthon, held that Copernicus' theory could not be taken literally as a physical fact. Nevertheless, he loved mathematical astronomy and allowed Copernican theory to be taught as another mathematical hypothesis (not as a proven fact) at Lutheran universities. His overall attitude—that astronomers were free to use various mathematical ideas without taking any of them too literally—was consistent with astronomical tradition going back to the Greeks and also with Aquinas' attitude toward Ptolemy.
- According to a widely repeated myth, John Calvin also condemned the Copernican theory. As I told you early in the course, Andrew Dickson White popularized a false claim to that effect, complete with a bogus quotation alleged to be from Calvin.
- **Calvin certainly believed that the Earth was at rest in the center of the universe. However, he never mentioned Copernicus by name anywhere in his writings, nor did he clearly deny the Copernican theory on biblical grounds.** Some think he ridiculed it in a sermon on 1 Corinthians 10, but he was probably commenting on a reference by the French reformer Sebastian Castellio to a rotating Earth in Cicero's *Academica*, not to Copernicus' idea that the Earth goes around the Sun. His point, in context, was that some people will say outrageous things just for the shock value.
- Copernicus himself was aware of the possibility that some might object to his theory for biblical reasons—though he was much more concerned about public ridicule and objections from Aristotelian philosophy.
 - In the preface to his published book, dedicated to Pope Paul III, he briefly alluded to this, dismissing “certain ‘idle talkers’ who take it upon themselves to pronounce judgment, although wholly ignorant of mathematics...”
 - “... if by shamelessly distorting the sense of some passage in Holy Writ to suit their purpose, they dare to reprehend and to attack my work; they worry me so little that I shall even scorn their judgments as foolhardy.”
 - **“Mathematics is written for mathematicians; and among them, if I am not mistaken, my labors will be seen to contribute something to the ecclesiastical commonwealth...”**
- Contrary to what is often said, Copernicus had good reasons to think that the Roman Catholic Church wanted him to publish his ideas. Why? A pressing need to fix problems with the Julian calendar, used since Roman times. Pope Gregory XIII eventually dealt with it decisively in the 1580s—the Gregorian calendar



- The Church had invited Copernicus several times to help solve this problem. Once he started working on his book, friends urged him to publish it, including his fellow canon Tiedemann Giese, who became Bishop of Chełmno (Culm) in 1538.
- But Copernicus was still reluctant to publish. A quiet person who shunned controversy, he knew that moving the earth violates common sense and would invite ridicule. For example, he was depicted as a fool in a Mardi Gras play written in Latin by a Dutch Protestant schoolmaster and performed in the nearby town of Elbląg in 1531.
- He changed his mind during a visit by a young astronomer from Luther's own university at Wittenberg who became Copernicus' only student: Georg Joachim Rheticus. Rheticus came to Frombork in 1539, not long after the decree against Protestants in Warmia, to see Copernicus and to learn more about his ideas.
- Giese and Rheticus persuaded Copernicus to allow his ideas to be published—in a book Rheticus would write himself, *Narratio prima* ("The First Account"), published in Gdansk in 1540. It was probably read more widely than Copernicus' own book, *De revolutionibus*. By the time Rheticus left Frombork in Sept 1541, Copernicus had also agreed to let his own book be published.
- The great printing center in Germany was Nuremberg, where Rheticus found a printer. Before the job could be finished, however, he accepted a new position at the University of Leipzig.
- To finalize the job of overseeing publication, he enlisted the help of Andreas Osiander, a convert to Lutheranism who had been the first Protestant minister in Nuremberg. An amateur mathematician, Osiander was deeply concerned about how Copernicus' moving earth would be received.
- Intending to ease the acceptance of Copernicus' mathematics, Osiander added an unauthorized preface right at the front of the book. He said that astronomers cannot really have "certain" knowledge of the heavens; only "hypotheses" are possible, so let these "hypotheses" be received no differently than any others.
- Neither Copernicus, nor Rheticus, nor Giese knew about this until they saw the book after its publication; Rheticus angrily crossed it out with a red crayon!
- Insulted by Osiander's preface, Giese tried to get the Senate of Nuremberg to censure Osiander, but they paid no attention—why should they? He'd acted sensibly...
- Osiander's preface, with its advice to not take the earth's motion literally as a physical truth, was very influential on how the book was received for the rest of the century.
- It also influenced the views of Catholic theologians in 1616, when they censored Copernicus' book to make it appear more hypothetical than Copernicus had intended. This ban remained in force for about two



centuries. It was officially removed from the Index only in Dec 1820; when the next printing of the Index took place in 1835, *De revolutionibus* was finally gone.

- The story of publication has a sad ending. In Dec 1542, Copernicus suffered a stroke and his health rapidly declined. Six months later, on 24 May 1543, paralyzed on his right side and bedridden, his mind and memory gone, Copernicus died. The final set of printed pages from his book—the opening section, including Osiander's preface—had only just arrived from Nuremberg. It was placed in his hands as he lay dying—did he even realize it was his own book?
- Although in time most Christians came to accept the Solar System without batting an eye, a few Christians today still reject it as unbiblical.
- Another issue merits comment: If the earth really moves around the sun, then the stars should appear to be in slightly different locations at different times of the year—annual parallax, but it was not observed until 1838.
 - The absence of observable parallax was a very strong argument against the Copernican theory.
 - To get around this objection, Copernicus himself needed to expand the size of the universe by at least 1,000 times in radius (the distance to the stars), to explain why parallax could not be seen. Yet, he still thought the universe had a definite edge.
 - However, some later Copernicans began to speculate about an infinite universe—a possibility suggested by the absence of parallax.
 - Thomas Digges proposed an actually infinite universe, containing uncountable stars that were just like the Sun—to be visible at such vast distances, those stars had to be enormous in size and incredibly bright.
- If the universe is really that large, with countless other suns, some also wondered whether other planetary systems exist, containing living things—perhaps even intelligent life!
 - This idea is called the **plurality of worlds**, after a book by the French mathematician Bernard le Bovier de Fontenelle, *Entretiens sur le pluralité des mondes* (1686)
 - A more purely fictional work was written by the English minister John Wilkins, *The Discovery of a New World ... in the Moone* (1638 and 1640). Wilkins claims that it is “probable there may be inhabitants in this other World, but of what kinde they are is uncertaine.”
 - “There is no more certain Way of comprehending the prodigious Bulk of the whole Mundane Fabrick, and the infinite Wisdom of its Divine Contriver, than by this Machine From hence we learn to have a most Noble and Magnificent Notion of the whole System of Nature. Now we are assured this Earth we inhabit is but a small and inconsiderable Part of a glorious Fabrick, since there are almost infinite Worlds created by a Supreme and Almighty Being, which are prodigiously



larger than ours.”—William Deane, *The Description of the Copernican System* (1738), p. vi