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Formal and Material Theories in Philosophy of Science: A Methodological Interpretation

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Abstract

John Norton's argument that all formal theories of induction fail raises substantive questions about the philosophical analysis of scientific reasoning. What are the criteria of adequacy for philosophical theories of induction, explanation, or theory structure? Is more than one adequate theory possible? Using a generalized version of Norton's argument, I demonstrate that the competition between formal and material theories in philosophy of science results from adhering to different criteria of adequacy. This situation encourages an interpretation of "formal" and "material" as indicators of divergent criteria that accompany different philosophical methodologies. I characterize another criterion of adequacy associated with material theories, the avoidance of imported problems, and conclude that one way to negotiate between conflicting criteria is to adopt a pluralist stance toward philosophical theories of scientific reasoning.

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