

On Optimism and Opportunism in Applied Mathematics (Mark Wilson Meets John von Neumann on Mathematical Ontology)

Stoeltzner, Michael (2003) On Optimism and Opportunism in Applied Mathematics (Mark Wilson Meets John von Neumann on Mathematical Ontology) .

Full text available as:

[Microsoft Word](#) - Requires a viewer, such as [Microsoft Word Viewer](#)

Abstract

Applied mathematics often operates by way of shakily rationalized expedients that can neither be understood in a deductive-nomological nor in an anti-realist setting. Rather do these complexities, so a recent paper of Mark Wilson argues, indicate some element in our mathematical descriptions that is alien to the physical world. In this vein the 'mathematical opportunist' openly seeks or engineers appropriate conditions for mathematics to get hold on a given problem. Honest 'mathematical optimists', instead, try to liberalize mathematical ontology so as to include all physical solutions. Following John von Neumann, the present paper argues that the axiomatization of a scientific theory can be performed in a rather opportunistic fashion, such that optimism and opportunism appear as two modes of a single strategy whose relative weight is determined by the status of the field to be investigated. Wilson's promising approach may thus be reformulated so as to avoid precarious talk about a physical world that is void of mathematical structure. This also makes the appraisal of the axiomatic method in applied mathematics less dependent upon foundationalist issues.

Keywords: Applied mathematics, axiomatic method, mathematical ontology, classical mechanics

[Specific Sciences: Physics: Classical Physics](#)

Subjects: [Specific Sciences: Mathematics](#)

[Specific Sciences: Physics](#)

[General Issues: Realism/Anti-realism](#)

ID Code: 1225

Deposited By: [Stoeltzner, Michael](#)

Deposited On: 18 June 2003