

# Episode Thirty-Two: The Atoms Are Colorless, But the Implications Are Not

Post by "Don" of August 23, 2020 at 6:48 AM

From what I can read from those categories, the ancient Epicureans would have had a lot of phenomena stuck at 2b whereas modern science, with its extension of the senses (e.g., microscopes, telescopes, etc), is able to have many more move into 2c. Major 2b ones that we still wrestle with are the deep structure and origin of the universe, the origin of life, etc. BUT we can literally see into deep space and "see" deep into matter at the interactions of atoms and molecules with experimentation and even deeper to understand sub-atomic particles via instruments like the Large Hadron Collider.

I also think when Epicurus and Lucretius talk about things like hooked "atoms" (\*their\* atoms, not our atoms) in, for example, diamond, they were intuiting the rigid crystalline atomic structure of this substances without realizing what we know today. In their experience, something with hooks could become entangled (a box of fishhooks, let's say). Likewise, "atoms" with hooks would result in a material difficult to disentangle. Same way with the smooth "atoms" in liquids. In their experience, smooth grains of sand slide past each other. At the "atomic" level, smooth "atoms" would allow a substance to flow.

Now, in modern times, we know these properties have to do with atomic and crystalline structures and the properties of molecules, etc. We don't see atoms (our atoms, not Epicurean atoms) as un-cuttables or fundamental particles but through the ancients' observations, they reasoned that if things like hooks and sand behaved one way, that if similar structures were analogous at their "atomic" level, that's how things too small to see could account for the things we see. You can go down to that unseeable world and still have unchanging particles that could give rise to things we can see. The "smooth atoms" and "hook atoms" don't change, merely their arrangements. But if you insisted on dividing below the level of the atoms\*\* infinitely, there's nothing that could hold together to form matter and you'd end up with nothing being able to be formed. Essentially, there'd be nothing for the universe to be made of. Stopping at the "atoms" provides the universe's building blocks.

\*\*NOTE: To be clear, I'm talking here about the Epicurean atoms/seeds. I have no problem at all "dividing below the level of the [modern] atoms" to discover quarks, mesons, quantum fields, etc.