

Shaughan Lavine, *Understanding the Infinite*, Harvard University Press, Cambridge, MA and London, 1994. ix + 372 pp.

Reviewed by

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This book is a defense of contemporary set theory as a positive and unproblematical addition to mathematics. The author addresses what he considers to be the two main arguments against the set theorist's claim of self-evidence regarding infinite collections: the historical and the epistemological. The former is, according to Lavine, due to a misunderstanding of the historical development of the axiomatizations of set theory. Contrary to the widely accepted picture, the axioms were not a series of nearly desperate measures to safeguard set theory against the paradoxes. This is argued in the first half of the book. The epistemological argument, on the other hand, is the rejection of any possible claim for intuition about the infinite on the basis that no set theorist has direct experience of the infinite. Conceding this lack of direct experience, the author argues that we nonetheless do have intuition of the infinite, which he thinks is an extrapolation (made formally precise) from our experience of the indefinitely large. The second half of the book includes a survey of various philosophies of mathematics, the exposition of Mycielski's finitistic mathematics, and the author's adaptation of the latter to a theory of the indefinitely large which extrapolates to infinitary set theory.

The interwoven strands of history, mathematics, and philosophy throughout the book rule out a detailed description of each chapter. Instead, only some of the strands will be exposed as we go through the chapters.

Chapter I is an introduction to the project and intentions of the author. Chapters II through V deal primarily with the first theme of setting the