

Popper on Darwinism

In his philosophical analysis of the nature of scientific knowledge Popper differentiated between scientific theories and metaphysical theories or research programmes in terms of their testability. Popper felt that only such theories could be legitimately termed scientific which could be tested and refuted by experience.

Known as the *Demarcation Criterion*, this differentiating principle rendered Darwin's theory of Organic Evolution by natural selection metaphysical as it did not lend itself to such refutation. In Popper's view, the utmost that could be said about Darwinism (this includes neo-Darwinism) is that while in itself it was not testable, it offered a possible frame work for testable scientific theories. The crux of Popper's argument lay in the observation that the evolutionary theory was incapable of making any prediction either in principle or in practice. As a result, the theory had limited explanatory ability in comparison with other scientific theories such as Newton's theory of gravitation. In sum, then, for Popper Darwinism was a metaphysical theory or a research programme, although a very special kind of metaphysical theory because it had provided valuable explanations in understanding at least certain aspects of natural phenomena.

Popper's description of Darwinism as a metaphysical research programme was subjected to severe criticism by both biologists

and philosophers of biology. Later, Popper modified his position by admitting that the theory of evolution could be often tested by deriving testable predictions from it. But philosophers of biology like Michael Ruse have argued that this modification did not amount to any substantive change in Popper's overall position. Ruse in particular argued that Darwinism taken as a whole was capable of making predictions as in the case of *founder principle*, an important principle in Population Genetics. He also argued that in terms of Darwinism one could claim that a species once having become extinct is unlikely to come back. In other words, according to Darwinism evolution cannot repeat itself. As Ruse puts it in his book *Darwinism Defended* (published by Addison Wesley, 1983) "the dodo is gone for ever".

Notwithstanding these limitations of Popper's views on Darwinism, his general philosophy of science does incorporate certain important concepts from the theory of evolution. For instance, Popper's model of scientific change emphasizes the *natural selection* of a given hypothesis in the context of competing hypotheses and the gradual replacement of one hypothesis by another on the basis of empirical refutation. This model of scientific change based on what Popper calls *Conjectures and Refutations* has been taken as the foundation of a new discipline in philosophy known as *Evolutionary Epistemology*.

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