

Is the organism really a machine?

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Despite all its successes, modern biological science has done remarkably little to tackle the fundamental question that lies at the very heart of biology: what is the nature of the living organism? Contemporary biologists (and philosophers of biology, for that matter) seldom ask this question openly and explicitly. The reason is simple: they already presuppose the answer. The organism is a machine.

One could conceivably construe the history of biology since the seventeenth century as the story of the success of the Cartesian notion of the *bte-machine*. Although the dissatisfaction with this mechanistic conception is almost as old as the idea itself, most of those who found themselves in disagreement were labelled as vitalists and marginalised from the scientific discussion. Today, the organism-machine analogy is dominant in virtually every branch of biological science that studies the organism. This conception of life promotes the view that biology is a subsidiary branch of physical science within which the theories and methods of physics, chemistry, and engineering can be fruitfully applied. In this way, the organism-machine analogy serves to not only justify, but also actively encourage, a number of epistemic attitudes, such as strict methodological reductionism, that have dominated the study of life since the mid-twentieth century.

In this paper I question the conceptual coherence of the organism-machine analogy, and in so doing, I challenge some of the central presuppositions underlying contemporary biological research. Apart from promoting a misleading view of what the living organism is and how it behaves, I argue that the Cartesian notion of the *bte-machine* has actually more in common with a Creationist/ID theorist's conception of life than it does with a well-informed evolutionary-developmental account of the organism. This unhappy marriage of Cartesian mechanicism on the one hand, and Neo-Darwinism on the other, has led to a number of tensions which play out both at the theoretical and practical level concerning what the organism is and how it should be studied.

As a symptom of the pervasiveness of the organism-machine analogy in biological thinking, several research programmes have emerged in recent years which aspire to provide the ultimate vindication of the organism-machine analogy. Central among them is Synthetic Biology, although a number of lines of research in *A-Life* also appear to share this objective. Whilst not denying the legitimacy and usefulness of these new fields, I argue that the faith that has been bestowed upon these disciplines regarding their potential to substantially advance our biological understanding of life is likely to be misplaced.

Finally, I draw from the long-standing anti-mechanistic tradition in biology to propose an alternative, organisation-based conception of the organism that sidesteps the problems of the organism-machine analogy, eliminates some of the deep-rooted conceptual tensions generated by it, and provides an understanding of the organism that is more in accordance with its actual nature.