

Existential axiomatics

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It is a curious fact of intellectual history that the *Grundlagenstreit* of the 1920s still colors our perspectives on the foundations of mathematics. Brouwer remarked in his 1927, “The disagreement over which is correct, the formalistic way of founding mathematics anew or the intuitionistic way of reconstructing it, will vanish, and the choice between the two activities be reduced to a matter of taste, as soon as the following insights ... are generally accepted.” Those insights have been accepted as far as they were still defended by Brouwer in 1953.

I sketch first the evolution to Hilbert’s finitist consistency program, point to the deep connections to Dedekind’s logicist views, and describe the evolution of “existential axiomatics”; cf. *Sieg 2002*. Second, I describe the problematic of articulating the epistemologically distinctive aspects of finitist mathematics. An analysis of the informal ideas underlying this approach motivates, however, the formulation of *reductive structuralism*. The goal in this third part is to give an integrating perspective for philosophical work and to formulate focused problems for mathematical investigation.

References:

- L.E.J. Brouwer
1927 Intuitionistische Betrachtungen über den Formalismus; published in 1927 and translated in: van Heijenoort (ed.), *From Frege to Gödel*, Cambridge 1967, pp. 490-492.
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2002 Beyond Hilbert's Reach?; in: Malament (ed.), *Reading Natural Philosophy*, Chicago 2002, pp. 363-405.