cousin is rather a highly debatable philosophical project. Unfortunately, Glymour who regards both kinds of logic as equally justified and even usable, simply blurs the situation. A similar remark concerns the computational approach to mind which appears in Glymour's book as something obvious. However, Bayesianism in inductive logic as well as the computational model of mind do not exhaust varieties of approaches in related fields. This should be very clearly stated in any introductory textbook.

I have evaluated Glymour's book as a textbook of logic for beginners. My evaluation is rather critical: the book is simply misdirected. On the other hand, *Thinking Things Through* looks very impressive as a philosophical monograph on logic and its uses in philosophical analysis. Philosophers who have lost their contact with modern logic can refresh their knowledge of logical matters. Philosophers who have not forgotten logic can skip chapters on logic and concentrate on more philosophical topics of which the Bayesian-oriented logic of induction and the computational model of mind are particularly valuable. Since most graduate philosophers are probably aware that both approaches do not exhaust related fields, the warning that Glymour blurs the contemporary situation in inductive logic and philosophy of mind are not as important.

****

Bertrand Russell, *Logical and philosophical papers, 1909–13*, edited by John G. Slater with the assistance of Bernd Frohmann, vol. 6 of *The collected papers of Bertrand Russell*, London and New York, Routledge, 1992.

Reviewed by

IRVING H. ANELLIS

Modern Logic Publishing
2408 1/2 Lincoln Way (Upper Level)
Ames, IA 50014–7217, USA

and

Des Moines Area Community College (Boone Campus)

The purpose of critical/scholarly editions is to "set *standards* for future scholarship by providing authoritative texts *reconstructed* to represent not only the authors' last

word (or final intentions) but also how they got there" (from p. 17 of Nathan Houser, "Appeasing the Shade of George Santayana," Documentary Editing **11**, no. 1 (March 1989), 15–20). There is a "difference between the reproduction of manuscripts...and the publication of a clear-text edition, usable for study and quotation, in which, so far as evidence permits, the author's intention is achieved" (Don L. Cook, pp. 304–305 in Don L. Cook & Christian J.W. Kloesel, "Two Responses to Moore and Burks on Editing Peirce," *Transactions of the Charles S. Peirce Society*). The latter is distinguished (see, for example, "Textual Commentary," pp. 582–612 in George Santayana, *Persons and Places: Fragments of Autobiography, Critical Edition* or "Textual Principles and Methods," pp. 555–557 and "Guide to the Textual Notes," pp. 558–559 in Bertrand Russell, *Philosophical Papers 1896–99*, vol. 2 of *The Collected Papers of Bertrand Russell*) by the chronological and textual comparison of all extant variants of the texts in question in order to produce a standard version which in the judgment of scholars represents the most authoritative and accurate version technically achievable by the scientific standards of the latest scholarship.

Introductory headnotes by the editorial staff in critical editions are designed to orient the reader rather than to provide interpretations; in keeping with this goal, they ordinarily include (see, e.g., p. vi, vol. 1 or p. vi, vol. 2 of "Information for the Reader," in Kurt Gödel, *Collected Works*): historical background information for the texts presented, including in some cases the physical characteristics, conditions, and history of the documents themselves, as well as the circumstances that led to their writing (for example: the problems in the literature of the day they set out to solve; when and how the author became aware of and interested in the problems; a sketch of the status of the subject at the time the author became involved, and especially at the time the document being introduced was written; etc.); an exposition of the text, in particular an explanation of difficult or unusual concepts or notations used by the author; a sketch of the influence which the work had on the author or on the development of the subject, or a discussion of the place which a particular work occupies in the development of the author's work may also be included. Along these same lines of reasoning, the bibliography of critical/scholarly editions is ordinarily restricted to the writings of the author whose edition is being prepared, works to which the author refers in the documents included in the edition, and works to which the editors refer in their introductory notes (see, e.g., p. vi, vol. 1 or p. vi, vol. 2 of "Information for the Reader," in Kurt Gödel, *Collected Works*).

Critical/scholarly editions are not intended by the editorial team to provide a historical or conceptual interpretation (collective or individual, by the editors) of the *opus* of the author whose work is being presented, but are intended to serve as a faithful reproduction, according to their best scholarly judgment, of the most accurate representation of that author's work. Reviews of such works should therefore focus primarily on the work of the

author whose material is being presented, and in particular on the documents in the volume under review, outlining their importance and contributions to the subject and its history; secondarily on the degree of success with which an editorial project has met the intention of producing a critical/scholarly edition; and tertiarily on the place which the edition being reviewed occupies with respect to earlier editions of the author's work, on the place which the edition can be expected to occupy in the literature of the subject, and on the new edition's potential for improving scholarship on and understanding of the subject, the author, and the author's work.

With the appearance of this volume, ten volumes of the Bertrand Russell Editorial Project's planned set of approximately 30 volumes have now been published. The volumes which have appeared to date or are already well on their way to publication are as follows:

Vol. 1: *Cambridge Essays, 1888-99* (published in 1983)
Vol. 2: *Philosophical Papers, 1896-99* (published in 1990)
Vol. 3: *Toward the "Principles of Mathematics", 1900-02* (published in 1993)
Vol. 4: F*oundations of Logic, 1903-05* (published in 1994)
Vol. 6: *Logical and Philosophical Papers, 1909-13* (published in 1992)
Vol. 7: *Theory of Knowledge: The 1913 Manuscript* (published in 1984)
Vol. 8: *The Philosophy of Logical Atomism and Other Essays, 1914-19* (published in 1986)
Vol. 9: *Essays on Language, Mind and Matter, 1919-26* (published in 1988)
Vol. 12: *Contemplation and Action, 1902-14* (published in 1985)
Vol. 13: *Prophecy and Dissent, 1914-16* (published in 1988)

Bibliography of Russell
I: *Separate Publications, 1896-1990* (to be published in 1994)
II: *Serial Publications, 1890-1990* (to be published in 1994)
III: *Indexes* (to be published in 1994)

and the following volumes are in preparation:

Vol. 5: *Toward "Principia Mathematica", 1906-08*
Vol. 10: *Philosophical Papers, 1927-46*
Vol. 14: *Pacifism and Revolution, 1916-18*
Vol. 15: *Uncertain Paths to Freedom: Russia and China, 1919-22*
Vol. 22: *Civilization and the Bomb, 1944-49*

With the exception of volume 1, the volumes of the collection fall into one of two sets — the technical, including Russell's philosophical and mathematical work, and the non-technical, including his popular and political writings. (It should be noted that none of Russell's previously published books are to be included in any of the volumes, forthcoming or already published.) The first volume is the trunk from which these two distinct branches diverge and contains such diverse items as his school-boy 'Locked Diary' and papers on ethics and geometry from his Cambridge student days.

The structure of the volume under review is the same as that of all previous volumes, consisting of the frontmatter, the text, and the backmatter.

Frontmatter. An introduction provides the biographical setting and intellectual background for the Russell's work in the period which the volume's contents cover. This is followed by a useful "Chronology: Russell's Life and Writings, *p* ["*p*" being the period of years covered by the volume].

Text. The frontmatter is followed by writings themselves, arranged first by topic, and, within each topic, arranged chronologically. Book reviews belonging to the topic follow the main papers, and are likewise arranged chronologically. Each topic defines a "Part."

In volume 6, there are seven parts, but only "Part I: Logic and the Philosophy of Mathematics," comprising approximately one-eighth of the lxix + 562 pages, will be of special and sustained interest to logicians (a slightly larger percentage if the materials from some of the appendices are added). The papers in this section are:

The theory of logical types (1910)
The philosophical importance of mathematical logic (1911)
On the axioms of the infinite and the transfinite (1911)
What is logic? (1912)
Reply to Koyré (1912)
Review of *Logique et mathématiques. Essai historique et critique sur le nombre infini* by Arnold Reymond (1909)
Review of *The Foundations of Mathematics: A Contribution to the Philosophy of Geometry* by Paul Carus (1909)
Review of *Methodologisches und Philosophisches zur Elementar Mathematik* by G. Mannoury (1910)
A medical logician (1912) [review of *A New Logic* by Charles Mercier]

All of the papers in this section have already been published, and the major writings of this section will already be very familiar to logicians. Of the papers in this section, the one that deserves the most attention for its importance is the famous 1910 paper on theory of types. It was originally written in reply to Poincaré's *Revue de métaphysique et de morale* paper "La logique de l'infini" and was itself published first in *Revue de*

métaphysique et de morale. It was later incorporated, in English translation, into the introduction and chapters 2 and 3 of the *Principia Mathematica*. The more obscure pieces in this section are mere historical curiosities, of interest principally because they were written at the time that the *Principia* was at the center of Russell's attentions, and they themselves have had little interest or effect on the subsequent history of logic.

The remaining six parts of text are strictly philosophical (they are: Part II. The Problem of Matter, Part III. Metaphysics and Epistemology, Part IV. Ethics, Part V. Critique of Pragmatism, Part VI. Critique of the Philosophy of Bergson, Part VII. Critique of Idealism). The paper "Pragmatism and Logic" (1912) of Part V, which is a review of F.C.S. Schiller's textbook, *Formal Logic: A Scientific and Social Problem*, may also be of interest, but primarily to philosophers of logic; its interest to logicians and historians of logic will depend upon Russell's castigation of Schiller's work as only "giving as much knowledge of traditional logic as is required for passing examinations at Oxford together with as much pragmatism as may persuade the student that all formal logic is worthless" (p. 296). The Appendix includes Schiller's reply to Russell's review of his textbook, the French original "On the Axioms of the Infinite and the Transfinite" ("Sur les axiomes de l'infini et du transfini"), the very brief "Remarks Opening Section IV(a) (Philosophy and History), 23 August 1912", and the French original of Russell's "Reply to Koyré" from the *Revue de métaphysique et de morale*. In the latter, the center of philosophical debate in the pages of the *Revue de métaphysique et de morale* is the "logical definition of number" given in the *Principia Mathematica* in which Russell, Couturat, and Poincaré were the major disputants.

The "Remarks Opening Section IV(a) (Philosophy and History), 23 August 1912," from E.W. Hobson & A.E.H. Love, editors), *Proceedings of the Fifth International Congress of Mathematicians*, vol. I (Cambridge, Cambridge University Press, 1913), p. 53 is of historical interest for the remarks evaluating the contributions of his elder colleagues, Cantor, Frege, and Poincaré:

> Some unavoidable absences are to be deplored; among these, the illustrious name of Georg Cantor will occur to all. I had hoped, but in vain, that we might have been honoured by the presence of Frege, who, after many years of indomitable perserverance, is now beginning to receive the recognition which is his due. In common with other sections, we cannot but feel how great a loss we have sustained by the death of Henri Poincaré, whose comprehensive knowledge, trenchant wit, and almost miraculous lucidity gave to his writings on mathematical philosophy certain great qualities hardly to be found elsewhere. The work of the pioneers has been great, not only through its actual achievement, but through the promise of an exact method and security of progress of which, I am convinced, the papers and discussions which we are to hear will afford new evidence.

The text proper of each piece is preceded by a "headnote" which gives the particulars of the piece, discussing the circumstances of the writing, providing bibliographic information and history of any previous publications, and using any archival material that was available in which Russell wrote of the piece, its composition, and his intellectual or emotional state at the time of composition.

Following the main body of the text is a section of appendices containing pieces which help elucidate the one or more of the principal pieces; the appendices in this volume include such items as authors' responses to reviews by Russell of one of their works, included in this volume; or the original publication in French of a work of Russell's appearing in English in the present volume.

Backmatter. In the "Annotation", obscure and implicit references and quotations are clarified and explanations given of concepts required to understand the text. In the section on "Textual Notes," the subsections "Textual Principles and Methods" and "Guide to the Textual Notes" detailing the policy of the editors and giving an explanation to their use is followed by the notes to each individual paper. These notes begin by indicating the primary document or "copy-text" which the editors gave priority to and relied upon in preparing the final version appearing in the volume or how they collated any variant versions of the text to produce their final version. In the case of previously unpublished writings, the copy-text is described in some detail, in particular with respect to its physical properties, noting any emendations, insertions, deletions, notations, or marginalia to the text. Following the general description, every variant or emendation to the text, including the corrections made by the editors, is listed individually, identified by page and line(s). Thus, a complete record is preserved of all variants among the extant documents utilized in preparation of the version finally appearing in the volume. Since Russell often used abbreviations in his manuscripts, the editors have appended to the "Textual Notes" a list showing the "Expansion of Abbreviations" which they have silently incorporated into their printed text.

The "Textual Notes" are followed by a "Bibliographical Index" listing all of the works referred to by Russell in the materials included in the volume, along with those cited by the editors in their headnotes and annotations, and the page(s) on which these works are cited is listed as well. Unpublished correspondence cited by the editors is not included; nor are any papers by Russell that are printed in the volume in hand unless they are explicitly referred to by Russell in the textual material presented. The notation "Russell's library" tells readers that a copy of the relevant title can be found in Russell's library.

Many of those writings contained in this volume that pertain to logic are of significance to historians of logic principally because they were written at a time when Russell was "about half-way through the writing out of *Principia*" (p. xvi). Because the papers in this volume that are likely to be of interest to logicians, historians and philosophers of logic have already been published by Russell, the background information provided in the

headnotes is to a large degree of greater interest than the papers themselves. The interest of these headnotes resides in the biographical and historical details they provide to help complete our understanding of the papers presented. This is true for the better-known writings to the extent that those papers are already well-known and have been the subject of many years of historical scrutiny and analysis; and it is true for the lesser-known writings precisely because they of themselves have had so little impact and received so little attention outside their own time. At the same time, the republication of the more obscure writings among the works included here is a valuable historical contribution for bringing them once more to the attention of historians and philosophers of logic, both for their own sake and, more especially, for the sake of the presentation of the contextual background surrounding them which the editors have provided. For the same reason, the "Introduction" is especially useful for the general biographical and historical information which it provides of Russell during this period. Much of this information comes from Russell's personal correspondence, and has therefore not always been readily accessible or generally familiar, at least not in the rich detail that the editors have provided. Here (p. xvi) we can glimpse Russell "on his hands and knees" working on the proof sheets of *Principia*, and observe not only the way in which he and Whitehead worked on the *Principia* but also gain insight into the daily progress of the *Principia*; at the same time, we see the kinds of issues, especially philosophical issues, that intruded on the work. In the course of these years, Russell was also teaching at Cambridge, and some of the details of the "ups" and "downs" and "ins" and "outs" of his relationship with Wittgenstein are explored.

In a letter to Leon Henkin of 1 April 1963 (not quoted in the "Introduction" to this volume), Russell wrote that it had been fifty years since he had worked seriously in mathematical logic. In the pages of this volume, we can watch Russell's attention slipping away from logic towards philosophy, the philosophical problems "implicit" in the *Principia* leading him in turn to other matters, increasingly remote from logic or mathematics, so that we can understand why the bulk of the writings from this period, especially the latter part of this period, do not belong even to philosophy of logic or philosophy of mathematics, but to other realms of philosophy, such as theory of knowledge and other arcane matters of metaphysics. The introduction and headnotes in this volume help us understand why Russell broke off doing logic. Above all, we are given access, in the "Introduction," to the hitherto private "years and years of torture over *Principia Mathematica*" (p. xvii), and that reenforces our understanding of why, with the completion of the three (of four projected) volumes of *Principia* (the fourth, devoted to geometry, to have been written by Whitehead alone), Russell abandoned work in logic in favor of doing philosophy.

If history is more than a mere list of names, dates and published theorems, but also includes tracing the intellectual paths taken to obtain those theorems, then we owe our gratitude to the people of the Bertrand Russell Editorial Project for making available the

bulk of Russell's writings. And if history is more than a mere list of names, dates and published theorems, but also includes an understanding of the various intellectual and general non-intellectual factors surrounding, coloring, and influencing the work of those who publish the theorems and those who prepare the way for them, then we owe our gratitude to the authors of the introductions and the headnotes for the BREP volumes for helping us understand the biographical, social, and historical background of Russell's work and thought and for giving us a glimpse of Russell at work and of Russell "talking" about his work.

****

А.Г. Барабашев, *Будущее математики: методологические аспекты прогнозирования*, Москва, Издательство Московского университета, 1991.

Reviewed by

IRVING H. ANELLIS
Modern Logic Publishing
2408 1/2 Lincoln Way
Ames, IA 50014-7217, USA

and

Des Moines Area Community College, Boone Campus

I should like to preface my remarks by suggesting that much of what I am about to say concerning the history of mathematics within the context of this review of Alexei G. Barabashev's book *The Future of Mathematics: Methodological Aspects of Prognostication*, doubtlessly applies, *mutatis mutandis*, with equal force to the history of logic as well.

It seems that there has always been an awareness that mathematics has a history. We can see this, for example, even from the extant writings on *History of Arithmetic* and *History of Geometry* of Aristotle's student Eudemus of Rhodes (fl. ca. 320 B.C.). The importance of history of mathematics for contemporary mathematics was understood by Proclus Diadochus (410 – 485), a geometer and historian of geometry whose *Commentary on Book I of the Elements of Euclid* includes the *Eudemian Summary*, a fragment from