

The Rationalist Conception of Logic

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The failure of Frege's foundation for mathematics in [9] led to an enduring tension in the philosophy of logic. If Frege had succeeded, almost everyone would have granted his system the title of logic in a favored, primary sense.¹ First-order logic (FOL) would, like sentential logic, have been considered an interesting special case. Stronger systems might have been called logics in view of their similarities to Frege's. But anything beyond what was needed for the general formalization of mathematics would have borne the name logic by courtesy—particularly if its principles were less evident than Frege's axioms I–V. Unfortunately, however, Russell discovered that there were no stronger systems; a generation later, Gödel showed that the truths of any RE logic could only make up a tiny part of classical mathematics. Logicians after Frege have therefore had to consider a proliferation of systems sharing to various extents the attractions of his paradigm. Since one may differ over which features, if any, can serve to pick out a logic from among the many alternatives, the “scope of logic” ([23], ch. 5) has remained in dispute. Broadly speaking, the disputants fall into two camps, one emphasizing strength as a criterion for the title of logic, the other conceptual simplicity. Stronger systems are more nearly adequate for the job of founding mathematics, yet increasing strength yields less elementary, transparent notions of logical validity and proof. Frege's system, of course, was both elementary and strong, but that was too good to be true.

This paper deals with the problem of characterizing logic that we have inherited from Frege. I will also consider a problem of Quine's. Verbally, it is the same—‘what is logic?’—but Quine's motives and philosophical framework are so different that the relation of his question to Frege's is not obvious. For Quine, the determination of a speaker's ontology, which depends on a choice

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