

WHO WAS COPERNICUS?

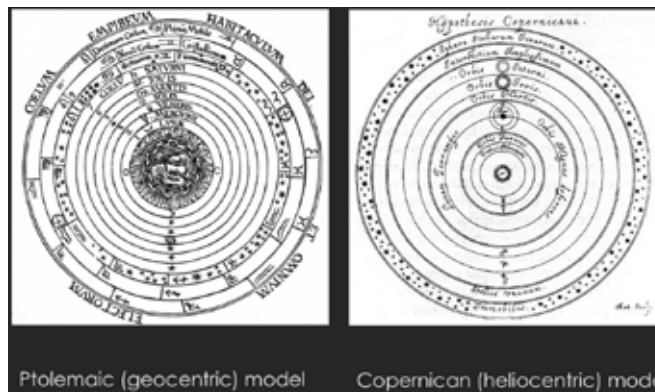
Nicolaus Copernicus (1473-1543) was a “canon” (church servant, not priest) of Frombork Cathedral in the remote episcopal province of Varmia, now part of northern Poland. When he was about forty he circulated an anonymous sketch of what would later be known as Copernicanism or “heliocentrism,” a model in which the planets, now including Earth, circle the Sun. Just before his death in 1543, his great *De revolutionibus (On the Revolutions)*, unfolding this cosmology, was published by a prominent printer in Nuremberg.

At one level, Copernicus’s modification of the older model of Ptolemy was relatively simple: he placed Earth where the Sun had been (between the circles of Venus and Mars) and located the Sun in the centre, where Earth had been. Most radically, in Copernicus’s model, Earth became a planet, a “wandering star,” which meant that it *moved*: rotating once every 24 hours, and tracing an annual revolution about the central Sun.

DID COPERNICUS “DETHRONE” EARTH AND HUMANKIND FROM THEIR SPECIAL PLACE IN THE COSMOS?

According to one persistent interpretation of Copernicus, his work somehow entailed a humiliation for Earth and its inhabitants. I call this interpretation the “Great Copernican Cliché.” Influential writers from Bernard le Bouvier de Fontenelle in the late 1600s and on through Johann Wolfgang Goethe, Sigmund Freud, Carl Sagan, and down to the present have congratulated Copernicus for demoting or “dethroning” us humans, cosmologically speaking. If Earth is a planet, then perhaps the other planets are earths, and we’re not the unique creatures in a unique location—not the special objects of the Creator’s concern—that we once thought we were. The cliché thus feeds the broad presumption that science serves to undermine religion.

It’s true that the history of astronomy gives us humans much to ponder about our “place” in the Universe. Gradually, not only were other planets imagined to be earths, but the existence of “other moons” stripped our Moon of its uniqueness,



while stars came to be seen as other suns, some nebulae came to be seen as other galaxies, and today some cosmologists even speak of other universes (or of a “Multiverse”).

But it’s worth pondering the immediate obstacles faced by heliocentrism. In the reigning physics of Copernicus’s day, inherited from Aristotle, the centre of the Universe was the cosmic low point, and it drew heavy things to itself. That’s why the element of earth, being the heaviest, stood at the centre, above which were the spheres of water, air, fire—and beyond that a fifth, celestial element or “quintessence.” By proclaiming Earth a planet, Copernicus implied that Earth was in the heavens—an exaltation, not a demotion. Furthermore, by saying that the Sun was in the centre, Copernicus risked demoting the Sun, depriving it of its membership among the heavenly bodies (each associated classically with one of the gods). The first official response to Copernicus’s teaching (1544) complained that “Copernicus puts the indestructible sun in a place subject to destruction.” Thus for a long time, most remained convinced that our mutable Earth, not the noble and immutable Sun, belonged there in the cosmic basement, in what the philosopher Pico had called “the excrementary and filthy parts of the lower world.” In his most poetic passages, however, Copernicus worked hard to renovate that basement by describing the centre as a *solium* (throne)—a fit place from which the Sun (*sol*) should govern the planets.

Still, in the absence of new physics, Copernicus’s model was simply very hard to accept. It lacked decisive observational evidence, and contradicted the longstanding commonsense view that we live on *terra firma*. It took almost a century and a half after the death of Copernicus for his model firmly to take hold even among astronomers. Before 1600, only

a small handful endorsed heliocentrism. Moreover, many theologians initially regarded Copernicanism as contrary to certain parts of Scripture that (superficially at least) supported geocentrism (e.g., Joshua commanded that the Sun stand still). Some worried that it involved heresy. But over time, thanks to contributions from the likes of John Calvin and Johannes Kepler, theological opposition to astronomy all but faded away. Today, essentially no one sees any conflict between Christian doctrine and the claim that Earth is one of the planets.



LETTING COPERNICUS BE COPERNICUS

Fortunately, some very great scientists did accept and build on Copernicus’s new cosmology. Kepler, like Copernicus, sought an orderliness and harmony in the structure of the Universe based on *theological* presuppositions. Copernicus had sought the beauty and consistency of a world that “the best and most orderly Artist of all framed for our sake.” (He didn’t say *merely* for our sake!) Kepler’s development of Copernicanism was likewise undergirded by his conviction that “geometry ... shines in the mind of God. The share of it which has been granted to man is one of the reasons why he is the image of God.” Galileo, moreover, recognized that Copernicus’s model entailed a promotion for Earth: no longer “excluded from the dance of the stars” and no longer “the sump where the universe’s filth and ephemera collect.”

With his work based on strong convictions about the artistry and orderliness of the Creator, and so also about

the elegance and mathematical consistency of the Cosmos, Copernicus deserves his place of honour at the birth of modern science. But he did not cosmically dethrone or demote Earth and its inhabitants. 🌱

FIND OUT MORE

Dennis Danielson, "Copernicans and the Structure of the Universe," CSCA YouTube Channel ([csc.ca/youtube](https://www.csc.ca/youtube)).

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Dennis Danielson and Christopher M. Graney, "The Case Against Copernicus," *Scientific American*, 310(1) (Jan 2014): 72-7.

Owen Gingerich, *God's Planet* (Harvard University Press, 2014).

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DENNIS DANIELSON

M.A. Intellectual History (University of Sussex)
Ph.D. English (Stanford University)



Dennis Danielson, Professor Emeritus of English at the University of British Columbia, is an intellectual historian and Milton scholar with interests in the history and literature of science. Danielson's anthology *The Book of the Cosmos: Imagining the Universe from Heraclitus to Hawking* was named to Amazon.com's "Editor's Choice" top 10 science books for the year 2000.

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 www.csc.ca  1.905.297.5245

 info@csc.ca  P.O. Box 63082, University Plaza
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Did Copernicus Dethrone the Earth?



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