Roman Murawski (2011)

Logos and Máthēma. Studies in the Philosophy of Mathematics and History of Logic

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Recommended by M.A. Urszula Kieżun

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The volume contains twenty essays devoted to the philosophy of mathematics and the history of logic. They have been divided into four parts: general philosophical problems of mathematics, Hilbert’s program vs. the incompleteness phenomenon, philosophy of mathematics in Poland, mathematical logic in Poland. Among considered problems are: epistemology of mathematics, the meaning of the axiomatic method, existence of mathematical objects, distinction between proof and truth, undefinability of truth, Gödel’s theorems and computer science, philosophy of mathematics in Polish mathematical and logical schools, beginnings of mathematical logic in Poland, contribution of Polish logicians to recursion theory.

Polish Contemporary Philosophy and Philosophical Humanities

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Reviewed by Prof. Wojciech Buszkowski   Edited by M.A. Urszula Kieżun

This book is the first volume of a new book series, published by Peter Lang (Internazionaler Verlag der Wissenschaften). We read on the homepage: “The series aspires to present a wide and relevant overview of best Polish works in philosophy and philosophical parts of the major fields of humanities: political and social sciences, history, religious studies or what is named in Poland ‘the history of ideas’. […] The series is open to all streams of Polish philosophy: from analytical philosophy, through phenomenology and hermeneutics, to existential or religious philosophies.”: The editor of the series is Jan Hartman, an influential Polish philosopher
from Jagiellonian University, also involved in political and social activities. Five other books have already been published in this series.

The reviewed book may be counted to philosophy of science and history of science. The author is a mathematician, for more than 20 years mainly active in publishing books and papers on philosophy and history of mathematics (he also edited some anthologies of classical texts and published some textbooks in logic, set theory and recursion theory). Let me note the monograph: Th. Bedürftig and R. Murawski, Philosophie der Mathematik, Walter de Gruyter, Berlin/Boston, 2012 (2nd extended edition).

His PhD Thesis and Habilitation were devoted to foundations of mathematics (models of Peano arithmetic, satisfaction classes in non-standard models). The foundational perspective dominates his philosophical essays: R. Murawski extensively discusses such topics, as e.g. Tarski's theory of truth, truth and provability, Hilbert's program and Gödel's incompleteness theorems, consistency, and computability, and much less nonclassical logics (except intuitionistic logic), philosophical logics, logic of language, etc.

The book contains 20 papers, published in years 1994-2008 in journals and collection volumes (all in English). The collection is divided into four parts:


IV. Mathematical Logic in Poland. 3 papers: (18) Stanisław Piątkiewicz and the Beginnings of Mathematical Logic in Poland (with Tadeusz Batóg), (19) Contribution of Polish Logicians to Recursion Theory, (20) Logical Investigations at the University of Poznań in 1945-1955 (with Jerzy Pogonowski).

It is not easy to apply to this book standard criteria of reviewing, e.g. to evaluate the novelty of the author's achievements. Philosophy is not a typical scientific discipline: it poses questions but not necessarily answers them definitely. Furthermore, Roman Murawski is not a typical philosopher. He does not defend any particular
doctrines, nor thoroughly analyses sophisticated metaphysical assumptions. By his temper, he is an erudite, a historian and a commentator. His expertise in mathematics enables him to clearly see the mathematical sense of different philosophical standpoints and the philosophical significance of certain mathematical results.

Let us briefly characterize the contents and the style of some papers. (1) is a chapter in “Handbook of Epistemology” (Kluwer, 2004); the author presents the main schools in philosophy of mathematics (logicism, intuitionism and constructivism, formalism) with their ancient and modern predecessors, the logico-set-theoretical paradigm dominating the contemporary views on mathematics, and finally some current trends, e.g. Quine's holistic philosophy of mathematics and anti-foundational tendencies (I. Lakatos, R.L. Wilder, M. Resnik, S. Shapiro). Quite likely, everything contained in (1) can also be found in publications of other authors, but not embraced in one article with interesting comparisons of different attitudes.

Approximately the same might be said on several other papers in this collection. In parts I and II the author mainly discusses some well-known themes: the onthology of mathematics in (3), (4) and its epistemology in other papers (here problems concerning Hilbert's program, incompleteness theorems, consistency of formal theories and the concept of truth). Nonetheless each paper is original in a sense: it provides some new historical references, confronts classical topics with quite new interpretations, and brings a brilliant synthesis of the particular theme. In (13) the author extensively refers to his own mathematical results on non-standard models of arithmetic and satisfaction classes in order to explain some fine aspects of the definability of the truth predicate in formal theories.

From the viewpoint of our platform, the most interesting are parts III and IV, as they directly concern logical and philosophical studies in Poland (but also in part II one finds many references to works of Polish logicians, especially Alfred Tarski, Andrzej Mostowski and their followers; see (11), (12), (13)). In part III we find three essays on the philosophy of mathematics and philosophical reflection on mathematics in writings of Andrzej Mostowski (17) and other leading representatives of the Warsaw Mathematical School and the Lvov-Warsaw Philosophical School, e.g. Z. Janiszewski, W. Sierpiński, S. Mazurkiewicz, J. Łukasiewicz, A. Tarski, L. Chwistek and others; see (15), (16). (14) reminds of Józef Maria Hoene-Wroński, a less-known, but interesting Polish mathematician and philosopher of the 19-th century. R. Murawski is probably the first competent commentator of Hoene-Wroński's works from the viewpoint of contemporary science.

Part IV contains three essays; (18) on Stanisław Piątkiewicz, the author of the first Polish text on algebra of logic, (19) on the contributions of Polish logicians to recursion theory, and (20) on the logical investigations at the University of Poznań in years 1945-1955 (at this time Kazimierz Ajdukiewicz was a professor in Poznań, and a group of analytical philosophers and logicians worked under his supervision: Seweryna Luszczechska-Romahnowa, Roman Suszko, Jerzy Giedymin; Zygmunt Zawirski and Adam Wiegner were the leaders of other groups).

All papers included in this volume are interesting and well-written; they bring much historical information, often new even for experts in these disciplines, and a competent discussion of philosophical issues. The author published a similar collection of papers in 2010 (R. Murawski, Essays in The Philosophy and History of Logic and Mathematics. Poznań Studies in The Philosophy of The Sciences and The Humanities, Rodopi). These two
collections contain no common paper, although some papers discuss similar topics. The disjoint contents of these two anthologies have both positive and negative consequences. Positive: they bring together a nearly full presentation of R. Murawski's articles on the history and philosophy of logic and mathematics. Negative: some really valuable papers are beyond the reviewed collection. In particular, the contents of part IV of the latter seem quite limited. Only (19) contains an almost complete survey of the works of A. Tarski, A. Mostowski, A. Grzegorczyk, H. Rasiowa and others in recursion theory and related issues (decidability and undecidability, the complexity of models). On the other hand, K. Ajdukiewicz and his collaborators cannot be counted to mathematical logic at all, with the exception of Roman Suszko (to some extent), hence part IV does not seem to be a good place for (20). To get more information on Polish mathematical logic the reader should also consult the other collection or different sources.

The author formulates all judgements and opinions with cautiousness and reserve. Generally admirable, in some cases this reticence goes too far, in my eyes. For instance, in (20) the authors write: “One can ask the following question: was there any continuation of the Lvov-Warsaw Logical School at the University of Poznań right after the Second World War? Unfortunately, the answer is far from obvious. Without any doubts one can find a stigma of that School in the post-war publications of Ajdukiewicz and Łuszczewska-Romahnowa. On the other hand, Suszko belonged to the new generation.” Further, the authors remind of the difficult political situation, the domination of Marxist ideology and philosophy, and so on. In my opinion, the answer is definitely: yes. Ajdukiewicz was never a Marxist; in the post-war period he continued many issues of his earlier research, and his collaborators followed these lines, including a large part of Suszko’s publications (also Z. Zawirski undoubtedly continued Łukasiewicz).

With full conviction I recommend the book under review as a highly valuable presentation of some central issues of philosophy of logic and mathematics with plenty of competent information on the history of these disciplines. Roman Murawski is certainly a prominent representative of Polish philosophy and history of mathematics, and this book clearly witnesses it.
