Contracting Batterman's Asymptotic 'No-Man's Land:' Reduction Rejoins Explanation

Kallfelz, William (2005) Contracting Batterman's Asymptotic 'No-Man's Land:' Reduction Rejoins Explanation.

Abstract

The notion of emergence has received much renewed attention recently. Most of the authors I review (§ II), including most notably Robert Batterman (2002, 2003, 2004) share the common aim of providing accounts for emergence which offer fresh insights from highly articulated and nuanced views reflecting recent developments in applied physics. Moreover, the authors present such accounts to reveal what they consider as misrepresentative and oversimplified abstractions often depicted in standard philosophical accounts. With primary focus on Batterman, however, I show (in § III), that despite (or perhaps because of) such novel and compelling insights; underlying thematic tensions and ambiguities persist nevertheless, due to subtle reifications made of particular (albeit central) mathematical methods employed in asymptotic analysis. I offer a potential candidate (in § IV), for regularization advanced by the theoretical physicist David Finkelstein (1996, 2002, 2004). The richly characterized multilinear algebraic theories employed by Finkelstein would, for instance, serve the two-fold purpose of clearing up much of the inevitably " epistemological emergence " accompanying divergent limiting cases treated in the standard approaches, while at the same time characterize in relatively greater detail the " ontological emergence " of particular quantum phenomena under study. Among other things, this suggests that the some of the structures suggested by Batterman as essentially involving the superseded theory are better understood as regular algebraic contraction (Finkelstein). Because of the regularization latent in such powerful multilinear algebraic methods, among other things this calls into question Batterman ' s claims that explanation and reduction should be kept separate, in instances involving singular limits. (§ V)

Commentary on:	Batterman, Robert (2004) Response to Belot's "Whose Devil? Which Details?".
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- Belot, Gordon. Whose Devil? Which Details?. (deposited 14 December 2003)
  - Batterman, Robert. Response to Belot's "Whose Devil? Which Details?". (deposited 18 Febuary

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- Cohnitz, Daniel. Explanations are like salted peanuts. Why you can't cut the route toward further reduction. . (deposited 30 March 2004)
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