Sedley Article: Epicurus And The Mathematicians of Cyzicus -1976 (On The Issue of Epicurus vs Geometry)

Post by “Cassius” of June 15, 2022 at 9:26 AM

Thanks to Don for this link, which appears to have a lot of good information in it!

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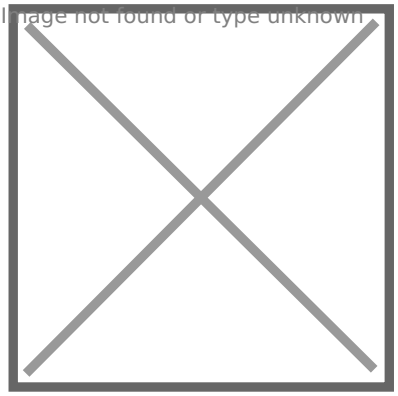

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EPICURUS AND THE MATHEMATICIANS OF CYZICUS

DAVID SEDLEY

1. The Epicureans and Geometry

> 'Not even the belief in a minimal unit is worthy of natural scientist, and indeed Epicurus would never have held it if he had preferred to learn geometry from his associate Polyaenus instead of making Polyaenus himself unlearn geometry.'
>
> (Cicero, *De finibus* I 20)

That Epicurus believed in a minimal unit of measure out of which not only atoms but also all larger lengths, areas and volumes are composed, is nowadays widely accepted; and most would also agree that it is not merely a physical minimum, contingent upon the nature of matter, but a theoretical minimum, than which nothing smaller is conceivable.[1] Others both before and since Epicurus have been seduced by similar theories without being led to reject conventional geometry. Yet this is precisely the penalty which a theory of minimal parts should carry with it, for one of its consequences is to make all lines integral multiples of a single length and therefore commensurable with each other, whereas the incommensurability of lines in geometrical figures had been recognised by Greek mathematicians since the fifth century. Moreover the principle of infinite divisibility lay at the heart of the geometrical method commonly called the 'method of exhaustion', which was fruitfully developed by Eudoxus in the fourth century.

What little evidence survives for the Epicureans' attitude to geometry presents a coherent picture. Epicurus himself is only known to have written about geometry insofar as it affected the structure of atoms.[2] But in the years 311/0-

dies Presented to G. Vlastos' (Phronesis, suppl. vol. I, 1973), 421-30; E. Mayser, *Grammatik der griechischen Papyri aus der Ptolemäerzeit*, II i (Leipzig & Berlin 1926); F. Sbordone, *Philodemus, Adversus [sophistas]* (Naples 1947); *Per la storia dell'epistolario di Epicuro, Miscellanea Rostagni* (Torino 1963), 26-39; D.N. Sedley, *Epicurus, On Nature, Book XXVIII*, « CErc » 3 (1973), 5-83; *The Structure of Epicurus' On Nature*, « CErc » 4 (1974), 89-92; L. Spina, *Eudosso e i Ciziceni nei papiri ercolanesi*, « CErc » 1 (1971), 69-72; H. Steckel, 'Epikuros', *RE* Suppl. XI (1968), 579-652; H. Usener, *Epicurea* (Leipzig 1887); G. Vlastos, *Zeno of*

Here's the point that appears to me to behind everything:

2. The Cyzicenes

It was not, I imagine, with a heavy heart that Epicurus resolved to strike geometry from his school curriculum. To see why, one need only read Plato's prospectus for higher education in the Academy, in Book VII of the *Republic*, where the various branches of mathematics — arithmetic, plane and solid geometry, astronomy, and harmonics — are commended for their ability to draw the mind away from the changing world towards the contemplation of an unchanging reality. This document [28] might have prompted any materialist philosopher to think twice about the educational value of pure mathematics, notwithstanding its obvious uses as an applied discipline.

Given that the only "unchanging reality" in Epicurean terms is at the level of the atoms and void, and that's clearly NOT what Plato was taking about, the contention that our attention should be drawn away from the world around us to "an unchanging reality" that does not exist -- those are fighting words, and a very damaging thing to teach to children or adults! So I would fully expect Epicurus to want to upend the entire issue by drilling down to separate what might be helpful in geometry from what would be a damaging fiction.