

Review of  
**STEWART SHAPIRO, *PHILOSOPHY OF  
MATHEMATICS. STRUCTURE AND ONTOLOGY.***

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The background to the view developed in this book is constituted by the form that classic issues in the philosophy of mathematics — What is the ontological status of mathematical objects? Do numbers, sets, and so on, exist? What is the semantical status of mathematical statements? What do mathematical statements mean? Are they literally true or false, are they vacuous, or do they lack truth-values altogether? — received in the two famous papers Benacerraf devoted to *What Numbers Could Not Be* ([1]), in 1965, and to the notion of *Mathematical Truth* ([2]), in 1973. Both papers stress some difficulties concerning the *realistic* conception, which is taken in both the ontological sense (mathematical *objects* — numbers, functions, and the like — do exist), and in the semantical sense (each well-formed, meaningful sentence is determinately true or false). Difficulties stem from combining these theses with the requirement that mathematical statements have the same semantics as ordinary statements and with the so-called *causal* theory of knowledge: if mathematical objects are outside the causal nexus, how can we know anything about them? How is it possible to guarantee an epistemic access to a causally inert, eternal, and detached mathematical realm? Moreover, confronted with *different* ways to set-theoretically model virtually every kind of mathematical object, we are left without an answer to the question of which kind of objects *are*, for instance, the natural numbers, with the possible conclusion that numbers are not objects at all.

Contrary to what Benacerraf seems to suggest, Shapiro thinks that *antirealist* philosophies of mathematics don't fare any better: in fact, his structuralist program is a realism in ontology and a realism in truth-value. Preliminary to the characterization of his program is the emphasis on the importance of philosophy for mathematics. Dealing with the relationship between the practice of mathematics and the