

Zermelo's Axiom of Choice

Its Origins, Development
and Influence

Gregory H. Moore

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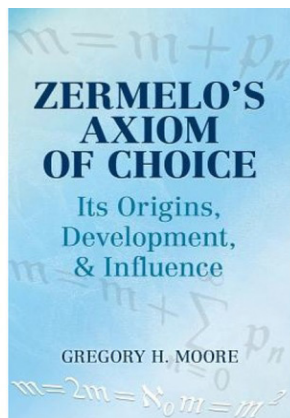
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Joel Haack

Zermelo's Axiom of Choice is a Dover reprint of a classic by Gregory H. Moore first published in 1982. It provides a history of the controversy generated by Zermelo's 1908 proposal of a version of the Axiom of Choice. Moore provides the philosophical and mathematical context for the controversy, carrying the story through Cohen's proof that the Axiom of Choice is independent of the Zermelo-Fraenkel axioms for set theory. The story is told effectively and in great detail, giving this reader a real appreciation of the reasons for the controversy.

Moore makes it clear that the most significant concern among mathematicians regarding the Axiom of Choice stemmed from the expectation that mathematical objects should be explicitly constructed.

The story that Moore provides proceeds both logically and chronologically. He begins with the prehistory of the Axiom of Choice, discussing those results that are either equivalent to the Axiom, that made an implicit use of the Axiom in a proof, or that motivated the introduction of axioms for set theory. The discussions in this portion of the book



include mathematicians such as Gauss, Bolzano, Weierstrass, De Morgan, Peirce, Schröder, Borel, Jordan, Lebesgue, Hilbert, Bernstein, Peano, Hardy, Jourdain, and Zermelo. In short, it is a real who's who of mathematicians of the period.

Zermelo explicitly stated the Axiom of Choice in 1904, introducing it as an assumption required for his proof that every set can be well-ordered. This result contradicted one supported by J. König, namely that the set of real numbers cannot be well-ordered. Thus Zermelo's proof generated a great deal of controversy; a discussion of this is the content of Moore's second chapter.

The book is admirable. Moore has provided a clear guide through the exciting controversies and developments related to the *Axiom of Choice*.



Estampilla postal

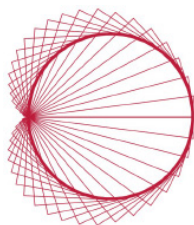
¿Qué es un poema de cero palabras? Es una emoción sentida como una cualidad poética potencial que ha sido expresada con menos de una palabra.

Es verosímil que todos los poemas conocidos (con algunas excepciones) hayan comenzado siendo poemas de cero palabras. Señalemos de todas formas que, pese a esta riqueza, una antología de poemas de cero palabras tendería a convertirse en una estampilla postal.

François Le Lionnais

La versión completa de la reseña se puede consultar en la página:

<https://maa.org/press/maa-reviews/zermelos-axiom-of-choice-its-origins-development-and-influence>



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