

Episode 260 - The Universe Is Infinite And Eternal And Has No Gods Over It

Post by “Joshua” of December 22, 2024 at 10:58 AM

Quote

In his book *The Sand Reckoner*, Archimedes set out to demonstrate methods for dealing mathematically with extremely large numbers, such as the number of grains of sand which would fill the universe (hence the title of his book). Of course to arrive at the largest number possible, he had to find a description of the largest theoretical universe known in which to place his grains, and for that he turned to Aristarchus. Having explained to his patron, King Gelon, that most astronomers believed the earth to be the center of the universe, around which everything else rotated, he added almost as an aside:

But Aristarchus has brought out a book consisting of certain hypotheses, wherein it appears, as a consequence of the assumptions made, that the universe is many times greater than the “universe” just mentioned. His hypotheses are that the fixed stars and the sun remain unmoved, that the earth revolves about the sun on the circumference of a circle, the sun lying in the middle of the orbit, and that the sphere of fixed stars, situated about the same centre as the sun, is so great that the circle in which he supposes the earth to revolve bears such a proportion to the distance of the fixed stars as the centre of the sphere bears to its surface.

--Archimedes, *The Sand Reckoner*, chapter 1:4-5

Here then was Aristarchus’s great thought, preserved only as a reference in another book. Archimedes for his part did not even believe it to be true, only being interested in the sheer scale of the model he proposed.

The response to Aristarchus’s hypothesis of a heliocentric solar system was perhaps to be predicted and may in itself help to explain why so few of his own works survive. Contemporaries were horror-struck by the new role this Alexandrian astronomer gave to the earth and, by implication, to the people on it. How dare he take away their special position at the very heart of creation? One of them, by the name of Cleanthes, wrote a treatise entitled simply *Against Aristarchus*. This has since been lost, so we don’t know on what grounds he attacked Aristarchus, but Plutarch would later comment that Cleanthes

thought it was the duty of the Greeks to indict Aristarchus of Samos on charges of impiety for putting in motion the Hearth of the Universe (i.e. the Earth), this being the effect of his attempt to save the phenomena by supposing heaven to remain at rest and the Earth to revolve in an oblique circle, while it rotates at the same time, about its own axis.

--Plutarch, On the Face Which Appears on the Orb of the Moon, book 6

Display More

--*The Rise and Fall of Alexandria*, by Justin Pollard and Howard Reid