

Episode One Hundred Twenty-Seven - Letter to Pythocles 02 - The Formation of "Worlds"

Post by "beasain" of July 2, 2022 at 8:53 AM

[Quote from Cassius](#)

In the meantime, I noticed an interesting exchange on Martin's wall about "entropy" and how issues revolving around the eventual destruction of our world (but not of the universe as a whole!) can be a little depressing to think about.

Martin on his wall limited this issue to the future of our solar system. In my opinion the concept of entropy is really a most depressing one, and I think that Epicurism is for me an excellent antidote to live with it.

Entropy is a measure of disorder, and especially the so-called second law of thermodynamics rules the universe in an unpleasant way:

"the entropy of the universe increases in the course of any spontaneous change."

The key word here is universe: it means, as always in thermodynamics, the system together with its surroundings. There is no prohibition of the system or the surroundings individually undergoing a decrease in entropy provided that there is a compensating change elsewhere.

Atkins, Peter. The Laws of Thermodynamics: A Very Short Introduction (Very Short Introductions) (p. 49). Oxford University Press. Edición de Kindle.

"The second law is of central importance in the whole of science, and hence in our rational understanding of the universe, because it provides a foundation for understanding why any change occurs. Thus, not only is it a basis for understanding why engines run and chemical reactions occur, but it is also a foundation for understanding those most exquisite consequences of chemical reactions, the acts of literary, artistic, and musical creativity that enhance our culture."

Atkins, Peter. The Laws of Thermodynamics: A Very Short Introduction (Very Short Introductions) (pp. 37-38). Oxford University Press. Edición de Kindle.

The consequence of this law is that there is in general a change that takes place in the direction of more disorder (destruction). My library spontaneously evolves in a chaotic state of books (and it costs energy to order them). The good thing is that you like in my library locally can reduce the disorder by augmenting the disorder of the universe. An example is an airco installation in the city. You can reduce the inside temperature in your house (lower temperature is lower entropy) by 'pumping' entropy to the rest of the city. 😞

In other words, to maintain entropy/disorder low you need to have a continuous flow of energy. An example is our body. While we are able to pump oxygen and sugar around our organs everything maintains its ordered state, and the repair mechanisms maintain entropy low. Once the flow of energy stops, self-organisation begins to disintegrate, and in keeping with the Second Law of thermodynamics our orderly system becomes undone, dissolves... The cells start leaking, autolysis, and the body starts to disintegrate.

I think that the Second law of thermodynamics has enormous philosophical implications, and I have the feeling that it is in some way in Epicurus with his no nonsense stand against metaphysics. "You can philosophize all that you want but nobody escapes of a tremendous increase of entropy sooner or later". The latter are of course my words...

What do you think? [Martin](#)?

PS. The book of Peter Atkins I have cited from is a very good introduction to the concept, and in my opinion also to philosophical implications. Peter Atkins wrote various very good textbooks on chemistry etc.