Philosophy of Mathematics in the Twentieth Century: Selected Essays

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procedure in building a glossary of Fregean concepts is exemplary too (cf. pp. ix–x and xxxiii–xxxvi). Beginning more than 10 years ago with small translation bulletins, the three core members of the project team discussed existing approaches and alternative interpretations, objections and revisions stage-by-stage on a weekly basis. This was their modus operandi for a long time. It was only when the first draft of the translation of Volume I was finished that a workshop with international Frege scholars was organized in 2006 to work through the full manuscript. A second followed in 2008 for Volume II, and in 2010 a collaborative revision of the entire translation began. In the introductory passage 'Translating Frege's *Grundgesetze*' (pp. xvi–xxix) the editors not only present the resulting glossary of technical terms (pp. xxvi–xxviii)[3] but also a detailed explanation of their translations (pp. xvi–xxvi) for more than 20 (in some cases of course difficult) concepts. The editors even convincingly explain why they chose not to transform Frege's concept-script into modern notation (pp. xxix–xxx). Should readers need assistance with their understanding of Frege's calculus, the edition contains an appendix 'How to read *Grundgesetze*' (pp. A-1–A-42) by Roy T. Cook. The edition ends with an 'Index' for both volumes (11 p.).

One point of criticism: in their 'Introduction' Philip A. Ebert and Marcus Rossberg speak (like many other proponents of a type-free higher-order logic) of 'the inconsistency of Basic Law V' (p. xv). For Frege scholars this is a very careless remark. It falsely suggests that Basic Law V is a contradiction. In fact the inconsistency lies in the formal system of *Grundgesetze*, a system that contains alongside Basic Law V a type-free higher-order logic. Why should we consider Basic Law V inconsistent if the underlying logic is likewise necessary to deduce the antinomy? It is only fair to remember that Basic Law V is absolutely harmless if treated within simple Type Theory. But that is my only criticism.

There is no doubt that this English edition will become a basic work in international Frege scholarship in general and the standard reference for neologicist programs in particular. The translation and editing were undertaken on the highest level and in veneration of Gottlob Frege. Philip A. Ebert, Marcus Rossberg and Crispin Wright (as well as all the other members of this project) did a great job. Congratulations and kudos!

References

Angelelli, I. 1984. 'Frege and abstraction', *Philosophia Naturalis*, **21**, 453–71.
Schirn, M. 2010. 'On translating Frege's *Die Grundlagen der Arithmetik*', *History and Philosophy of Logic*, **31**(1), 47–72.

CHARLES PARSONS, *Philosophy of Mathematics in the Twentieth Century: Selected Essays*. Cambridge: Harvard University Press, 2014. xiv + 350 pp. $55.00, £40.50, ₫49.50 (Hardcover). ISBN 978-0-67472806-6.

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The second volume of Charles Parsons' selected papers, dedicated to Solomon Feferman, Wilfred Sieg, and William Tait, collects eleven mainly historical essays and reviews on

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[3] On p. xxvi in the glossary: 'Endlos' is not translated as 'endless' – probably a typographical error.

philosophy and philosophers of mathematics in the last century, with about 15% new material, including: one new thematic essay on the continuing Kantian legacy in the first half of the century (in the usual suspects, intuitionist and formalist), forming a link of sorts with the predecessor volume, *From Kant to Husserl* (Harvard, 2012); postscripts to several papers; new notes; and an introduction and preface.

A second thematic essay concerns the relationship, again in the first half of the century, between acceptance of impredicative definitions and philosophical realism, finding it more complicated than usually supposed (even though the issue of impredicativity in intuitionism, from the Brouwer–Heyting–Kolmogorov explanation of the conditional to the 'creative subject' scheme is not covered), partly because of Hilbert's acceptance of impredicativity in mathematical practice, as legitimate though not *inhaltlich*.

The remaining ten papers treat the philosophies of mathematics of six important writers and thinkers: two logicians with institutional affiliations in mathematics (Paul Bernays and Kurt Gödel), two logicians with institutional affiliations in philosophy (Hao Wang and William Tait), and two philosophers who made significant contributions to logic, especially early in their careers (W. V. O. Quine and Hilary Putnam), to which category Parsons himself belongs, though he is also what none of the others are, an historian of philosophy. The first two are treated as mainly historical figures, the other four as 'contemporaries' of the author, though only Tait and Putnam are still living by the time of this writing.

The last of the essays, a review of another writer's selected essays, begins by saying (p. 290) that 'it should be no surprise to those who know [his] work that this is a very rich collection, with contributions on a wide variety of issues, both systematic and historical', and that 'serious discussion of even all the majors issues would be beyond the scope of a review'. Exactly the same can be said of the author and volume under review, and with more emphasis considering the very short word limit available to this reviewer. Most of the papers have already generated considerable discussion after their original publication.

Bernays' unsystematic but significant philosophical contributions (he was among other things perhaps the major figure in the transition from the polemics of the *Grundlagenstreit* to the calm comparative study of trade-offs between scope and power on the one hand and evidence and security on the other) is given welcome and overdue serious attention in the third essay. Four essays on Gödel, the fourth through seventh, partly the fruit of Parsons' close familiarity with the *Nachlaß* (beginning with the Gibbs Lecture and drafts of a contribution on Carnap for the *Library of Living Philosophers* volume on Carnap) in his capacity as co-editor of the great logician's *Collected Works*, include: an overview; a close look at Gödel's first published philosophical essay, 'Russell's Mathematical Logic'; a comparison of Gödel's very curious and idiosyncratic notion of 'analyticity' with the well-known negative views of Quine; and a major study of the themes of 'realism' and 'intuition' in Gödel, whose complexities defy concise summary. The tenth essay, on Hao Wang, is also in large part, though by no means exclusively, about Gödel, or more precisely about Wang's writings on Gödel, which range from formulations personally approved for publication by Gödel himself to attempted reconstructions of remembered conversations, which naturally must be used with some caution.

The eighth essay is on Quine's 'nominalism', less in the sense of his joint work with Nelson Goodman, but of his career-long insistence that the mere use of predicates as predicates ('is yellow', for instance) does not in itself commit one to the existence of any sort of *entity* (Fregean concept, attribute or property, set or class, or even predicate-meaning). This is followed by a study of the theme, little treated elsewhere, and making only limited, though significant, contact with philosophy of mathematics, of 'genetic explanation' (mainly speculative, non-empirical developmental linguistics) in Quine's oddest book, *The Roots of Reference*.

Putnam's elusive views on existence and ontology are pursued in the eleventh essay, and the twelfth, a review of selected essays of Tait, does much better (to be sure, with a more generous word allotment) at concise summary and evaluation of complex themes in that writer than I have managed to do here with Parsons himself.

The book as a whole, while not pretending to be a comprehensive account of twentieth-century philosophy of mathematics – on the contrary, the preface begins by listing what has been left out – provides a many-course banquet of food for thought, and there is not one of its chapters that will not repay reading, rereading, and repeated rereading.