A 'Meillassouxian' Approach to Kant's First Antinomy of Pure Reason and the Big Bang[1]

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Among the most interesting philosophical mysteries is the history of the universe and the nature of its origin, if it has one. This topic has been handled regularly by philosophers, physicists, and cosmologists, the only consensus being that the available data seems to indicate that the universe did have a beginning, leaving the long-standing philosophical issue of the origin of the laws of physics and other necessary (meta)physical paraphernalia that preceded the Big Bang. Perhaps no philosopher has better stated the dilemma better than Kant in his first antinomy of pure reason. In the following, an attempt will be made to convince the reader that there are alterations that can be made to conventional philosophical frameworks that can resolve issues, such as Kant's antinomies, and the one addressed in this paper is the first antinomy of pure reason. The proposed alteration is to apply some of Quentin Meillassoux's tools, though breaking from the bulk of his framework —the reason for the scare quotes in the title.

To motivate the use of the first of Meillassoux's tools, that of the Humean take on causation, there is no better place to start than current physics, astronomy, and cosmology. Observational facts, as catalogued and construed, seem to suggest that the universe did have a beginning. For example, according to astronomical observation, the universe is expanding, and inverting the Hubble constant extrapolated from that expansion presents an estimate of long it's

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been since the universe was in its most compact state and the Big Bang occurred (Carroll and Ostlie 1118); and there are other phenomena suggestive of a Big Bang, such as the nature of the cosmic microwave background radiation (Krauss 51). However, the laws of physics are being misapplied by some cosmologists, like Lawrence M. Krauss, who wish to assert the causal efficacy of quantum vacuum fluctuations extends to the status of necessary causal agent in going from nothing to something. Never mind that over the course of three pages, in *A Universe from Nothing*, Krauss can hardly maintain coherence in what he is saying: "Nevertheless, all of the [quantum] phenomena imply that *under the right conditions*, not only can nothing become something, it is required to" (Krauss 156) (emphasis added) and "nothing *always* produces something, if only for an instant" (Krauss 153) (emphasis added). The key concern is that Krauss and others have no prescribed parameters for assessing gradations in "instability" of "nothing."[3] More directly, and speaking to the physics, what was it quantitatively and conceptually about the vacuum which yielded the Big Bang that differs from the garden variety vacuum fluctuations that pervade the universe at present, and why did it yield precisely the amount of stuff (matter-energy, etc.) that it did? A quip to the effect that the amount of stuff produced was simply "random," in response, is not an answer, unless "random" means that there was no necessary connection between the anteceding "nothing"[4] and the consequent something. The status of this disconnect suggests that the antecedent state is what Jan Faye describes as "globally underdetermined," the definition he gives to metaphysics —which is to say that a

[3] There are plenty of other conceptual concerns, beyond those introduced here. For instance, Raymond Tallis and many before him have noted conceptual difficulties in discussing a first instant of time, because it seems as though one needs to specify a meta-when in which the first instant occurs; or the idea that it seems perfectly fine to extend time further back, beyond the first instant, contra Hawking's north-pole analogy; or whether a Big Bang denotes a beginning of time or not (Tallis).

[4] While the meaning of "nothing" is relevant to this paper and a fertile ground for debate, the term is not the central concern of this paper; but it should be taken in a sense that some scientists fail to take it, namely, a condition that is devoid of space, time, materiality —everything. Categories will, in the following, be added to this list. This is also the reason for the clemency shown to Krauss' definition of "nothing" as being something.

discussion of Kant has been sufficiently motivated, since the science could go no further (Faye 21). First, a look at why the science should defer to Humean causation.

In regard to necessary causal connections, Hume says, "Such a connexion wou'd amount to a demonstration, and wou'd imply the absolute impossibility for the one object not to follow, or to be conceiv'd not to follow upon the other" (Hume 109). That is, to show a necessary connection is to show that one state following from another could not be otherwise. This is doubly problematic for the cosmologist, because, in addition to establishing the connection between the succession of states (nothing and something), she must also determine why, in particular, the amount of something observed could not have been otherwise. To adumbrate what shall follow, Meillassoux, in his chapter on "Hume's Problem," adds the further challenge to Hume's larger corpus, (Cartwirghtian) fundamentalism, and fideism, "…can one establish that in identical circumstances, future successions of phenomena will always be identical to previous successions?" (Meillassoux 85). The Humean issue to take with the philosophical underpinnings of cosmology rests in any particular (temporally local) succession of phenomena; the Meillassouxian approach is to take the Hume further in such applications, showing there is a temporally global problem regarding the stability of sets of particular successions. To fully explicate the relevance of this line of thought and, above all, show that it is an adequate approach, Kant's assessment of the metaphysics shall be introduced. The idea will be to show that a satisfactory alternative to the approach of metaphysical mystery does exist, and show that this alternative can fit well with scientific observation and theory, and take over where the science has not been able to go further.

Kant states that the transcendental dialectic yields an antinomy, and, because it is a dialectic, presents the antinomy as a thesis and an antithesis. The truncated thesis and antithesis

are, respectively, "The world has a beginning in time…" and "The world has no beginning…" (cf. A426) (*Critique of Pure Reason* 396).[5] The proof given for the thesis is that, if the world had no beginning, then an infinity of time would have had to have elapsed to get to any moment considered to be "now" (*Critique of Pure Reason* 397). The proof given for the antithesis is that, if there was a beginning of time, then there was an initial state, the problem being that there must have been some state, some condition of existence, that gave rise to the "initial state," and so on ad infinitum for all other newly established preceding states (*Critique of Pure Reason* 397). Within an anti-Humean framework, one is compelled to establish the conditio sine qua non for any state that arises, and Kant understood this. In a sense, Kant's antinomy is a prelude to Big Bang cosmology and steady-state cosmology, illustrating how pure reason puts them at loggerheads. Given that, can a disposition affording credence to empirical findings be honored within the ambit of an alternative philosophical framework? Meillassoux may be able to provide such a framework.

"Virtuality" and "contingency" are the Meillassouxian tools that can be brought to bear on Kant's antinomy. Once explained, it should be clear that these ideas naturally fit with Humean causation, and may even seem coextensive with it. Virtuality is the notion that the universe's ontology is not static, and, in such an ontology, an unprecedented event is said to be "contingent," that is, an event that is not an *a priori* ontological possibility. Meillassoux explains that, "[c]ontingency expresses the fact that physical laws remain indifferent as to whether an event occurs or not —they allow an entity to emerge, to subsist, or to perish" (Meillassoux 39).[6]

[5] The reason for arguing an implicit association between time and the first appearance of "something" is that the paper assumes the necessity of change in order for time to be extant; and change requires something, the something that follows from nothing.

[6] The astute reader may wonder why, as Graham Harman does in *Quentin Meillassoux: Philosophy in the Making*, there is any discussion of laws if events are contingent (Harman 125). The answer lies implicitly in the natural extension of Meillassoux's concept of "facticity," because contingent event may be synchronic, occurring as

Virtuality indicates a type ontology and may be best understood by approaching the epistemic version (epistemic virtuality), which is a subset of what is meant by virtuality. The single best explanation of epistemic virtuality comes in the words of a surprisingly unphilosophical source, Donald Rumsfeld, and, with no small amount irony, has been quoted by the even less philosophically minded Krauss, in his *A Universe from Nothing* (Krauss 23):

> As we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns —the ones we don't know we don't know (Rumsfeld).

Strictly speaking, facts that lie outside the periphery of one's knowledge are generally taken to have the same ontological status as the set of known facts; one does not doubt a fact's existence just because one was not previously aware of it. This thinking assumes a static ontology; the difference between it and the complete version of virtuality is that the latter admits a non-static ontology. That is, the "unknown unknowns" might not yet be. More precisely, there are analogs between static and non-static ontologies that make the picture clear: a static ontology has probabilities that govern the *totalized* collection of events, and a chance, *a priori*, that a particular event will occur; the analogs being that a non-static ontology is virtual, as the collection of events is non-totalizable, and the occurrence of any particular event being contingent.

The motivation for bringing in virtuality and contingency, in addition to an Humean view of causation, is that Kant's first antinomy has not been sufficiently responded to by Humean causation, as the question remains, as a result of the static ontology, "Where did the "possibility" of a particular amount of "something" come from?" The problem is that the Humean, vis-à-vis

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ontological blips, or, essentially, diachronic, stayed and extended over time, however long that may be (Meillassoux 39).

the tools of the Humean framework, cannot account for how something comes from nothing, having admitted a static ontology; and this is, no doubt, a motivation for Kant's treatment of metaphysics (and the introduction of the antinomies) as remaining beyond human grasp. In maintain a static ontology through mysterious, impregnable metaphysics, Kant says, "[n]atural science will never reveal to us the internal constitution of things, which though not appearance, yet can serve as the ultimate ground of explaining appearance" (*Prolegomena to Any Future Metaphysics* 79). What is needed, in addition to Hume, is some way of explaining how something could come to be, though it was not *necessarily* possible *a priori*, because, if the categories or some world of forms existed in the initial state, then there is something that affords for subsequent states. Therefore, even though one might grant Humean contingency (in the traditional sense of the word) in a static ontology, the problem remains that categories, etc., are something, so the question of how they got there remains, too. The non-static ontology resolves this, but a double move, so to speak, is needed to put it all together. The figurative double move requires redacting an axiom of logic.

Systems of logic are situated on two axioms, those of soundness and completeness. The soundness axiom says that:

For any sentence φ and set of sentences Γ, if $\Gamma \vdash \varphi$, then $\Gamma \models \varphi$ (Mates 134).

The completeness axiom says that:

For any sentence φ and set of sentences Γ, if $\Gamma \models \varphi$, then $\Gamma \vdash \varphi$ (Mates 136).

In other words, sentences that are consequences of a set of sentences, in the given system, must be derivable from that set for the system to be complete; sentences that are derivable from a set of sentences, in the given system, must also be a consequence of that set. In a system that is both

sound and complete, it must be the case that everything (a sentence or set of sentences; anything, call them Ω) *necessarily* follows from the empty set:

$$ø \rightarrow \Omega$$

The reasoning should be clear. By way of truth-functional logic, a false antecedent yields any consequent. This holds for a static ontology, though, a point that seems to go unnoticed. That is, completeness presupposes the totalization of all possibilities within the static ontology, because, in order to determine that some sentence or given set of sentences (Ω) is derivable, it is necessary to say what that Ω is. If Ω is not given *a priori*, and not just in the epistemic sense, but the ontological sense, then one cannot derive Ω, an unknown unknown, from the empty set. Therefore, non-totalizability within the non-static ontology means that completeness is precluded. Meillassoux's "facticity" is what permits for the otherwise viability of logic. Meillassoux says of "facticity":

> pertains to those structural invariants that <u>*supposedly*</u> govern the world — invariants which may differ from one variant of correlationism[7] to another, but whose function in every case is to provide the minimal organization of representation: principle of causality, forms of perception, logical laws, etc. These structures are fixed —I never experience their variation, and in the case of logical laws, I cannot even represent to myself their modification… (Meillassoux 39) (emphasis added).

Essentially, the point is that the completeness axiom is acceptable with regard to approximately synchronic and local scope. This approximately synchronic and local scope, call it "Kantian locality," manifests itself in other works, such as *The Dappled World* (Cartwright 23-24).

[7] For the sake of this paper, one may consider "correlationsim" to indicate any philosophical position that entails static ontologies. In fact, Meillassoux means much, much more than this by the term, and a full exposition of it would require a lengthy discussion. While the collection of philosophies termed "correlationism" is what Meillassoux is reacting to, it is approximately irrelevant to the purposes of this paper, another reason why this is a "Meillassouxian" approach, emphasis on the scare quotes.

The lack of completeness is what is needed to supplement Hume's causal framework, and Meillassoux's tools make this possible. That non-static ontology does not admit the completeness axiom, in the global sense, is interesting because the larger structure of Meillassoux's thinking is centered around the non-totalizability found in mathematical logic, borrowed from Alain Badiou, his mentor (see *Being and Event*'s discussion of Cantor Part VI). Putting everything together, it is now possible to give a full account of how the Big Bang may have occurred, all while avoiding Kant's antinomy and metaphysics. The idea is that the universe may have come from nothing —no set of conditions, no dimensions, no categories; nothing—, and the appearance of something having been a strictly contingent event, even in the amount of energy-matter created. This contingent event, not causally tied to any prior event, lacking any need for an *a priori conditio sine qua non*, arrives at the *causa sui*, insofar as "*causa*" has been freed of the metaphysical baggage traditionally assigned to it. That has been the project, without stating it explicitly, and is the project of Meillassoux —to eliminate metaphysics to resolve similar issues. As Meillassoux says,

> For it is by progressive uncovering of new problems, and adequate responses to them, that we will give life and existence to a *logos* of contingency, which is to say, a reason emancipated from the principle of reason —a *speculative form of the rational* that would no longer be a *metaphysical reason* (Meillassoux 77).

The reason, in a loose sense, without a reason, in a strict sense, is the mode by which Meillassoux inverts consequences that arise by way of metaphysics, as seen with the antinomies, and, therefore, a similar route has been taken herein, dispelling metaphysics to resolve one conundrum.

To sum up, the current conceptual cul-de-sac, provided by observational astronomy and the theory of cosmology, philosophical underpinnings included, has made room for radically

different considerations in ontology. As Kant's assessment of the metaphysics shows, there is something missing in the understanding of metaphysics, which either consigns thought to accepting the mysteries of metaphysics that lie beyond the limits of pure reason, or to the consideration of something like Meillassoux's non-static ontology. That science has demonstrated leanings toward Big Bang cosmology, and focuses in on the conceptual problems in transitioning from nothing to something, notions like contingency and virtuality, in tandem with a sort of Humean idea of causation, may prove philosophically fulfilling. Given the Meillassouxian approach provided, not only can the Big Bang be described as a contingent event, which did not follow out of necessity from a state of nothing (in the sense that Krauss claims: if nothing, then something *must* follow), and there being no causal link between state; but also what contingently followed was a product of non-static ontology, one which spurns the fundamentalist's and fideist's presumed underlying metaphysics. In other words, a higher degree of metaphysical parsimony has been achieved by the Meillassouxian approach, one that, if valid, suggests the fideist and fundamentalist presumption has unnecessarily sent science on a wild-goose chase. The Meillassouxian line of thinking may also resolve other issues.

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