

# Question Re Thermodynamics And Deductive Reasoning v. Empiricism

**Post by "Cassius" of October 3, 2019 at 8:13 AM**

I will be interested in what others have to say about this, especially [Martin Huehne](#), but I think the key aspect of your question is contained in "is not something we can observe even with the aid of the most sophisticated technology."

The point to remember here is that Epicurus was not a "radical" empiricist who insisted on direct observation of every aspect of his philosophy. This is a point developed at length by DeWitt, but not often by others, that it is obvious that Epicurus embraced deductive reasoning, with the starting point being sensation, but by no means limited to what can be perceived directly.

This is obvious even from the beginning of the discussion of atoms and void - Epicurus certainly did not have the technology to observe atoms directly, and void is by its nature empty of details to sense, and atoms and void they are at the core of his philosophy due to his deductive reasoning that they must exist based on what he *\*was\** able to observe. This observation applies both to the existence of the atoms as well as to the conclusion that the universe is eternal, which is based on the observation and reasoning that matter is not created or destroyed spontaneously (or, as specified in Lucretius, at the will of gods).

Here are a couple of quotes where we can observe this deductive reasoning most clearly:

From the letter to Herodotus, note the sentence I have placed in ALL CAPS:

"First of all, that nothing is created out of that which does not exist: for if it were, everything would be created out of everything with no need of seeds. And again, if that which disappears were destroyed into that which did not exist, all things would have perished, since that into which they were dissolved would not exist. Furthermore, the universe always was such as it is now, and always will be the same. For there is nothing into which it changes: for outside the universe there is nothing which could come into it and bring about the change. Moreover, the universe is bodies and space: FOR THAT BODIES EXIST, SENSE ITSELF WITNESSES IN THE EXPERIENCE OF ALL MEN, AND IN ACCORD WITH THE EVIDENCE OF SENSE WE MUST OF NECESSITY JUDGE OF THE IMPERCEPTIBLE BY REASONING, as I have already said. And if there were not that which we term void and place and intangible existence, bodies would have nowhere to exist and nothing through which to move, as they are seen to move. And besides these two, nothing can even be thought of either by conception or on the analogy of things conceivable such as could be grasped as whole existences and not spoken of as the accidents or properties of such existences.

Lucretius Book 1 Bailey:

[420] But now, to weave again at the web, which is the task of my discourse, all nature then, as it is of itself, is built of these two things: for there are bodies and the void, in which they are placed and where they move hither and thither. For that body exists is declared by the feeling which all share alike; AND UNLESS FAITH IN THIS FEELING BE FIRMLY GROUNDED AND ONCE AND PREVAIL, THERE WILL BE NAUGHT TO WHICH WE CAN MAKE AN APPEAL ABOUT THINGS HIDDEN, SO AS TO PROVE AUGHT BY THE REASONING OF THE MIND. And next, were there not room and empty space, which we call void, nowhere could bodies be placed, nor could they wander at all hither and thither in any direction; and this I have above shown to you but a little while before.