

Movement, Direction, and Speed of Atoms - Do Atoms Fall "Down?" Is the "Swerve" Required To Bring Them Together Into Bodies?

Post by "Cassius" of December 12, 2024 at 8:15 AM

For reference as to Lucretius saying the swerve initiates collisions, and as to whether a collision resulting from a swerve was necessary to initiate world formation:

EPICURUS' REFUTATION OF DETERMINISM - David Sedley

1. The Swerve

A few facts are, I hope, uncontroversial enough to be set out without defence. Epicurus inherited Democritus' atomic system, but modified it in a number of respects. In particular, he so vehemently objected to its rigidly deterministic laws as to postulate a minimal. 'swerve'... in the motion of atoms, occurring at no fixed place or time — a doctrine which does not feature, in his meagre surviving writings but is nonetheless amply attested as his; and defended on his behalf by Lucretius (II 216-93). The swerve (a) _enables atoms falling through space at equal speed in parallel lines to collide occasionally and initiate cosmogonic patterns of motion_; and (b) somehow or other serves as a necessary condition for the behavioural autonomy of animate beings — a power often identified as 'free will'.

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I do not propose to expend much discussion on the swerve's cosmogonical function (Lucretius II 216-42), which I suspect to be a problem dreamed up with a preconceived solution in mind. Chains of atomic collisions in extra-cosmic space could have quite adequately been explained by the lateral intrusion of one or more atoms from elsewhere, despatched, say, by the break-up of a nearby world. The question of how such collisions ever started in the first place would not arise, given the infinity of past time and past worlds. That is, indeed, the view strongly implied by the Letter to Herodotus and the Letter to Pythocles, the physical epitomes which Epicurus wrote when he had already worked out his main cosmological views in Books I-XIII of his *On Nature*. Since these two works also contain no hint of the swerve doctrine, the likelihood is that it was his later work on psychology, apparently in the closing books of the thirty-seven book magnum opus, that led him to the innovation, and that it was only then grafted onto the existing cosmological scheme.

Bailey Lucretius Book 2 -

[216] Herein I would fain that you should learn this too, that when first-bodies are being carried downwards straight through the void by their own weight, at times quite undetermined and at undetermined spots they push a little from their path: yet only just so much as you could call a change of trend. But if they were not used to swerve, all things would fall downwards through the deep void like drops of rain, nor could collision come to be, nor a blow brought to pass for the first-beginnings: so nature would never have brought aught to being.

[225] But if perchance any one believes that heavier bodies, because they are carried more quickly straight through the void, can fall from above on the lighter, and so bring about the blows which can give creative motions, he wanders far away from true reason.

For all things that fall through the water and thin air, these things must needs quicken their fall in proportion to their weights, just because the body of water and the thin nature of air cannot check each thing equally, but give place more quickly when overcome by heavier bodies. But, on the other hand, the empty void cannot on any side, at any time, support anything, but rather, as its own nature desires, it continues to give place; wherefore all things must needs be borne on through the calm void, moving at equal rate with unequal weights. The heavier will not then ever be able to fall on the lighter from above, nor of themselves bring about the blows, which make diverse the movements, by which nature carries things on. Wherefore, again and again, it must needs be that the first-bodies swerve a little; yet not more than the very least, lest we seem to be imagining a sideways movement, and the truth refute it. For this we see plain and evident, that bodies, as far as in them lies, cannot travel sideways, since they fall headlong from above, as far as you can descry. But that nothing at all swerves from the straight direction of its path, what sense is there which can descry?