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# But isn't the neutral theory of ecology a null model?

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## Abstract

Why has the neutral theory of ecology been so controversial? It is tempting to locate the source of controversy in a conflict of worldviews between (a) a view where natural selection via interspecific competition is the dominant mechanism structuring ecological communities and (b) a view where ecological drift, immigration, and speciation are the dominant mechanisms. This fits both the philosophers' predilection for theoretical claims about the world and the narrative of the biological sciences in the 20th century in which natural selection first reigns supreme and then suffers a backlash. Against this received view, I argue that the controversy is better conceived as a conflict of scientific methodologies and that the tension between the selectionist and neutralist worldviews in ecology stems from this root. I frame the controversy as being about the epistemological status and appropriate use of null models. Null models in biology are often used to deny the necessity of invoking selection by establishing the sufficiency of an account lacking selection. Debate over the appropriate use of null models has moved through genetics, ecology, and paleontology over the last fifty years and forms the historical context of this controversy. Current actors' views towards the neutral theory of ecology and toward null models are shaped by these past debates. Framing the controversy as a clash of scientific methodologies emphasizes the underappreciated roles that scientists' goals and methodologies play in shaping their worldview that their enquiry produces and aids in interpreting the virtues and vices of neutral theory.

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