

is prime' to be true, "it needs to be the case that (a) there is at least one standard model of arithmetic, and (b) '3 is prime' is true in all of the standard models of arithmetic" (p. 90). While this seems to be a reasonable way for the FBP-ist to deal with the non-uniqueness problem, taking mathematical statements to be claims about what is true in all standard models is surely not to take them at face value. The existence, in the FBP-ist's picture, of more than one standard model of arithmetic means that, if one does interpret the singular terms used in the statements of arithmetic at face value, the FBP-ist should agree with the fictionalist that these statements, taken literally, are false.

The real disagreement between FBP and fictionalism is thus not over the truth values of mathematical claims taken at face value. Their disagreement is rather regarding how to reinterpret these straightforward falsehoods so that there is some sense in which they can be said to be true. And here the fictionalist proposal (that such statements are true in the sense that they are true according to our mathematical stories) might well be seen to win out over the FBP-ist alternative, for reasons of ontological economy, since the FBP-ist must rely on the fictionalist's notion of a story to explain what counts as a standard model of our theories, while it is unclear what explanatory value is gained by the FBP-ist's additional claim that our stories should have at least one instantiation.

While Balaguer's strong epistemological and metaphysical conclusions might thus be a little hasty, *Platonism and anti-platonism in mathematics* is an impressive work. Balaguer presents forceful arguments for the viability of both FBP and fictionalism, and against the feasibility of any substantially different Platonist or anti-Platonist position. In the light of the challenges of Benacerraf and Quine, any defence of Platonism *or* anti-Platonism that answers these problems would be welcome. To provide plausible defences of both, as Balaguer has done, is an admirable achievement.

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TOMASZ PLACEK. *Mathematical intuitionism and intersubjectivity. A critical exposition of arguments for intuitionism.* Synthese library, vol. 279. Kluwer Academic Publishers, Dordrecht, Boston, and London, 1999, xii + 218 pp.

Dividing the twentieth century roughly into three parts, the author discusses the philosophical justification of intuitionism given by three prominent representatives of the intuitionist program: Brouwer, Heyting, and Dummett. He investigates their philosophical account in the light of the following three issues: (1) the often-heard accusation that since on the intuitionist view mathematics consists of mental constructions, intuitionism leads to solipsism and the incommunicability of mathematical proofs; (2) the justification of the need for revising classical logic and mathematics; and (3) the question whether it is possible to formulate a satisfactory general intuitionist theory of the meaning of mathematical statements.

The book contains an introduction, followed by three chapters devoted respectively to Brouwer, Heyting, and Dummett. The reviewer feels that it was indispensable to read the whole book carefully in order to understand fully and to appreciate the clear concluding chapter, in which the author succinctly summarizes his findings.

The chapter devoted to Brouwer is the longest of the book. This reflects the author's sympathy for Brouwer's philosophy of mathematics. In his view, Brouwer has produced key elements in the solution of two of the three issues under investigation. Brouwer's response to (1) is that the ideal mathematician should not be seen as an empirical subject but as a transcendental subject. By the nature of a transcendental subject, it is necessary that any two of them carry out mathematical constructions in essentially the same way. Brouwer also saw that the best argument for revising classical logic lies in the notion of choice sequence. (This central aspect of the author's argumentation is discussed at length in the review by Mark van Atten, *History and philosophy of logic*, vol. 21 (2000), pp. 166–168.) Since