

Torkel Franzén

Gödel's Theorem: An Incomplete Guide to Its Use and Abuse

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REVIEW

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Gödel's Incompleteness Theorems, first revealed to the world 75 years ago, have by now become part of our general intellectual background. One can find references to them in discussions on architecture, photography, literary criticism, the “theory of everything,” theology, Zen Buddhism, etc. This might seem astonishing at first, given that they are quite technical results in mathematical logic. However, by exhibiting some surprising and insurmountable limitations of formal systems, Gödel's theorems have often been the source of inspiration for talk about analogous limitations in other domains. While there is certainly nothing wrong with this, one frequently also encounters shameless abuses of the theorems, where they are misrepresented or where certain conclusions are attributed to them erroneously. To ameliorate this situation is Torkel Franzén's explicit aim, namely “to allow a reader with no knowledge of formal logic to form a sober and soundly based opinion of these uses and abuses” (p. iv). This aim is what makes Franzén's book unique. On the one hand, Franzén presents Gödel's results with a minimum of symbolism and technical jargon (e.g., Franzén uses the term “Goldbach-like statements” instead of “ Π_0^1 -statements”), but without compromising on clarity and precision, and, on the other hand, he discusses Gödel's theorems and their consequences in a wide variety of contexts.

It is one of the great merits of this book that it sensitizes the reader to the linguistic subtleties involved in describing Gödel's achievements. Franzén does an excellent job in explaining the relevant terminology, often mentioning terminological variants that occur in the literature, and he carefully points out where they differ from usage in ordinary language. In particular such terms as “theory,” “formal system,” “axiom,” “consistency,” “completeness,” and “incompleteness” can easily