EDITOR'S INTRODUCTION

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The year 1893 does not stand out in the annals of general history, or of the general history of science, for any events of secular significance. The historians of logic, however, have highlighted the entry "1893" to mark the year that saw the publication of Frege's masterpiece *Grundgesetze der Arithmetik, begriffsschriftlich abgeleitet,* brought out by Hermann Pohle's publishing house in Jena where Frege had been teaching for nearly twenty years.

The work was not a success at that time; in fact it was scarcely noticed. H. Courbe announced it in 1894 in *Polybiblion* (November issue, 428 *f.*), and in 1895 R. Hoppe reviewed it for the *Archiv der Mathematik und Physik* ((2) 13, *Litterarischer Bericht* IL, 8), and G. Peano in his *Rivista di Matematica* (5, 122–128, *cf.* his *Opere Scelte* II, Roma 1958, 295 *f.*, and V.H. Dudman's English translation in *The Southern Journal of Philosophy* (9, 1971, 36 f.). Nothing more happened, so that the volume of 1893 got a smaller number of reviews than the *Begriffsschrift* of 1879 and *Die Grundlagen der Arithmetik* of 1884 (six and four, respectively). Broader attention was first drawn to the work by the now well-known disaster ten years later when Frege and Russell, almost simultaneously, published Russell's discovery of "his" antinomy (Frege in volume 2 of *Grundgesetze*, and Russell in *The Principles of Mathematics*, then still introduced as "Vol. I" on its title page).

In spite of several papers penetrating into the aims and structure of *Grundgesetze*, and of painstaking, if controversial, investigations of particularly difficult parts, the work cannot be considered well known even today. No doubt this is mainly due to the fact that three fourths of its content are written in Frege's "Begriffsschrift", an ingenious but unwieldy and deterrent two-dimensional system of logical notation. It is this feature that has restricted later editions to reprints and kept a critical edition in the status of a *desideratum*; and only parts have been translated into foreign languages, the most comprehensive one being Montgomery Furth's English translation *The Basic Laws of Arithmetic. Exposition of the System* (Berkeley/Los Angeles 1964).

When I was invited to guest-edit a special issue of *Modern Logic* commemorating the centenary of volume 1 of *Grundgesetze*, it was clear to me that I would not be able to fill an issue exclusively with articles on Frege's *Magnum Opus*. Few scholars have specialized in this subject, and a collection of contributions from their pens (or PCs) might not reach a much wider circle than their own. But then Frege's *Grundgesetze* does not stand in isolation. It is the central item of a bundle of writings marking the mature second phase of Frege's thought, among them the three classics *Function und Begriff*, "Über Sinn und Bedeutung" and "Über Begriff und Gegenstand", all three of which are referred to in volume one of *Grundgesetze* (*cf.* Frege's footnotes on pp. ix, x, 3, 5 and 7). Illuminating and even pioneering as they may be in many respects, they confront us with not a few

problems and puzzles — e.g., the *Grundgesetze* with the permutation argument, the referential uniqueness proof and parts of Frege's attempted "Way out" of the inconsistency of his formal system, and the smaller pieces with the paradox of analysis, truth-values as denotations of sentences, "the concept horse", and quite a few more.

Some of these topics are taken up in this Special Issue by four independent papers which I have arranged in the alphabetical order of their authors' names, followed by an essay review by Ignacio Angelelli. The papers start with Uwe Dathe's "Freges Weg vom Logizismus zum Versuch einer geometrischen Grundlegung der Arithmetik" ("Frege's Path from Logicism to the Attempt at a Geometrical Foundation of Arithmetic"). Dathe outlines Frege's intellectual path from the breakdown of his logicist enterprise (caused by the Zermelo-Russell paradox) to his late philosophy of arithmetic which combines the maintenance of the aprioricity of arithmetic and of Frege's insight that a number statement contains a predicate of a concept, with a renunciation of the definition of number as the extension of a concept and of the ensuing claim that arithmetic is a branch of logic. The main subject of the paper is the hitherto largely unknown influence of the neo-Kantian philosophers Bruno Bauch (1877–1942) and Richard Hönigswald (1875–1947) on the formation of Frege's revised outlook.

The idea of the "incompleteness" or "unsaturatedness" of a linguistic expression is central to Frege's philosophy of logic and language, but it has some rather unwelcome consequences. If Frege is right in construing the role of the definite article as that of an operator yielding singular terms, the expression 'the concept "horse"' will refer to a (saturated) *object* and not to the (unsaturated) *concept* it was destined to denote. Antoni Diller in his paper "Is the Concept *Horse* an Object?" argues that Dummett's and Geach's proposals for the solution of this well-known paradox are insufficient, and he offers a new solution of his own. By distinguishing different parts of language with different properties, he manages to give a meaning to phrases like "the concept *horse*" as genuine singular terms in a way which, for observers of the current discussion, invites comparison with, e.g., Hans Julius Schneider's solution in his recent *Phantasie und Kalkül* (Suhrkamp: Frankfurt a.M. 1992; ch. III 7: "Begriffe als Gegenstände der Rede".

The German original of Gottfried Gabriel's article 'Fictional Objects? A "Fregean" Response to Terence Parsons' was first published in a German semiotics journal in 1987, and reprinted in a collection of Gabriel's papers in 1991. As it contributes to a discussion on fictional objects which has largely been going on in English-speaking countries, it seemed desirable to make it more easily accessible to readers from this context through the English version which is here published for the first time. In the history of semantics, Frege's analysis of some (now so called) intensional contexts in "Über Sinn und Bedeutung" has led to the assumption of "intensional objects" and in particular to the conception of "senses" as full-fledged entities. With their help, it seemed possible to explain in satisfactory manner the purported reference to fictitious persons in propositions of "fictional discourse", but Terence Parsons in a paper of 1982 analysed typical example sentences of this kind and came to the conclusion that this "Fregean" approach was deficient and inferior to the Meinongian approach of postulating "non-existent objects" and raising the category of "fictional existence" to an equal rank with that of "real existence". Gabriel, explaining Frege's distinction between sense and reference as a differentiation not

of kinds of entity but of semantic roles, gives an account of fictional discourse that gets along without intensional objects and without non-existent objects as well.

In his paper "Peirce and Frege, A Question Unanswered", Benjamin S. Hawkins, Jr. is puzzled, like many others, by the lack of mutual reference in the works of Charles S. Peirce and Gottlob Frege, has collected (for the first time?) the available evidence, most of it circumstantial, for the possibility that the two great logicians of the Nineteenth Century were not unaware of the other's work. Hawkins points to a host of traits for further inquiry and perhaps some future discovery, but for the time being the question remains what the title says: a question unanswered.

I have referred to Ignacio Angelelli's concluding "Critical Remarks on Michael Dummett's Frege and Other Philosophers" as an Essay Review, although its procedure is in one respect narrower and in another respect broader than this literary category would suggest. As a review, the paper concentrates on a critique of Dummett's interpretation of Frege's analysis of the concept of number (*Anzahl*), and of the rôle and the importance Dummett assigns to the "context principle" in Frege's work after the *Grundlagen*; as an essay with systematically relevant side-purposes, it presents Angelelli's well-known distinction between the "looking-around method" and "modern abstraction" and emphasizes its significance for an adequate assessment of the history of modern logic (yet to be given). Although I disagree with Angelelli's unrestricted attribution of the "looking-around method" to Frege, I am convinced that his lucid exposition of the fundamental distinction will contribute greatly to the advancement of the historiography of logic and even of a modern theory of knowledge.

Regardless of (or even by) their widely differing subjects, the contributions of this Special Issue combine quite well to fill harassing lacunæ in our picture of the problems and ideas to which Frege's *Grundgesetze* responded and to which they gave rise. They will act as valuable guides to interesting future research.

Erlangen, September 1993   Christian Thiel