

Rebecca Goldstein,

Incompleteness: The Proof and Paradox of Kurt Gödel

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REVIEW

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To the extent that Goldstein’s book is an intellectual biography of Gödel, it will inevitably be compared with John Dawson’s (1997) *Logical Dilemmas*. In any such comparison, Goldstein’s work will fare far the worse. It is, for example, short on biographical detail. It is short, also, on exposition of Gödel’s most important mathematical results. Moreover, it is weak on exposition of Gödel’s work. There are plenty of other accounts of Gödel’s mathematical work to turn to, however. The treatment that Goldstein renders is roughly on a technical par with Nagel and Newman’s (1958) *Gödel’s Proof*, as mathematically sophisticated as a philosopher is prepared to venture whose training in mathematics and logic does not precede beyond a standard course in “Symbolic Logic” covering propositional calculus, first-order functional calculus with identity, just enough set theory to learn the Russell Paradox, and just enough “metamathematics” to receive an outline of Gödel incompleteness and a discussion of its philosophical import for arithmetic theories.

Goldstein, trained at Princeton, but in philosophy (albeit engaged to a limited extent in philosophy of mathematics) rather than in mathematics, and author primarily of fiction, is at a disadvantage in navigating the details of Gödel’s proof of his incompleteness results. To the extent, however, that Goldstein’s real aim in this study is to integrate Gödel’s biography and character with the philosophical aspects and *raison d’être* of his mathematical work, the loss of detail has minimal impact on the message that she is seeking to relate.

The dual core of the discussion center around Gödel’s attendance at, but lack of participation in, the meetings of the Wiener Kreis; and his reticence in publishing. The latter episodes focus on Gödel at Princeton and his shared intellectual “exile” there with Einstein.

The link between the young Gödel in Vienna and the old Gödel in Princeton is mathematical Platonism. As a Platonist, Gödel was an outsider among the defenders of empiricism who comprised the Vienna Circle. He was closer in outlook to Wittgenstein whose otherwise enigmatic behavior among the logical positivists in their meetings in Vienna was a reflection, in Goldstein's conception, of his disdain, or at least discomfit, with the implications that the members of the *Kreis* read into his *Tractatus logico-philosophicus*. This unease, undergirded by Spinozistic mysticism, is what caused Wittgenstein to literally turn his back on the members of the Vienna Circle at their meetings, and to read poetry to himself. In Gödel's case, his silence was undergirded by his unspoken Platonism, which fed his hesitation in arguing with the empiricists unless and until he could muster a mathematically fool-proof argument against their empiricism.¹ Having found none strong enough to convince himself of its invincibility, Gödel retreated to the Wittgensteinian silence of the *Tractatus* "*Wovon man nicht sprechen kann, darüber muß man schweigen*" (Wittgenstein 1922, Proposition 7). Gödel, like Wittgenstein, endured silence and isolation, "exile", because he understood that the members of the *Kreis* had misunderstood the import of his work. For Gödel, the incompleteness theorems were a Platonistic proof of the philosophical Platonism of mathematics. And he would have agreed with all those who interpreted his results to apply to all areas of knowledge, encompassing, for example, the Heisenberg Uncertainty Principle, and the Carnapian infinite metalinguistic regress. The failure to find an unassailable argument for his position, or his lack of confidence in his ability to do, and the desire to produce a perfect argument on paper for whatever theme of the moment he devoted himself to-his perfectionism with respect both to the position defended, and to its stylistic and formal expression-accounted for the surprising paucity of Gödel's published output, despite the sheer volume of his total written output. If Gödel was neurotic (and Goldstein never says so), he was also undeniably insecure (about which Goldstein more than hints, while never explicitly asserting).

Gödel's sympathy for Einstein at Princeton was also the sympathy of a fellow intellectual exile. Just as Einstein could not accept quantum mechanics, but, at the same time was unable to close the deal on a unified field theory, so Gödel could not accept either the interpretations and implications drawn by fellow logicians from the incompleteness

¹See (Rodríguez-Consuegra 1992, 1994, 1996) for an extended discussion, engendered by a reading of the official edition of Gödel's published and unpublished writings, of the philosophical aspects of Gödel's work and of its meaning.

theorems, or the studied rejections of the support for mathematical Platonism which Gödel believed held for his results. Thus, in Princeton Gödel daily sought out Einstein just for the chance to converse with him about such matters as whether one could produce an axiomatic system for relativistic spacetime, and whether time is a spiral such that it would be possible to return to one's starting point, *ad infinitum*—in Goldstein's words, whether Gödel would be again a young man attending meetings of the Vienna Circle, working up his incompleteness theorems and searching for an irrefutable proof of Platonism.

In search of an adequate descriptor for Goldstein's book, the best I have been able to arrive at so far is "docudrama." It is an attempt at an educated, but scholastically incomplete and inadequate, representation of Gödel's inner intellectual and emotional life.

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