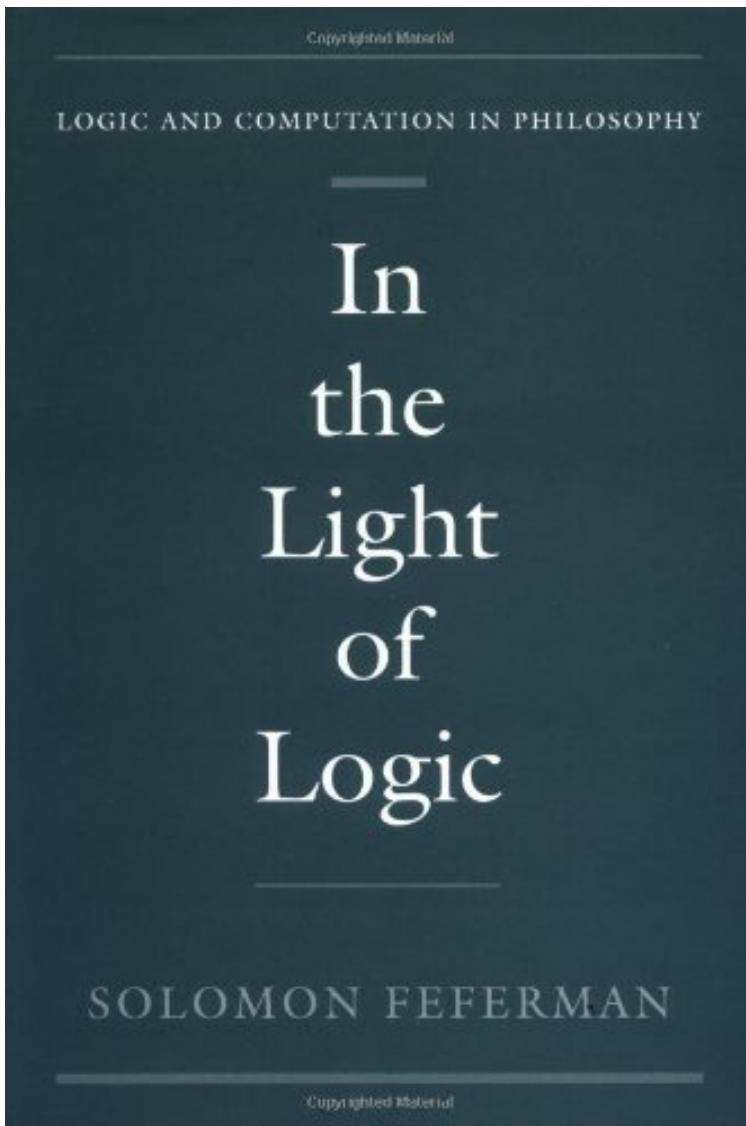


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In the Light of Logic



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Description :

Prsentation de l'diteurIn this collection of essays written over a period of twenty years, Solomon Feferman explains advanced results in modern logic and employs them to cast light on significant problems in the foundations of mathematics. Most troubling among these is the revolutionary way in which Georg Cantor elaborated the nature of the infinite, and in doing so helped transform the face of twentieth-century mathematics. Feferman details the development of Cantorian concepts and the foundational difficulties they engendered. He argues that the freedom provided by Cantorian set theory was purchased at a heavy philosophical price, namely adherence to a form of mathematical platonism that is difficult to support.Beginning with a previously unpublished lecture for a general audience, Deciding the Undecidable, Feferman examines the famous list of twenty-three mathematical problems posed by David Hilbert,

concentrating on three problems that have most to do with logic. Other chapters are devoted to the work and thought of Kurt Gdel, whose stunning results in the 1930s on the incompleteness of formal systems and the consistency of Cantors continuum hypothesis have been of utmost importance to all subsequent work in logic. Though Gdel has been identified as the leading defender of set-theoretical platonism, surprisingly even he at one point regarded it as unacceptable. In his concluding chapters, Feferman uses tools from the special part of logic called proof theory to explain how the vast part--if not all--of scientifically applicable mathematics can be justified on the basis of purely arithmetical principles. At least to that extent, the question raised in two of the essays of the volume, *Is Cantor Necessary?*, is answered with a resounding no. This volume of important and influential work by one of the leading figures in logic and the foundations of mathematics is essential reading for anyone interested in these subjects. *Revue de pressea* outstanding collection, highly informative, sometimes provocative, often insightful, and throughout displaying the great clarity and command which are hallmarks of the author's writing. (Geoffrey Hellman, *Philosophia Mathematica*, Vol. 9, No. 2, 2001) Feferman's book shows that, far from being over, work on the foundations of mathematics is vibrant and continuing, perched deliciously but precariously between mathematics and philosophy. (The Mathematical Intelligencer) *Prsentation de l'diteur* In this collection of essays written over a period of twenty years, Solomon Feferman explains advanced results in modern logic and employs them to cast light on significant problems in the foundations of mathematics. Most troubling among these is the revolutionary way in which Georg Cantor elaborated the nature of the infinite, and in doing so helped transform the face of twentieth-century mathematics. Feferman details the development of Cantorian concepts and the foundational difficulties they engendered. He argues that the freedom provided by Cantorian set theory was purchased at a heavy philosophical price, namely adherence to a form of mathematical platonism that is difficult to support. Beginning with a previously unpublished lecture for a general audience, *Deciding the Undecidable*, Feferman examines the famous list of twenty-three mathematical problems posed by David Hilbert, concentrating on three problems that have most to do with logic. Other chapters are devoted to the work and thought of Kurt Gdel, whose stunning results in the 1930s on the incompleteness of formal systems and the consistency of Cantors continuum hypothesis have been of utmost importance to all subsequent work in logic. Though Gdel has been identified as the leading defender of set-theoretical platonism, surprisingly even he at one point regarded it as unacceptable. In his concluding chapters, Feferman uses tools from the special part of logic called proof theory to explain how the vast part--if not all--of scientifically applicable mathematics can be justified on the basis of purely arithmetical principles. At least to that extent, the question raised in two of the essays of the volume, *Is Cantor Necessary?*, is answered with a resounding no. This volume of important and influential work by one of the leading figures in logic and the foundations of mathematics is essential reading for anyone interested in these subjects.