Mathematical Conceptualism

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Thursday, March 2, 2006
102 Bradley Hall, 3:30 pm
(Tea 3:00 pm Math Lounge)
Note Unusual Time and Place

Abstract

Is circular reasoning necessary in mathematics? Many mainstream mathematicians might be surprised to learn that the standard axiomatizations of set theory involve fundamental circularities. Mathematical conceptualism is an alternative foundational philosophy, originating in views of Poincare and Russell, which strictly forbids all circularity. This sort of approach was originally thought to be far too weak to support ordinary core mathematics, and later was felt to be subject to severe limitations of a more abstract nature, but we now know that these limitations are not valid and in fact essentially all core mathematics is conceptualistically legitimate if interpreted properly. At the same time, conceptualism exorcises vast regions of set-theoretic pathology from the mathematical universe, so that it is in fact in better accord with actual mathematical practice than the Cantorian picture. I believe a strong case can be made for abandoning Cantorian set theory as a foundation for mathematics, and adopting conceptualism in its place. (Related papers are available at
`http://www.math.wustl.edu/ nweaver/conceptualism.html`)

This talk should be accessible to undergraduates.