

A 'MEILLASSOUXIAN' APPROACH TO KANT'S FIRST ANTINOMY OF PURE REASON AND THE BIG BANG

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Presented at Duquesne University
2/23/2013

Introduction and Intention

- ▣ Philosophy of science that proceeds on the basis of the science
- ▣ Cosmology and astrophysics applied to the philosophy
- ▣ Question: Is there a science-informed philosophy that can add anything to the discussion of world's origin?
- ▣ The novelty: Meillassoux

A Universe with a Beginning or No?: What the Science Says

1. Astronomical Observed Expansion of Galaxies
2. Chemical Composition Ratios throughout
Universe (Consilience)
3. Cosmic Microwave Background
4. And Much More!

Krauss' *A Priori* Proofs

Pair production is instantiated by “instability” of “nothing”. Therefore, the Big Bang and resulting universe came from nothing [presumably because this is the best of all possible worlds].

“Nevertheless, all of the [quantum] phenomena imply that under the right conditions, not only can nothing become something, it is required” and “nothing always produces something, if only for an instant”

--Lawrence Krauss *A Universe from Nothing* (p. 153 & 156)

Hume and Other Problems with Krauss

- It's poor physics! (Just consider the lack equations determining the amount of matter production, where “instability” would be one among many parameters; no initial conditions or boundary conditions given as governing equation constraints).
- Metaphysics (Hume): Krauss establishes no necessity.
- A question for a metaphysician *par excellence*: Where did the possibility of something from “nothing” come?

Kant's First Antinomy of Pure Reason

Thesis and Proof: The world had a beginning in time, because, if it had no beginning, an infinity of time must have elapsed, and it could never be “now”.

Antithesis and Proof: The world had no beginning in time, because, if it did, then there was a first state, which had a prior state that made that state possible; and so on *ad infinitum*.

Satisfied? What about the science?

Unknown Unknowns and the Idea of Virtuality

- Epistemic Virtuality: The idea that there are things that one is not even aware of not knowing.
- Ontological Virtuality: The idea that there are things that are not yet (nor are they conceivable as ontological possibilities, etc.), but might be in the future.
- Ontological virtuality is what we will mean by “virtuality” in the context of this talk.

Virtuality & Contingency

Ontology Type	Static	Non-Static
Ontological Realizable Set of Actualities	Totalizable	Non-Totalizable (Incomplete!)
Collection of Events	Probability of “Potentiality” (indexed, only law governed)	Virtuality (not pre-constituted; not indexed)
Single Event Status	Chance	Contingency

(See: Meillassoux’s “Potentiality & Virtuality” in *Collapse II*, Ed. Robert McCay (2007): p. 55-81)

Hume's Onslaught

- Standard concern (addressed by Kant)
- Where did the possibility come from? Does Hume need a non-static ontology?
- Classes of causal chains, such as probability (not really addressed by Kant)

Logic of Non-Static Ontology

Completeness (notice the synchronic universality):

For any sentence φ and set of sentences Γ , if $\Gamma \models \varphi$, then $\Gamma \vdash \varphi$.

Reformulation in terms of entities and their histories (diachronic):

For any entity (e.g., objects and laws) φ and set Γ , if $\Gamma \models \varphi$, then $\Gamma \vdash \varphi$.

It naturally follows that this axiom needs to go, in a non-static ontology.

- 1) Thinking about laws like objects in a Minkowski diagram, possessing “conceptual” worldlines. Entities are historical.
- 2) As Cartwright has noted, laws maybe locally (temporally and spatially) as viewed by traditional philosophy and science; and thus completeness may appear, locally and pragmatically, to be admissible.

Afterthoughts

- Why use science to inform the philosophy, to begin with? Does this approach sympathize with the progress-view of science?
- Mathematization of Nature and Gödel
- Can Meillassoux's tools and the Speculative Turn contribute to a resurgence in qualitative science?

Acknowledgments

Duquesne's Department of Philosophy for the
invitation/hospitality

&

IU Bloomington's HPS Department for the travel grant