Explanations of the Success of Science

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(ABSTRACT)

Many bodies of modern scientific theory (such as both Newtonian and relativistic physics) have proven to be remarkably successful at predicting future observable phenomena. Some philosophers have seen this success as calling for deeper explanation: what is it about these theories that makes them so predictively reliable, when, presumably, not just any theory would enjoy such success? This question has often motivated philosophers (such as Richard Boyd) to adopt a realist stance towards scientific theories, wherein the entities and mechanisms postulated by a successful theory are understood as referring to real entities and mechanisms in the world. However, as Nicholas Rescher has argued, a close look at the concepts employed in scientific theorizing reveals that they are not of the right kind for such a realist explanation to work. His arguments show that at the root of each key element of our standard scientific framework is a reference to mental functionings. This being so, an explanation such as Boyd's ceases to be viable, as an approximately accurate picture of the external world would presumably be free of reference to mental functioning. I thus attempt to provide a plausible explanation for the success of science, bearing in mind that a straightforward correspondence between the world described by our theories and the world itself does not seem to obtain. Such an explanation relies not only on the features of the external world that our theories might approximate, but also on the ability of mental processes to enrich our picture of this world, both in theorizing and in experience.

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Table of Contents