Kurt Gödel, *On Formally Undecidable Propositions of Principia Mathematica and Related Systems*. Translated by B. Meltzer, with an introduction by R. B. Braithwaite, New York, Dover Publications, 1992; viii + 72 pp.; ISBN 0-486-66980-7; $4.95.

Reviewed by

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There is no way around calling [Gödel *1931*] "Über formal unentscheidbare Sätze der *Principia Mathematica* und verwandter Systeme I", a classic — not only of logic alone, but of the entire intellectual enterprise of mankind. This paper revolutionized logic in the thirties, so that, to give just one nonstandard example, the smartest mathematical mind of those days, John von Neumann, lost the courage to continue his foundational research — Gödel eliminated him from the field (*cf.* [Köhler *1995*, ch. 4.3]). It inspired logical research for decades: "It is appropriate to remark that Gödel's paper was exceptionally rich in new ideas and that only now, after more than 30 years, the wealth of problems stemming directly from it begins to show signs of exhaustions" ([Mostowski *1966*, 23]); and still today it has an effect on logic as well as on theoretical computer science. One need think only of provability logic (*cf.* [Boolos *1993*] or [Smoryński *1985*]) or length-of-proof considerations (*cf.* [Leitsch *1995*]). A mathematical proof can be great for two reasons: because of the result, or because of the proof-technique(s) involved — Gödel's paper surely meets both demands beyond measure. In addition, its two main theorems, the incompleteness, and the 'unprovability of consistency' theorems, entered (not only analytic) philosophy via the most successful philosophical undertaking of this century, logical empiricism, and they are now reaching a common cultural sediment (*cf.*, e.g., [Hofstadter *1979*] and his successors), especially of the learned and/or the computerized world of Western-technological calibre. The paradox is that the technical apparatus of [Gödel *1931*] has helped to promote a cultural paradigm underlying the whole computer stuff current dreams and societies (information superhighway!) are made of, even as its very results call the same into question. The disillusionment following upon this extravagant praise is that the booklet to be reviewed here seems to

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* Orrin Summerell was so kind as to improve the English of a preliminary version.