Review of: "Evolution, Through the Lens of a Physicist"

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The commentary submitted by Alfred Driessen promises to take a closer look at the phenomenon of evolution from the point of view of a physicist. By itself, this could be a valuable input, as the phenomenon of evolution, exhaustingly discussed among biologists and chemists, deserves a wider perspective. However, on further reading, it becomes clear that the author treats this topic with a strong emphasis on philosophy. This may be interesting as well, but soon it becomes obvious that the selected arguments are in conflict with modern natural sciences. They finally lead to conclusions that, in my opinion, are highly doubtful and partially misleading.

First, there is the issue of chance and intent. In my opinion, natural science should always start with the assumption of randomness unless an “intent” is proven. The author does so himself: in part 2, he writes about “true randomness” based on quantum mechanics. No physicist would expect any intent behind a quantum mechanical phenomenon. So why should a biologist? In the discussion section, we find a very dangerous statement: “If a biologist believes that in the biological objects, a designer or even a creator becomes visible, he cannot invoke the natural sciences.” To my opinion, the biologist could not even call that biology, otherwise we would soon have many “biologies” depending on the various religious orientations of their protagonists.

The second conclusion refers to the idea that the whole is always more than its parts. This by itself could be a trivial statement, however, the author is suggesting some metaphysical influence that governs the properties of the ensemble and that cannot be understood based on the properties of the single units. Let’s look at an example in physics: a single water molecule is well understood as a quantum-mechanical entity. If we look at bulk water, we just have to include various interactions between these entities. This given, every single property of bulk water can basically be reconstructed from detailed knowledge of single water molecules, their interactions, and their molecular dynamics. There may be more complex phenomena (the author mentions superconductivity, superfluidity, and photon entanglement), but still, no metaphysics is required for their understanding. The same should hold for biology: the basic assumption should be that all phenomena are to be explained on a molecular basis. And, regarding the final part of the discussion section: molecular interactions easily reveal the basic weakness of the Feuerbach statement (man is what he eats) in the eyes of a molecular biologist - the DNA-controlled metabolism of an organism is definitely much more than the food that it metabolizes.