

Connecting Thought With Atoms - Emergence, Downward Causation (From The Macroscopic To The Atomic), and Epicurus

Post by "Cassius" of March 29, 2026 at 3:22 PM

In [today's Zoom](#) and also podcast this issue was discussed as a result of [David Sedley's article "Epicurean Anti-Reductionism."](#) The basic concept as I understand it it likely this:

Epicurus would have understood just as we do today that it is not intuitive how atoms, which have no properties other than shape, size, and weight, can no matter how they combine have the ability to think and assume all the other complex phenomena that we see around us. In even simpler terms, how can atoms which do not possess the property of color combine into bodies that do have the property of color. Has something been added to the body that was not present in the originating atoms?

It is one thing to say that these phenomena "emerge" from the atoms, and another to offer any kind of coherent and persuasive conceptual model of how this might be possible. And note that I say "model" rather than "explanation," as "explanation might imply we can somehow list what might be an infinite series of causes.

In "Epicurean Anti-Reductionism" Sedley builds the Epicurean case for providing an explanation how this could occur, and he gives citations to where the phenomena is discussed in the texts, including Lucretius in Book 2 discussing how the mind of a horse issues orders for the horse to emerge onto the racetrack.

This also has obvious relevance for issues of determinism.

This is a very interesting area to develop and it continues to be a matter of discussion today, often under the name of "downward causation."

Here's a clip from Sedley's article and after that I will post a number of resources. I have not read them other than to glance at the first, which came from Joshua:

But is there also downward causation? Can the properties of a macroscopic body act causally on its atomic components? It may be hard at first to see how they could. For example, if a macroscopic object is sufficiently dense it falls to the bottom when dropped in water. It is sound Epicureanism to conclude that the object's density is the cause of *its* falling. But there seem to be no grounds for adding that the object's density is also the reason why each atom in it, taken individually, falls. At the atomic level, each atom's behaviour is accountable in terms of its own weight, perhaps the occasional random swerve, and its collisions with other atoms. Thus one might conclude that in Epicureanism all causation is either upward (from the atomic to the macroscopic) or horizontal (from the atomic to the atomic, or from the macroscopic to the macroscopic).

causes will be found at the atomic level. When the water in a kettle changes to steam, the immediate cause may be an accidental property, its becoming hot; but that accident, although it has no existence at the microscopic level, is nevertheless caused by a set of underlying atomic changes. In short, if an Epicurean world lacks downward causation, all macroscopic properties are mechanically caused by the motions of atoms.

Was Epicurus willing to stomach this conclusion? Emphatically, no. That even human behaviour should be mechanically determined was an unacceptable outcome of Democritean atomism which Epicurus, famously, felt able to resist.⁸⁶ Moreover, his denial of it involves an express assertion of downward causation. Lucretius, on Epicurus' behalf, assures us that the cause of autonomous action must be the mind's volition, and that the *corpsa materialia*⁸⁷ in the limbs is directed by this volition (II 251-83, especially 261-2, 266-71, 278-93). Now the "mind" is itself the physical organ of consciousness⁸⁸, comparable to the brain and nervous system in modern physiology. But "the mind's volition" (its *voluntas*, 257, 261, 270, 276; its *studium*, 268) can only be an accidental property of that organ. It therefore follows from everything we have learnt so far that volition exists only at the level of experience, not at the atomic level. Yet volition is said to act upon our atomic matter.

[Examples of downward causation? — The Brains Blog](#)

I just culled together a bunch of putative examples of downward causation, some from advocates, some from detractors. Particularly interesting and promising is...
philosophyofbrains.com

(There are many more references I will add as time allows.)

Crossreference to [the Zoom where this arose](#).

Post by "Cassius" of March 29, 2026 at 4:27 PM

I'll post separately that it might seem that the title of this thread and terms like "downward causation" are technicalities irrelevant to day to day life. However I'd posit that having a conceptual model of how complex systems like human beings emerge from atoms moving through the is essential to having any real confidence that the naturalistic explanation of the universe is sound.

<https://www.epicureanfriends.com/thread/5003-connecting-thought-with-atoms-emergence-downward-causation-from-the-macroscopic/>

If you can never get comfortable with the idea that non-thinking matter can give rise to thinking animals, then all the citations to 'atomism' in the world aren't going to serve the purpose for which they are needed. And in fact if you don't have a better developed understanding then you'll likely be stuck with Democritus making some critically-damaging conclusions about the implications of atomism.

To help process the implications of this issue I recommend the following short three-minute video which Kalosyni found:

<https://www.youtube.com/watch?v=BxV3EXRfvBg>

And to show that Thomas Jefferson too thought about this see the underlined section below:

Jefferson to John Adams, August 15, 1820

[Full version at Founders.gov](#))

Here Jefferson complains to Adams about Christian theology and states that "To talk of immaterial existences is to talk of nothings. To say that the human soul, angels, god, are immaterial, is to say they are nothings, or that there is no god, no angels, no soul. I cannot reason otherwise."

... But enough of criticism: let me turn to your puzzling letter of May 12. on matter, spirit, motion etc. It's crowd of scepticisms kept me from sleep. I read it, and laid it down: read it, and laid it down, again and again: and to give rest to my mind, **I was obliged to recur ultimately to my habitual anodyne, 'I feel: therefore I exist.' I feel bodies which are not myself: there are other existencies then. I call them *matter*. I feel them changing place. This gives me motion. Where there is an absence of matter, I call it *void*, or *nothing*, or *immaterial* *space*. On the basis of sensation, of matter and motion, we may erect the fabric of all the certainties we can have or need.**

I can conceive *thought* to be an action of a particular organisation of matter, formed for that purpose by it's creator, as well as that *attraction* in an action of matter, or *magnetism* of loadstone. When he who denies to the Creator the power of endowing matter with the mode of action called *thinking* shall shew how he could endow the Sun with the mode of action called *attraction*, which reins the planets in the tract of their orbits, or how an absence of matter can have a will, and, by that will, put matter into motion, then the materialist may be lawfully required to explain the process by which matter exercises the faculty of thinking. When once we quit the basis of sensation, all is in the wind. **To talk of *immaterial* existences is to talk of *nothings*. To say that the human soul, angels, god, are immaterial, is to say they are *nothings*, or that there is no god, no angels, no soul. I cannot reason otherwise:** but I believe I am supported in my creed of materialism by Locke, Tracy, and Stewart.

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