

BOOK REVIEW

George Boole, *Selected Manuscripts on Logic and its Philosophy*. Ivor Grattan-Guinness & Gérard Bornet (eds.) (Basel/Boston/Berlin, Birkhäuser, 1997), 236p. ISBN 3764354569

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The influence of George Boole on the origin of formal logic is widely underestimated, and the philosophical background to the work of Boole and his successors is also widely neglected. In fact at the time of Boole's work there were heated discussions in Great Britain between traditionalists, who supported the heritage of the Aristotelian and the Kantian tradition based upon the study of inference in syllogistic logic, and the new logicians, who, influenced by the criticisms of syllogistics by Locke and the Scottish philosophers of common sense, showed more sympathy for the role of language in logic than had been normally granted by the syllogists.

The book *George Boole: Selected Manuscripts on Logic and its Philosophy*, carefully edited by Ivor Grattan-Guinness and Gérard Bornet,

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provides the necessary documentary material for filling the gaps in the picture of Boole's philosophical approach to logic and mathematics.

The book starts with a helpful introduction written by the two editors, which is divided into three parts. The first part, "Boole's Quest for the Foundations of his Logic", written by Grattan-Guinness, includes among other chapters some biographical notes and useful remarks on the renaissance of logic in Britain, on Boole's algebraic approach and on why the work of Leibniz, Peacock, Babbage and De Morgan, though often, and quite rightly, associated with Boole, in fact is mentioned very little in Boole's publications.

In the second part of the introduction, "Boole's Psychologism as a Reception Problem", Bornet defends Boole against the charge of psychologism. In doing so he argues against Dummett and his tradition, supporting instead the consensus of recent researchers in this field (e.g. Nicola Vassallo's paper 'Psychologism in Logic: Some Similarities between Boole and Frege', in James Gasser, *A Boole Anthology: Recent and Classical Studies in the Logic of George Boole*, (Dordrecht: Synthese Library, Kluwer, 2000).)

The two first parts of the introduction – the last part concerns the editing and dating of the manuscripts which constitute the volume - can be seen as suggesting the following picture of Boole's philosophy of logic: The use of algebraic methods in logic and the study of the logical laws in natural language should yield an all-encompassing instrument of knowledge.

The main part of the book, which consists of texts by Boole himself, is divided into four parts:

- A) The Nature of Logic and the Philosophy of Mathematics
- B) The Philosophical Interpretation of a Theory of Logic
- C) The Philosophy of Logic. A Sequel to *The Laws of Thought*
- D) Miscellaneous Matters, Letters and Fragments.

From all this rich material I would like to mention three issues which I think are important for understanding the philosophical arguments which took place at the time of Boole, namely:

1) Boole and his successors replaced the traditional distinction between categorical and hypothetical judgements with the difference between *primary propositions* (instead of categorical), that is propositions which express a judgement with respect to a realm of objects, and *secondary propositions* (instead of hypothetical) which express a judgement with respect to other propositions. This classification of propositions, which Boole held as central to his conception of logic is expounded several times in Part A of this book, anticipates the deep discussions of the distinction between metalogical implication, inference rules and the object-language conditional by MacColl, Venn, Bolzano, Frege, Russell and Lewis up to contemporary philosophy of logic.

2) Boole and the new logicians laid special emphasis on the theory of signs as a key to logical knowledge. Worth mentioning in this respect is the chapter in Part C with the title “Nature and Office of Signs” (p. 129-132), where Boole stresses the fact that signs are not only useful for the representation of things and the expression of thought, but that “they stand for things contemplated not as individuals, but as falling under the general conception of class of kind, i.e. they stand for things under those relations [of] our power of conceiving which makes deductive inference possible” (p. 130).

3) In the remarkable chapters of part D, “On Belief in its Relation to the Understanding” (p. 158-161), “The Philosophical Idea of Freedom” (p. 162-163) and “Note [on Aristotle]” (p. 164-166) Boole develops the theological and ethical motivations of his logic. After an analysis of an act of belief as a relation between a subject and an *understandable* proposition, in which Boole makes a point of the fact that we cannot believe without understanding, he poses the question of why it is that “men can believe self-contradictory and mutually contradictory propositions

or more generally why men can be able to reason falsely if the laws of correct inference are not less rigid, not less exact, than are the laws which govern the physical universe” (p. 161). Now, one would expect the question to be attached to a conception of logical laws as innate. But Boole’s argument seems to be more epistemological than psychological, he rejects innate logical truths in the chapter on Aristotle and defends the truths of logic as being nothing but “immediate results of the conditions under which its operations [i.e. mental operations] are performed” (p. 166). In Boole’s opinion this does not mean that we necessarily think correctly, we can think correctly in the same way as we can act morally although we occasionally do not. Boole stresses in this context not only the analogy but also the relation between moral conduct and logical thinking: “if the mathematical laws in the human intellect are conclusions of science they ought to affect human conduct” (p.163).

The book as a whole presents a wealth of thought-provoking documents for giving a more precise shape to the philosophical background of Boole’s work, a task which still remains to be carried out, and will be invaluable both as a teaching resource in the history of logic and as a work of reference.