of view, Wittgenstein's philosophy of mathematics seems completely wrong from beginning to end, and superficial at that. The main thrust of Espinoza's argument against Wittgenstein's position is that no anti-realist view of mathematics can explain its applicability to natural sciences.

Espinoza also sees Wittgenstein's philosophy of mathematics as a mere application of the philosophy of his second period (although there is no explicit distinction in this paper between Wittgenstein I and Wittgenstein II) and he concludes that Wittgenstein's conception is untenable: something must be wrong with his whole philosophy of meaning.

Although Wittgenstein's philosophy of mathematics is not the most popular part of his philosophy and, I would say, misconceived from the very beginning, I think that its refutation needs stronger arguments than those offered here. The paper is nevertheless a worthwhile contribution to the complicated topic of the nature of mathematics.

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William Aspray, *John von Neumann and the Origins of Modern Computing*. History of Computing, the MIT Press, 1990. xvii + 376 pp.

Reviewed by

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Interest in applications of mathematics is on the rise these days. As job opportunities in pure mathematics have become increasingly tight, many recent Ph.D.'s, as well as some less recent Ph.D's, look for Wall Street, engineering, business management, and so on, to put their talents to other good uses. Mathematicians oriented towards logic and foundations in oparticular seek and find opportunities in the field of computing. John von Neumann preceded them. William Aspray's