Notre Dame Journal of Formal Logic
Volume XVIII, Number 3, July 1977
NDJFAM

A REASSESSMENT OF GEORGE BOOLE'S THEORY OF LOGIC

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George Boole's theory of logic has not fared well at the hands of the commentators who have written about it, whether they be his successors in logic itself, or historians of the subject. While there is general agreement that his work occupies an important place in the history of logic, the exact nature of that importance remains elusive. On the one hand, he has been called the originator of mathematical logic,[1] but on the other, that claim has been pointedly disputed.[2] On the one hand, his logic does differ significantly from traditional syllogistic logic, and for this he has been applauded.[3] But on the other, Frege's introduction of quantification theory forms such a complete barrier between paleo- and neologic that any lasting influence from Boole's work, if it is there at all, seems permanently obscured.

Fueling these general concerns about the significance of Boole's work are the many claims that errors abound in it. These center mainly on his supposedly uncritical use of mathematics in logical contexts, which, so the critics suggest, resulted in the appearance of logically uninterpretable expressions in his system of logic. Not surprisingly, many of these same critics suggest that Boole's successors in algebraic logic put things right by providing logical interpretations for these expressions, thus extending the symmetry between logic and mathematics.

Here are a few examples of the sort of criticism I have in mind:

> . . . Boole's quasi-mathematical system [can] hardly be regarded as a final and unexceptionable solution of the problem [of supplying a viable alternative to Aristotelian logic]. Not only did it require the manipulation of mathematical symbols in a very intricate and perplexing manner, but the results when obtained were devoid of demonstrative force, because they turned upon the employment of unintelligible symbols, acquiring meaning only by analogy.[4]

> [The] mathematical character [of his work] is responsible at once for the strength and the weakness of Boole's calculus, as on the one hand, it could hardly have assumed so general a form had not Boole been able throughout to

Received May 16, 1973