The Logical Writings of Karl Popper, edited by David Binder, Thomas Piecha, and Peter Schroeder-Heister, Trends in Logic (Studia Logica Library), Vol. 58, Springer, 2022, xxiv+ 552 pp., 5 b/w illus., Open access (https://doi.org/10.1007/978-3-030-94926-6), Eur 42,79

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This book has been published in the series *Trends in Logic (Studia Logica Library)* and is dedicated to Karl R. Popper's work, namely, his writings on deductive logic and its foundations, which are not so well known. Some of these writings had been already published by Popper in top journals and reviewed by outstanding logicians, some others remained in manuscripts, and many other logical ideas are to be found in Popper's correspondence with a large number of representative logicians, mathematicians, and philosophers of the twentieth Century. The book starts with a preface (from which we find out that Popper's numerous ideas on Boolean algebra are still in manuscripts and waiting to be published), continues with the editors' introduction to Popper's theory of deductive logic, has three main parts, and ends with a useful list that correlates the pages of the originally published articles with those from this volume, an extensive bibliography and a index of terms. The three main parts of the book are as follows:

Part I contains Popper's published articles and the reviews that they received -*Logic without Assumptions* (1947), *New Foundations for Logic* (1947), *Functional Logic without Axioms or Primitive Rules of Inference* (1947), *On the Theory of Deduction, Part I. Derivation and its Generalizations* (1948), *On the Theory of Deduction, Part II. The Definitions of Classical and Intuitionist Negation* (1948), *The Trivialization of Mathematical Logic* (1949), *Are Contradictions Embracing?* (1943), *A Note on Tarski's Definition of Truth* (1955), *On a Proposed Solution of the Paradox of the Liar* (1955), *On Subjunctive Conditionals with Impossible Antecedents* (1959), *Lejewski's Axiomatization of My Theory of Deducibility* (1974). Excepting the last three articles, all the other articles received important critical reviews from logicians like Ackermann, Beth, Curry, Hasenjaeger, Kemeny, Kleene, McKinsey or Nagel.

Part II contains seven of Popper's unpublished manuscripts: *On Systems of Rules of Inference* (joint work with Paul Bernays), *A General Theory of Inference*, *On the Logic of Negation*, *A Note on the Classical Conditional*, *Three Notes on Derivation and Demonstration*, *Lecture Notes on Logic (1939–1941)*, and *The Origins of Modern Logic*.

Part III contains some of Popper's correspondence on logical, mathematical, and philosophical ideas: with Bernays (12 letters), with Brouwer (13 letters), with Carnap (11 letters), with Church (4 letters), with Kalman Joseph Cohen (9 letters), with Henry George Forder (23 letters), with Harold Jeffreys (1 letter), with Klenne (1 letter), with Quine (7 letters), with Heinrich Scholz (1 letter), with Peter Schroeder-Heister (9 letters).

The editors' helpful introduction to the volume, *Popper's Theory of Deductive Logic*, is self-contained and offers a comprehensive understanding of what Popper actually did in the field of deductive logic and its foundations. It seems that Popper was not well acquainted with Gentzen's work, but his approach to logic is similar to Gentzen's proof-theoretic approach, in which a system of logic is characterized both by structural rules (defining the general features of the relation of logical derivability) and by operational rules (which inferentially define the logical terms of a system of logic). Although one of Popper's initial motivations was to continue Tarski's work on the concept of logical consequence, which made the latter dependent on the distinction between logical and non-logical terms, the approach that K. Popper developed is primarily an inferentialist approach to logic, i.e., a theory in which the concepts of rule of inference, derivability conditions or proof have priority to those of meaning, truth conditions, model or representation. The reader will find in the editors' introduction a very useful guide to Popper's ideas, carried out through his structural theory of logic, his inferential definitions of logical terms, his analysis of different forms of negation, his inferential treatment of the notions of duality and "anti-conditional" (i.e., "co-implication"), his system of bi-intuitionistic logic, his theory of quantification and identity and, likewise, his analysis of the six modal operators that he considers (necessary, impossible, logical, contingent, possible and uncertain). All these ideas are discussed both from a historical and a systematic perspective and, thus, make the reading and understanding of Popper's technical writings much easier. (For elaborations of these ideas see also Binder and Piecha (2017, 2021) and Schroeder-Heister (1984, 2006))

In addition to Popper's technical contributions to logic, the reader may find in this book, in my opinion, some very useful philosophical discussions on the nature of logic. For instance, in his unpublished manuscripts *Lecture Notes on Logic (1939–1941)*, *The Origins of Modern Logic*, and *Three Notes on Derivation and Demonstration*, Popper defines logic and places it in the overall scientific picture of reality, provides a characterization of its formality, discusses the notions of truth and rule of inference, provides an interpretation of the traditional "laws of thought" and characterizes formally and informally the distinction between derivation and demonstration (or proof). This last distinction is elaborated further in

a later article by Popper (1970), in which he distinguished between two main uses of logic: the demonstrational one, in mathematical proofs, and the derivational one, in the empirical sciences. This article provides a useful discussion of the problem of revising (classical) logic (see Brîncuș (2021) for an analysis of this subject). In all these discussions, as well as in Popper's treatment of the modal notions, the reader will immediately recognize Carnap's significant influence on Popper's philosophical approach to logic.

Popper's impressive correspondence with important logicians, mathematicians, and philosophers of his time is very interesting both for the scientific content of the letters (which cover various subjects, including Gödel's results –see his exchange with Carnap, Cohen, Forder) and as evidence for his enthusiasm and curiosity and, in addition, I would say, for his strong craving for learning and correcting his opinions (no doubt, an instance of the application of his falsificationism and critical rationalism to his own system of beliefs). Since the editors have not been able to locate one letter from this correspondence, namely, Carnap's letter to Popper from 9 December 1944, I shall briefly describe here the content of this letter (RC-102-59-16). (Many thanks to Iulian D. Toader for finding and sharing this letter to me.)

In the first part Carnap brings Popper up to date about his activity and in the second part he answers to Popper's comments on his book *Formalization of Logic* (1943). Carnap asks Popper whether he thought about applying for a Guggenheim Fellowship in the U.S. and tells him that he can write "a testimonial in the highest terms of appraisal" and assures him that some other people will do the same. Then Carnap confesses that in the last two years he worked hard on modal logic and on a new theory of probability and that he already began writing "a large book on it, but it will take years to complete it".

In the second part, Carnap qualifies Popper's observations as "the best comments I have received on this book" and agrees that some concepts from the book should receive further clarifications. Carnap then tells Popper that he doubts his method from the book will have any influence on the decision problem because the extension of the concept of provability of sentences in the functional calculus is not changed by his method. Then Carnap answers Popper that he did not study whether positive logic has non-normal interpretations, but encourages him to investigate this and publish the results in *The Journal of Symbolic Logic*. In the last paragraph of the letter Carnap tells Popper that he also made great use of the L-concepts in his treatment of probabilities and finds these concepts indispensable in general. For this reason he is puzzled by Tarski's divergent view on this matter and conjectures that "the question depends in some way on the kind of language for which the distinction between

L-truth and F-truth is made (and that between logical and descriptive …)". Carnap encourages Popper to write a paper on this problem as well or, at least, to summarize to him in a letter his ideas on this topic. Carnap ends the letter by indicating to Popper Tarski's address at Berkeley and congratulates him for the fact that his book *The Open Society and Its Enemies* will be published by Kegan Paul.

I want to emphasize the fact that Popper's writings on deductive logic, for instance, *Logic without Assumptions* (1947) or *New Foundations for Logic* (1947), are directly concerned with the problem of logicality, i.e., the problem of demarcating the logical and non-logical signs, to which Carnap refers in this letter.

The reader may wonder whether there are good reasons for reading Popper's writings on logic today. I think that for those interested in deductive logic and its foundations from a technical, philosophical and historical point of view, Popper's writings are extremely relevant and the publishing of this volume is very welcome. In my opinion, Sir Karl R. Popper is one of those authors who was really interested in what he was doing and put a great deal of effort into getting a clear *understanding* of the problems he was working on. Thus, I highly recommend this book to all those interested in *understanding* deductive logic, its functioning and its historical development.

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