

The Many Mechanisms of Natural Selection

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It is commonplace among biologists to speak of natural selection as a mechanism, but, with the re-emergence of interest in mechanisms and mechanistic explanation over the past twenty years, philosophers of biology have raised questions about whether it really is true that natural selection is a mechanism, and if it is, how well it fits within the confines of contemporary philosophical accounts of mechanisms.

My view is that this debate has conflated three distinct claims about the relation between mechanisms and natural selection:

- 1) Natural selection processes are mechanistic.
- 2) Natural selection is a type of mechanism.
- 3) Explanations of evolution by natural selection are mechanistic.

I will argue for claim 1 by showing how selection processes exhibit the core features identified by what I call minimal mechanism. I will then dispute claim 2 by giving an account of mechanism types, showing that particular tokens of selection processes do not fall under a common mechanism type. Finally I will dispute claim 3 by showing that there are a variety of explananda and explanatory strategies connected to selection processes, and that only bits and pieces of them appeal to mechanisms. The larger conclusion to draw from this exploration is that a mechanistic ontology and worldview is entirely consistent with a pluralistic conception of scientific explanation.