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Type: Monograph

Title: The Continuity Debate: Dedekind, Cantor, du Bois-Reymond, and Peirce on Continuity and Infinitesimals

Author: Buckley, Benjamin Lee

Year: 2012

Publisher: Docent Press

Abstract: The topic of this book is the historical struggle to define and defend a realnumber continuum which could do the work limit theory required of it. These definitions drew heavily on philosophical and foundational assumptions, and each raises numerous philosophical questions of its own. As we shall see, attempts to formulate a non-geometrical mathematical continuity raise questions such as: What is a number? What, in particular, is a real number? What is the true nature of continuity itself? Does a philosophically coherent definition of continuity logically commit us to infinitesimally small quantities? Is the concept of an infinitesimally small quantity even logically coherent? What is the relationship between this real number continuum and other well known continua, such as the geometrical straight line? The main question to be addressed, of course, is whether mathematical continuity exists at all.

Language: English

Keywords: Continuum, Continuity, Mathematical continuity, Number, Real number, Infinitesimal, Mathematics