Incompleteness: The Proof and Paradox of Kurt Gödel

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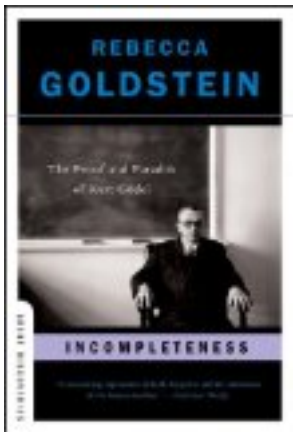
Original link



Gödel was a hacker. He attended the meetings of the Vienna Circle, one of the most important philosophical groups in history, and sat quietly, convinced they were all wrong. Others might try to argue them out of it. Not Gödel. Perhaps (rightly) he thought that rational argument would get him nowhere with people so detached from reality. So he decided to *prove* them wrong.

The result was Gödel's incompleteness theorem, one of the most celebrated results in mathematics and logic, elegantly proving that any mathematical system complicated enough to do basic arithmetic contains statements which, while true, cannot be proven within the system.

But even this was to no avail, the Vienna Circle continued to insist the proof was bogus or irrelevant. (The Vienna Circle insisted the world was simply language-games, with rules and structures. Gödel, by showing something that was clearly true to us but not provable from within the game, thought he had proved that such things, like numbers, have an independent reality.) Gödel, an incredibly odd and delusional figure, remained quiet for many years, practically confiding only in Albert Einstein, and little at all after Einstein's death.

This is a very bad book. It rambles and prattles and occasionally repeats itself practically verbatim. (It is the result of a project to improve science writing simply by paying famous authors to write about scientific topics. Perhaps the payment should be contingent on some measure of quality in the result.) But it is a compelling story and Gödel's proof is so brilliantly beautiful that it should be learned by all educated people. I had never seen it presented in any real

detail before and once I got to its key principle I exclaimed and tossed the book down and paced, admiring its brilliance. But there are many sources who will explain the fairly simple idea. I'd love to tell you about it myself.

- Buy Goldstein's book
- Buy Raymond Smullyan's explanation of the proof