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ON WHETHER MEILLASSOUX'S PHILOSOPHY CAN SERVE AS A BASIS FOR A

SPECULATIVE TURN IN THE PHILOSOPHY OF SCIENCE

Abstract: Quentin Meillassoux's was among the four philosophers that met at Goldsmith's College in 2007, instantiating a philosophical turn that would formally seek to supplant correlationism, all forms of modern philosophy that contain correlations, especially the subject-object correlate. With the growth of the speculative turn, and the rise of numerous journals that publish papers of the non-correlationist persuasion, books devoted to various forms of speculative realism, and so on, it is of growing interest to establish, or figure out whether it is possible to establish, a speculative turn in the philosophy of science. Given the natural-philosophy mindedness of all four original attendees of the Goldsmith College (Graham Harman, Iain Hamilton Grant, Ray Brassier, and Alberto Toscano, who stood in the stead of Quentin Meillassoux, who was unable to attend), the question has been circuitously address, but not yet met head on; and so this exposition intends to focus on Meillassoux's contribution and assess the possibility that it could serve as a basis for a speculative turn in the philosophy of science. The modes by which this assessment shall be carried are, primarily, through exfoliating commentary and critique.

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§ 1. Introduction

The present exposition has many intentions. First, it is intended to develop the notion of what it would mean to put forth a speculative turn in the philosophy of science. This entails a discussion of what "correlationism" means, and we will employ, particularly, Immanuel Kant's philosophy as the exemplar of the correlationists' position —primarily because much of Quentin Meillassoux's strategy is overtly geared toward the subversion of Kant's philosophy, point by point. In fact, Badiou also sees Kant as being the nemesis Meillassoux has in mind, in the following sense, as he says in the introduction to the book: '…[Meillassoux] circumvents Kant's canonical distinction between "dogmatism" and "skepticism" (*After Finitude* vii). Meillassoux seems to give Kant a privileged status in the history of correlationist philosophy, saying

> …the central notion of modern philosophy since Kant seems to be that of
> *correlation*. By correlation we mean the idea according to which we only ever
> have access to the consideration between thinking and being and never to either
> term considered apart from the other (*After Finitude* 5).

Second, and related to the first, as will be seen, this exposition intends to critically assess the validity of Meillassoux's philosophy as a foundation for such a speculative turn in the philosophy of science. This portion of the text is really a three-step process, the first being an expository portion, the second being a critique of Meillassoux's philosophy, and the third being suggestions to the effect of what is needed on by Meillassoux, in terms of his philosophy's adequacy as providing a speculative turn in philosophy. Third, interspersed throughout the following, numerous points will be made regarding the value of Meillassoux's philosophy to the philosophy of science —and even science, *per se*; for example, illustrations of resolutions of some present issues within the philosophy of science will be offered. Finally, some suggestion

as to the direction a formal project of constructing a speculative turn in philosophy will be made. More specifically, the thesis to be argued is that Quentin Meillassoux's speculative "materialism" does constitute a satisfactory basis for a speculative turn in the philosophy of science, but that there are adjustments to be made (does "thinking"[1] relegate Meillassoux's philosophical framework into the correlationist camp) and some resolution must be made regarding ostensible critical failings thereof —for instance, Meillassoux's philosophy must either be understood as non-idealistic (as Harman and I think it appears to be idealist in nature) or, possibly, an explanation must be given for why it is that a speculative idealist framework could be non-correlationist in nature. This last point, regarding a non-correlationist idealism will not be exhaustively treated, but will be entertained and briefly discussed for the purposes of stimulating further rumination, or, if nothing else, for the sake of shameless entertainment. Noting that I said "finally," this section of the text will come prior to the portions of text that have more of a secondary-literature feel to them. One might think of section 3a. and 3b. as an advertisement as to why one should concern his or herself with the corpus of Meillassoux and the piece of secondary literature to be presented here.

The strategy for facilitating all of the above intended goals and thesis is to discuss some of the major points of Meillassoux's chapters in *After Finitude* (except the third chapter, which will be largely covered by the contents of other sections collectively) and his most important papers, and, in the end tie together the logs (the comments, critique, and overarching added structure applied to Meillassoux's philosophy) of the argument into a single raft that can float out to sea, like Neurath's ship on a metaphysics-less sea; but this can only be done once the relevant

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[1] Being a very science-minded philosopher, it is not clear in what sense thought is done by something other than a subject with something like a brain or similar network. Therefore, if Meillassoux cannot get outside of thought, qua something a subject does, then Meillassoux has certainly not escaped the correlationist circle.

salient features of Kant's work, especially those pertaining to epistemology and the nature of science, have been presented. It will be in the light of this Kantian doctrinal exfoliation that Meillassoux's strengths and weakness will be most palpable. Moreover, a thoroughgoing understanding of Meillassoux's anti-metaphysical project can be best understood, once again, as an antithetical approach to philosophy that negates the Kantian correlational deeds, in the sense that Meillassoux seeks to gut out all of the undergirding structure of givenness, as instituted by Kant in his Copernican counterrevolution; and it is worth mentioning that the need for undergirding comes from subjectifying (in the mode of Kant and like-minded philosophers) the object, i.e. from his bifurcation of subject/object as such.

§ 2. Kant and "Correlationism"

Among the central problems driving the Kantian project is how it could be that there is universal, necessary, and certain knowledge. More generally, as his title suggests, in the *Critique of Pure Reason*, Kant seeks to establish a synthetic understanding of reason and knowledge —"synthetic," in the sense of "synthesis"— on the grounds of cognitive faculties and the application of pure forms; and this overall schema would, then, yield an understanding of: 1) the limits of reason and 2) the origin of science's (qua knowledge) necessity, universality, and certitude. Indeed, one may even assert, given the scientifically inclined nature of the pre-critical project and the critical project in light of its antecedent Kantian texts, that the impetus that drove Kant to seek out this variety of epistemic founding was to ground natural science. A brief discussion of Kantian epistemology serves as an important starting point, because Meillassoux's speculative philosophy takes, by design, the antipodal approach, annihilating the framework of epistemology by necessity, replacing it with his philosophy, pithily summed up in his dictum, 'the only necessity is contingency.'

In order to understand the primary Kantian obsession with metaphysics, i.e., the noumenal realm, it is important to understand what Kant was responding to and the nature of the (i.e., the strategy of) the response. Above, I mentioned the importance of epistemology and the power of science for Kant's corpus. As is often quoted, Kant refers to his reading of David Hume as having awakened him from his dogmatic slumber. Hume, today, is still a bear to deal with in philosophical enquiries dealing with causation and determining necessary causal connections. Hume has a very good point to make: 'Such a [causal] 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). Elsewhere, Hume says things to the

effect that a causal connection means showing that events could not have occurred otherwise, and that one cannot see any such thing as a causal connection. Kant's response is largely oriented around this thinking that, absolutely, causal connections are not seen in the world, and so, between metaphysical underpinnings (within the realm of non-givenness) and the category of causality, there is nothing intuited that is a causal connection. This is why Kant goes on this rather complex spiel about extended magnitudes, and begins his section on the "Axiom of Intuition" by saying, 'Their principle is: all intuitions are extended magnitudes' (B202). Kant's thinking is that causal connections can be slipped out of the realm of givenness by way of his convoluted schema, where the category of causality is applied, by way of "*Urtheile*" ("judgements"), to phenomena —though not properly manifesting in the phenomena, only applied—, and correlated to some*ding*(*-an-sich*), supposedly. This point, that the category of causality is applied and not manifested, is most aptly presented in Kant's *Prolegomena to Any Future Metaphysics*, where he says, 'Before…a judgment of perception can become a judgment of experience, it is requisite that the perception should be subsumed under some such concept of understanding' (*Prolegomena* 35), and goes on to exemplify this point in the endnotes, suggesting that

> "When the sun shines on the stone, it grows warm." This judgment [of
> perception], however often I and others may have perceived it, is a mere judgment
> of perception, and contains no necessity; perceptions are only usually conjoined in
> this manner. But if I say, "The sun warms the stone" [notice the causal link], I
> **add** to the perception a concept of the understanding, viz., that of cause, which
> connects with the concept of sunshine that of heat as a necessary consequence,
> and the synthetical judgment becomes of necessity universally valid, viz.,
> objective, and is converted from a perception into experience (*Prolegomena* 110).

This lack of epistemic groundedness in givenness is what Meillassoux and like-minded speculative philosophers take issue with. While Kant maintains that 'natural science will never reveal to us the internal constitution of things' (*Prolegomena* 79), Meillassoux looks to dismiss "internal constitutions" by predicating the sum of all experience upon the contingency of the given. One thing is clear, which is that Kant is wrestling with Hume, and saw *A Treatise of Human Nature* as genuinely problematic to former views on causation, as causation remained hidden from intuition. For example, Holzhey and Mudroch have noted that Kant's causality, though a category like others, takes on the cloaked nature that it did for Hume, in Hume's philosophy (Holzhey and Mudroch 71). Instead of taking the metaphysician's approach to Hume's problem, Meillassoux relinquishes metaphysics and Leibniz' principle of sufficient reason that so occupies Kant's mind. This will be expounded upon in the section on "Hume's Revenge," and so the last point to bear in mind about causality with respect to science and epsitemology, until then, is the fact that Kant is trying to get a theory of causality that conforms to Hume's observations, while establishing the apodicticity of scientific knowledge.

I would be remiss if I did not state that Meillassoux does not maintain that Kant is the worst of all kinds of correlationist. Actually, Meillassoux, for the sake of establishing a minor subtlety that exists within camps of correlationist thought, points out that there are weak and strong correlation, and that Kant is one of the weak correlationists. Before establishing the dichotomy between these varieties of correlationism, let's keep in mind what it means to be properly correlationist, over and beyond the simplistic point that this form of philosophy features relata and relations of all sorts. Meillassoux notes that there is a bizarre and "vicious" circle wherein correlationists philosophers make attempts to absolutize, yet generally makes no positive assertion as to how this is possible in the face of the existing co-relational chasm (*After*

Finitude 31). Meillassoux paints the dichotomy thus: '…the strong model of correlationism maintains not only that it is illegitimate to claim that we can *know* the in-itself, but *also* that it is illegitimate to claim that we can at least *think* it' (*After Finitude* 35). Therefore, because Kant maintains that we might know something *a priori*, though not knowing something specific —i.e., know of noumena, but knowing anything about noumena—, Kant is really a weak correlationist; 'Why? Because although the author of the *Critique of Pure Reason* maintains that the thing-in-itself is unknowable, he also maintains it is thinkable' (*After Finitude* 31) and that noumena is, at least, known of *a priori*. Since Meillassoux has put so much focus on Kant in this and other texts, it is important, once again, to keep in mind what sorts of things he may think, but is not saying. For instance, those philosophers that proceed under the auspices of some no-metaphysics doctrine are probably really just in violation of strong correlationism, and their philosophy is equivalent to positing the in-itself cannot be thought. Therefore, modern philosophical no-metaphysics schools of thought, loosely speaking, like those of Ernst Mach and the logical empiricists, may be taken as, not non-metaphysical in nature, but as strong correlationists who implicitly think the in-itself is not knowable, consequently not mentioning anything of the sort, at all. A philosophy that possesses noetico-noematic, subject-object, and other correlationist relata are almost assuredly going to fall into this category. With that in mind, the discussion of the ancestral in chapter one of *After Finitude* becomes very important.

The foregoing, in all of its aspects (e.g., co-relations and synthesis), facilitates, not a Copernican revolution, as Kant proclaimed, but a Copernican counterrevolution. The Copernican revolution was more than a decentering of the earth; Meillassoux rightly believes it was: '…*the decentering of thought relative to the world within the process of knowledge*' (*After Finitude* 115). That being said, what Kant did was precisely the opposite. For example, that

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synthesis requires a subject to construct the phenomenal world, or that the Kantian setup

necessarily instantiates correlates by establishing an "in here" and an "out there" in which

everything is to be laid, requires a recentralization of thought within subject. Undoing this is

Meillassoux's project.

§ 3a. A Meillassouxian Approach to the Big Bang and Kant's First Antinomy of Pure Reason

In this section, I would like to take the time to establish, in a much less cursory fashion, why a speculative turn, especially using Meillassoux's program, even if tweaked, may be of great value, not just in terms of making some sense of philosophical issue central to science, but also with regard to methodological and pragmatic considerations within science proper.

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

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."[2] 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"[3] 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

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[2] 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).

[3] 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?" (*After Finitude* 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).[4] 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" (*After Finitude*

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[4] 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.

39).[5] 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

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[5] 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 (*Quentin Meillassoux* 125). The answer lies implicitly in the natural extension of Meillassoux's concept of "facticity," because contingent event may be synchronic, occurring as ontological blips, or, essentially, diachronic, stayed and extended over time, however long that may be (*After Finitude* 39).

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

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 $\Gamma \vDash \varphi$ (Mates 134).

The completeness axiom says that:

For any sentence φ and set of sentences Γ, if $\Gamma \vDash \varphi$, 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:

$$\emptyset \rightarrow \Omega$$

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 *supposedly* govern the world —
> invariants which may differ from one variant of correlationism[6] 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

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[6] 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.

logical laws, I cannot even represent to myself their modification… (*After Finitude* 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).

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* (*After Finitude* 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, hence the value of ventures into understanding and developing a thoroughly explicated speculative turn in the philosophy of science.

§ 3b. The Problem with the Question, 'Why Is There Something Rather Than Nothing?'

A piece of literature, whose ideas appear to warrant discussion following the primary body of section two, is Heidegger's essay, "What Is Metaphysics?" There are at least two reasons for this. The first is that metaphysics, Heidegger suggests, proposes a major question: 'Why are there beings at all, and why not rather nothing?' ("What Is Metaphysics" 110). The question is supremely relevant to Krauss' position, because one gets the sense that there an *a priori* reason, in his mind —as I established, it's certainly not empirical, and appears, in no way to be scientific, even in any extended sense— for why something comes from nothing. Another reason is that, because "mood" and, more importantly, its ontological structure will play such an important part in section nine, Heidegger's thoughts on metaphysics (and "nothing") should, by association, naturally pique interests.

We shall begin more centrally with Heidegger's thoughts, before moving onward to Heideggerian considerations involving Krauss. One correction that needs tending to is the fact that Heidegger has accidentally bifurcated one concept into two separate pieces, namely, virtuality into anxiety and nothing. (Heidegger's usage in Krell's translation is not "nothing," but "indeterminateness" ("What Is Metaphysics" 101).) As Heidegger says, '[t]he nothing reveals itself in anxiety' ("What Is Metaphysics 102), where anxiety may be loosely thought of as a non-object oriented fear —whereas fear is naturally fear *of* something, i.e., it is object oriented. The problem is that Heidegger doesn't fully grasp the nature of the relationship between anxiety and nothing, because he doesn't have anything explicitly like radical contingency in his philosophy. Meillassoux has afforded (see later sections discussing

ontological status of secondary qualities in *After Finitude*) such sensations the same ontological privilege as primary qualities, which means that anxiety tells us something about the world, in the same way that mathematics does. I would like to suggest that ontological impetus for this secondary quality is the fact that the ontological landscape is temporally non-static, and so, locally, the plenum of givenness (see later sections for explication of this) has access to the status of the whole and the necessity of contingency imposed on it, part and whole.[7] On the opposing side of the accidental cleavage is "nothing," which Heidegger says, '[n]othing itself nihilates. Nihilation is not some fortuitous incident' ("What Is Metaphysics" 103). Where Heidegger goes wrong, though getting it mostly correct, is in the distinction of "accident" and "not accident," because they both presuppose some kind of necessity in ontology. Instead, "fortuitous," as something beyond overdetermination and accident, is exactly the kind of incident that nothing is. The fascinating point is that, in appending the predicate of fortuitous to the incident, called nothing, this seems to be precisely the obverse of the former: where anxiety is an awareness that each instant in the immediate feature may be radically different than the present state of affairs would necessitate in the classical understanding of static ontologies, "nothing" is that which enshrouds being in non-being (i.e., nihilates), or, in other words, rips something from givenness that was previously manifest in givenness. These obverses, when brought together, represent the virtual nature of the ontological landscape and the contingency contained within its temporality.

There is a problem, particularly in relation to thinkers like Krauss and Kant, on the basis of nothing as such. Specifically, nothing or the act of negation is an event, not a state, as the removal of something from givenness doesn't mean that there is a Platonic "otherworld" into

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[7] Some patience is required here, as a thoroughgoing discussion eliminating the human-non-human divide develops a framework further expanding up (and probably beyond) what Meillassoux has in mind, while, I think, internally consistent with said philosopher's program.

which something was placed. Nothing is an incident that occurs temporally within givenness, and the confusion of metaphysicians is applying it to spatiality, as though there was a place in which nothing serves as a set in which things find themselves when removed from givenness. In this, one finds the anti-metaphysical sentiment of Otto Neurath, who memorably said:

> There is no *tabula rasa*. We are like sailors who have to rebuild their ship on the open sea, without ever being able to dismantle it in dry-dock and reconstructed from its best components. Only metaphysics can disappear without a trace (Neurath in Cat).[8]

If givenness is the ship (replacing the ship qua science in the Neurathian analogy), then the open sea is temporality, its fluctuations fortuitous.

In Heidegger's wisdom, Krauss could learn something about the concept, nothing, which he brandishes and bandies about, as Heidegger remarks with concision:

> The nothing is rejected precisely by science, given up as nullity. … The nothing —what else can it be for science but an outrage and a phantasm? If science is right, then only one thing is sure: science wishes to know nothing from nothing. Ultimately this is a scientifically rigorous conception of nothing ("What Is Metaphysics" 95-96).

The words "scientifically rigorous conception of nothing" certainly come off as satirical, even cynical, which makes them all the more applicable to Krauss' book.

Heidegger also discusses logic in relation to nothing; but Heidegger is a bit puzzling, the more he talks about his conception of nothing. For instance, keeping in mind that *gewesen* is a verb for Heidegger, not "essence," but "essencing," he says that 'the nothing is the negation of

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[8] Special thanks to Jordi Cat for his patience in explicating numerous anti-metaphysical philosophical doctrines to me, and for sustained conversations on the Wiener Kreis, as well as its predecessors and progeny.

the totality of beings; it is nonbeing pure and simple' ("What Is Metaphysics" 97). There is, at

least, a modest peculiarity to this sort of statement. If things are verbings[9] for Heidegger, then

the quality of not verbing seems to be a linguistic fallacy of some very confused type. The fact

that something is negated doesn't mean it is unshelved, only to be shelved in an "*elsewhere*" not

in givenness. This linguistic fallacy, I maintain, comes from misunderstanding in the philosophy

of logic and what such terms of the logicians actually mean.[10] On paper, there is nothing that

presses the logician to answer the question about whether negation, ¬, is diachronic or

synchronic. By "synchronic," I only mean that the negation occurs approximately at an instant,

forgiving for some infinitesimal extension provided by a duration of nihilation, as in the case of

proximate instants preceding and following. By "diachronic," I only mean that the negation is a

state in which, within givenness, there is a temporal extension that denotes a status wherein that

which is negated is in a state of non-being, i.e., not manifest in givenness. In short, the

difference between the latter and the former is that the former is an event, the latter a state. I

think it is fairly safe to say that the logicians have been guilty of assuming the latter is the case.

For, to look at a ball with the attributed predicate "red," and saying that it *is* "not green" (¬G) is

to say and think something that is not in givenness; givenness supplies positive knowledge, not

negative. This becomes clear in the sorts of semantic-oriented theories of truth, like that which

features Tarski's material adequacy criterion, in which something from the object language

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[9] All I mean to say here is that, for Heidegger, there are verbs, i.e., actions, which are temporally extended, and, by way of gerunds, from which we acquire the ostensible standing nature of essence (or continued existences of substance). Reverting back to the discussion of Minkowski space in section four (on chapter two of *After Finitude*), it becomes clear that objects in both philosophies are, not world lines, but world line segments, in which there is a virtual advent of their first manifestation and an eventual contingent event of their nihilation.

[10] Contra Heidegger, I do not think logicians are guilty of playing metaphysics. I take it that he is implying this. I think the situation is much more accidentally arrived at, and that logicians are innocent of metaphysics. Heidegger says, 'But the question of the nothing pervades the whole of metaphysics since at the same time it forces us to face the problem of the origin of negation, that is, ultimately, to face up to the decision concerning the legitimacy of the rule of "logic" in metaphysics' ("What Is Metaphysics? 108). It seems more likely that the explanation I give on the pragmatics of understanding requiring contrast classes (which '¬' qua 'not' is useful for) surreptitiously occurred, going unnoticed, and that '¬' qua the state 'not' probably got entangled with some version of the principle of sufficient, even before the principle was formally codified.

corresponds to sentences in the metalanguage (Hodges). For instance, a male, who happens to be deuteranopic, cannot predicate ¬G unless he has experienced or knows someone who has experienced G. For this particular individual, G is relegated to epistemic virtuality. For predicates, or whatever might be negated, which are not yet, those are relegated to the virtuality of the ontological landscape.[11] Therefore, it appears that attribution of '¬' as a state is a correlationist's error, as the only attribution of '¬' should come directly from givenness, which is to say that it should be something, an event, that is apparent phenomenally, which, in turn, is referred to within natural language (the metalanguage) as '¬'.[12] It is, certainly, correlationist, because the subject requires memory of essencings —yes, a noun cum Heideggerian verb, then gerunded— past to note the absences of this predicate or that. Negation, that is nihilation, is to be grounded in givenness, otherwise one begins to build up a stock of concepts referring to that which is neither the sea or ship —which is to say, a stock of concepts referring to nowhere within the plenum of givenness, a stock collectively called "metaphysics."

Given all of the preceding, it becomes, I hope, obvious that Krauss and Kant are in the wrong, as far as employing "nothing" as a state rather than something that is an event; and that what is at stake is the instantiation of notions like "metaphysics" (the place, conceptual, physical, or otherwise, that is not disposed to givenness) and the principle of sufficient reason, the latter of which seems to fracture contingency, within Heidegger's thinking, into anxiety and nihilation. After having adjusted some of the thinking of Heidegger on the matter, Krauss's complaints

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[11] By that which is "not yet," I am referring to Meillassoux's "Spectral Dilemma," which contains numerous additional concepts that, though beyond what I want to highlight here, are, nonetheless, relevant.

[12] This is a little bit clearer when looking that the actual words chosen by logicians: '¬' qua 'to negate' is Heideggerian and Meillassouxian, while '¬' qua 'not' denotes a state. Probably, the thing that helps this erroneous convention into fashion is the fact that, conceptually, '¬' qua 'not' helps to establish contrast classes in metalanguage. For example, a trip through chapter five ("The Pragmatics of explanation) of van Fraassen's Lakatos-Award winning *Scientific Image* provides a brilliant demonstration of the conceptual necessity of establishing contrast classes prior to the acquisition of basic forms of understand, over and beyond scientific understanding, itself.

about the philosophical community requiring more of him, when defining "nothing," are absolutely risible, and it seems we can provide no greater parody than that provided by the tandem of Heidegger's astute observation and wit, regarding the scientific rigor required by science of "nothing." More, I hope it is clear that the meaning of "nothing," as used by modern cosmologists, is not meaningful. "Nothing" is treated by Krauss as though, *a priori*, it *necessarily* precedes givenness, but ontological priority tells a different story: said notion is only arrived at through events in givenness and, in some attenuated sense, memory. There is no sense in which Krauss and others are justified in using the term as he would, unless an additional philosophical framework is provided to explicate the meaning thereof. Finally, I propose, consequent to the above, antecedent lines of reasoning, an answer to the question posed at the end of Heidegger's essay, 'Why are there beings at all, and why not rather nothing?' The answer is that nothing is not something that is properly essencing, and does not have a world line; "nothing" is the metalinguistic concept of the (pragmatic) correlationist-minded thinker, which is used to establish contrast classes, but which has, also, been erroneously turned back in on givenness, so as to give it some ontological status within (really, through) givenness.[13] To cement this point, one of Meillassoux wonderful and insightful passages must be quoted at length:

> [T]he *Tractatus* maintains that the logical form of the world cannot be stated in the way in which facts in the world can be; it can only be "shown", that is to say, indicated in accordance with a discursive register that cannot be bound by the categories of science or logic. Consequently, it is the very fact that **the world is sayable** (that is to say, liable to formulation according to a logical syntax) **that cannot be bound by logical discourse**. Whence proposition 6.522: "There are

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[13] This is a chief Kantian strategy, in general: Kant uses givenness to project an ineffable metaphysical constitution that is both known of and unknowable, and that, yet, *necessarily* underlies givenness.

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indeed things that cannot be put into words. They *make themselves manifest*.
They are what is mystical." **But the mystical does not consist in other-worldly
knowledge** —it is the indication of science's inability to think the fact *that there
is* a world. Hence proposition 6.44: "It is not *how* things are in the world that is
mystical, but *that* it exists." Similarly, we have already seen how for Heidegger it
is the very fact that there are beings, and that there is givenness of beings, that
points to the rift inherent in representation: "Of all beings, only the human being,
called upon by the voice of Being, experiences the wonder of all wonders: *that*
beings *are*." In both cases, the fact that beings are, or the fact that there is a
logical world, is precisely what cannot be encompassed by the sovereignty of
logic and metaphysical reason… (*After Finitude* 41-42) (boldfaces added).

 More than metaphysics, which, through the foregoing discussion of "nothing," is a stockpile of

concept that, when examined critically, have no place in a philosophy that has virtuality as its

centerpiece, logic fails to encapsulate the logical world, unable to bound it. There is no topic of

discourse that illustrate this better than one of "nothing," because, as we noted, anxiety and

nihilation point to the non-static nature of the ontological landscape.

§ 4. Chapter 1 of *After Finitude*: Ancestrality

Perhaps the most pungent point made by Meillassoux in the first chapter of *After Finitude* is the fact he associates what is properly called metaphysics, i.e., that which is a subset of "non-givenness," so called by correlationists. In beginning with givenness, Meillassoux makes a fascinating point: somehow, it is the case that science has no problem with that which is given anterior to givenness, yet there is this problem that correlationists wish to say that there is a noumenal realm, which one might think of as a realm in which there is something that is simply not given. The inference one is to make should be clear. Just as that which is noumenal is not grounded in givenness, so is it the case that ancestral events that temporally precede pre-human,[14] that is, those supposed events that are reported by science to antedate the emergence of consciousness, are also not grounded in givenness. With respect to thought, itself, within the ambit of the correlationist's dogma, the rub is that

> thought cannot get *outside itself* in order to compare the world as it is "in itself" to
> the world as it is "for us," and thereby distinguish what is a function of our
> relation to the world from what belongs to the world alone (*After Finitude* 3-4).

Perhaps, Meillassoux could have done more to connect the dots for the reader, regarding the isomorphism he sees between that which is prior to givenness (temporally external to givenness) and that which is, in a sense, spatially external to givenness, but it is fairly clear that what he is

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[14] As will be discussed later on, this terminology of "pre-human" and like-minded phrases are problematic, in the sense that they appear to be (are?) fresh out of the correlationist lexicon. This virtually formally codified lexicon, well established in the post-Kantian era, is a plague upon attempts made by philosophers seeking a way out of all such philosophical ties with object-subject, noetico-noematic, referred-referent, and like correlations, because these co-relations have become so thoroughly embedded in the way that we —even the lay thinker— think that the speculative turn is struggles to construct its philosophy, while also attempting to found a philosophical lexicon of its own.

seeing is a hypocritical turn, where scientists ignore metaphysics and the philosophers[15] (especially, the philosophers of science) ignore the nature of scientific enterprise so far as it seems to be in no way tenable by the standards of what is called "noumenal" and "metaphysical."

Among the concerns of Meillassoux is the fact that Kant, in working to establish a mode by which scientific knowledge can be universal, necessary, and certain, has removed science from the realm of the given, where belief statements are to be assayed, and placed scientific knowledge into the realm of the mystical, i.e., the metaphysical; and the scientist has no direct knowledge of this mystical non-given world, making all scientific enterprise a matter of intersubjectivity, which completely subverts Kant's intention, anyway. Kant's intention was, more specifically, to find a way to ground science in the subject in a way that made the knowledge objective. However, this intention, I (and Meillassoux) think, has completely failed, falling on its face as a result of thought not being able to get outside of itself —which essentially means that the nature of the correlation between phenomena and noumena cannot be known. Briefly switching gears, I will come back to further discuss Meillassoux and intersubjectivity, but, for now, a little further discussion of the correlationist divide between one relatum and another of a (co-)relation is necessary. To further the thought that the correlation between phenomena and noumena cannot be known, we look to Kant's words found in the "Transcendental Aesthetic" of the *Critique of Pure Reason*:

> The transcendental concept of appearances in space…is a critical reminder that
> nothing in space is a thing in itself, that space is not a form inhering in things in
> themselves as their intrinsic property, that objects in themselves are quite

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[15] Of course, when speaking generically about "the philosopher," it is to be taken as philosopher qua correlationist, granted that the vast majority of philosophers write (and think) in correlationist terms, including those speculative philosophers who are struggling in the face of a dearth of anti-correlationist terms.

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unknown to us, and that what we call outer objects are nothing but mere representations of our sensibility, the form of which is space. The true **correlate** of sensibility, the thing in itself, is not known, and cannot be known, through these representations; and in experience no question is ever asked in regard to it (A30) (emphasis added).

It is precisely this sort of thinking that exemplifies the correlationist mentality of thought not being able to get outside itself, as well as being precisely what Meillassoux is railing against, asseverating that:

Such an enterprise is effectively self-contradictory, for at the very moment when we think of a property belonging to the world itself, it is precisely the latter we are thinking [i.e., the property is phenomenal, not belonging to the world itself], and consequently this property is revealed to be essentially tied to our thinking about the world (*After Finitude* 4).

The impetus for the radically different approaches is largely a result of how Kant and Meillassoux plan to respond to Hume, which will be discussed thoroughly in one of the following sections, commenting on "Hume's Revenge" in *After Finitude*. It is sufficient for the time being to simply take stock about how they are at odds, and what is additionally required of Meillassoux, in his philosophy, to begin constructing a anti-correlationist philosophy, namely, if the properties of the given —the "intuited," in Kant's terminology— are truly properties in the world, then all of them should be true properties inhering in the world. This is the motivation, it seems, for Meillassoux seeking to reestablish the ontological status of primary and secondary qualities that were so prevalent in debates between the empiricists and rationalists preceding Kant's critical turn. Unfortunately, Meillassoux doesn't explain this in quite this way. In fact, he begins *After Finitude* talking, as if out of a vacuum, about the need to reestablish the ontological status of primary and secondary qualities. At any rate, the reasoning and motivation

for the reestablishment of these qualities, provided here, seems to be accurate and consistent with his thought. In this interpretation of Meillassoux's thought, the function of primary qualities within his system is intended to place the in-itself back into givenness. This notion will be even more important to later discussions to follow herein, especially in regard to Meillassoux's paper on subtraction and contraction. The purpose of going this route in the first chapter of *After Finitude* is to establish the power of science and the certainty of knowledge, no matter how ephemeral the certainty of that knowledge, and to do so in a way that eliminates each of the relatum and the relation therebetween, the strategy for overcoming correlationism's subject-object chasm. The issue to be considered further is whether Meillassoux effectively overcome this chasm. In the terms within which he couches the problem, sure, he seems to, prima facie, overcome the chasm, but what about thought, itself? By this, I mean that there are two immediate problems. The first is that if there is no "out there," and all is content of the mind, then Meillassoux has simply made it impossible to talk about an "out there," which seems a hopeless tactic for eliminating the subject-object divide. The reason, in this case, is that there is no such thing as "outside thought," so Meillassoux is in danger of being labeled an idealist, and so, ostensibly, not too far away from holding a view that might be described as similar to Berkeley's.[16] In the section on idealism, a thoroughgoing discussion will be sustained, replete with sympathetic and critical remarks. The second issue that Meillassoux doesn't actually tell us what he takes thought to be. For instance, what science has to tell us about thought is that it is the product of electrical phenomena; but a sympathetic understanding of *After Finitude*, in toto, suggests that Meillassoux might respond by saying that givenness is ontologically prior to things like a brain and electrical signals. Therefore, I suspect Meillassoux might say that it is givenness

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[16] In fact, Meillassoux holds the same opinion as Berkeley, regarding the ontological status of secondary qualities; so some clarification is required ("Subtraction and Contraction" 71).

that must ontologically ground and underpin these things, not that they, in themselves underpin thought. In this way, Meillassoux can avoid being thrown into the category of correlationist. Even so, this is far from clear solely on the basis of what Meillassoux actually says, and, therefore, Meillassoux's lack of discussion about what thought is, itself, leaves Meillassoux's philosophy wanting.

Continuing in almost the same vein, Meillassoux makes a statement that makes his position very puzzling —and I suspect that Meillassoux is a bit confused on this point, as well, simply not having given sufficient thought to this point. He says, 'it is possible to say that every philosophy which disavows naïve realism has become a variant of correlationism' (*After Finitude* 5). It is very, very difficult to see how naïve realism could be anything but a correlationist philosophy, given that '[n]aïve realism claims that such objects continue to have all the properties that we usually perceive them to have, properties such as yellowness, warmth, and mass [when not observed]' (O'Brien). In other words, Meillassoux may be desirous of using naïve realism to note he wants impose upon objects of givenness those qualities in a way that is independent of the act of perceiving; however, there is something that *ipso facto* does the perceiving (thus preserving the co-relationship), if the qualities are to be contained within givenness, otherwise, the qualities do inhere in the objects themselves, but then there is still something that Meillassoux must say about givenness and non-givenness, because there are qualities that are existing that are not given to thought. It's the idea of the "out there," the perceived or unperceived "out there," that is still problematic for Meillassoux, in his attempt to overcome correlationism. Naïve realism is just a (weak) strategy for justifying adequation of mental contents with in-the-world ("out there") contents. This is where some kind of pluralism may help Meillassoux, but I will not speculate on this fascinating possibility in this text. Instead,

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in a later section discussing Meillassoux and metaphysics, I will provide a possible understanding one might entertain with respect to Meillassoux's framework that may save Meillassoux's status as non-correlationist.

Having moved through some of the argumentation, the argument that Meillassoux wants to make against Kant, and where he agrees with Kant, becomes clear. Where Meillassoux agrees with Kant is in the fact that mathematics is key to scientific authority, though mathematical structure is, itself, contingent, and not so out of necessity. For Kant, the power of science is derived from metaphysical structure that permits the uniform application of mathematics to phenomena, and it is the inability of disciplines like chemistry, for Kant, that make it less than a science (*Metaphysical Foundations* 7). More, it is by the constructive (formalized axiomatic) nature of mathematics that facilitates Kant's framework as synthetic and apodictic. Contrary to this, Meillassoux's absolutizes experience, and affords qualities their pre-critical ontological status. What is easy to miss is the fact that Meillassoux is not just bringing back secondary qualities, but extending this ontological status to primary qualities, which is to say that Meillassoux removes mathematics from originating in and being stuck in the mind, and makes it possible for mathematics to come from outside of thought.

§ 5. Chapter 2 of *After Finitude*: Metaphysics, Fideism, and Speculation[17]

In chapter two of *After Finitude*, Meillassoux explicitly states what has been mentioned above, insofar as his strategy of giving power to science grounded in givenness. He says:

> For if I cannot think anything that is absolute, I cannot make sense of ancestrality, and consequently I cannot make sense of the science that allows me to know ancestrality. Accordingly, we must take up once more the injunction to know the absolute, and break with the transcendental tradition that rules out its possibility (*After Finitude* 28).

In the section on Kant and correlationism, I noted that Kant was trying to meet Hume's observations, that one cannot point to a necessary causal connection, and so attempted to place reassert causality qua category in terms of an aspect within the transcendental framework. This is what Meillassoux is opposing, here. Meillassoux is hinting at the elimination of metaphysics with his suggestion of getting rid of the transcendental. As Meillassoux's project develops, the key to his essay arguing for the necessity of contingency will become lucid, as Meillassoux has no qualms about altogether ditching the necessity of causation.

Meillassoux's thoughts on contingency are developed in this chapter, and they represent a veritable cornerstone in his thought. Unfortunately, while Meillassoux does a really great job, in the sense of creativity, in developing this idea of contingency —which I will sometimes refer to in a much broader sense as a "non-static ontology"—, this is one of the areas in which Meillassoux does not provide the fullest explication of his thought. This will be clear, once Graham Harman's objections regarding natural "law" are given. At any rate, Meillassoux says of contingency that it 'expresses the fact that laws remain indifferent as to whether an event

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[17] I will not delve further into the strong-weak dichotomy within correlationism, because it was touched upon in the section on Kant and correlationism.

occur or not —they allow an entity to emerge, to subsist, or to perish' (*After Finitude* 39). Now,

this is rather peculiar, that Meillassoux uses the word "law," rather than disbanding the term

from the outset, induces some confusion. In an ontology that is shifty and can lead to

emergence, advent, and creation, the function of law is not at all clear. In order to introduce

some of Meillassoux's preliminary thinking on the matter, perhaps a brief excursion into an

interview conducted by Harman will be helpful. Particularly, in his *Quentin Meillassoux:*

Philosophy in the Making, Harman asks Meillassoux: 'One would assume that you take some

interest in the natural sciences as well. But how can you reconcile science with your belief in

absolute contingency' (*Quentin Meillassoux: Philosophy in the Making* 172)? Meillassoux

responds:

> On the contrary, the insightfulness of contingency seems to me rather pertinent to
> every scientific mind, for every science ends by stumbling over the facticity of its
> postulates and its fundamental laws. Indeed, because the facticity of laws of
> nature is thought as uncircumventible by scientists that they ultimately ought to
> be validated by experience and not by *a priori* demonstration, the existence of
> laws and of ultimate constants of the Universe. It is because logicians and
> mathematicians have a sharp consciousness of contingency of their axioms that
> they are capable of sensing new heterodox logics or interesting new axiomatics.
> It is because philosophy is aware of this increasingly obvious role of contingency
> in science that it ought to lay hold of it as a new principle: the sole absolutely
> necessary one (*Quentin Meillassoux* 172).[18]

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[18] Tremendously problematic, but beyond the scope of exposition taken up here, is the fact that Meillassoux seems a bit confused about the nature of contingency in mathematics. By this, I mean that mathematics throws out restrictions, and I can't recall an instance in which mathematics eliminates a positively stated axiom. For example, the rumored fall of Kant, in adhering so strongly to Euclidean geometry, was not consequent upon the parallel axiom being thrown out, but the fact that it was found, through the work of Gauss, Riemann, Lobachevski, and Bolyai, that other axioms regarding parallels (i.e., the number of lines parallel in a plane) were no longer necessarily ruled out. A critical assessment of Judith Grabiner's article, which attempts to present a thorough argument of the same sentiment as Meillassoux's, illustrates, I believe, that the position is mistaken, and that there are no revolutions in mathematics in the way that they may occur in science (Grabiner). I leave it to the reader to make up her or his own

What becomes apparent is just what Meillassoux said on a previous page of this text (*Quentin Meillassoux* 170), that he was deeply influence by Henri Bergson. Like Bergson, this idea of non-static ontology, where new components of the ontology may arise at any moment, is greatly appealing. A realist reading of Thomas Kuhn's *The Structure of Scientific Revolutions* concedes so much. For instance, when Kuhn says, '[t]he very ease and rapidity with which astronomers saw new things when looking at old objects with old instruments **may make us wish to say** that, after Copernicus, astronomers lived in a different world' (Kuhn 117) (emphasis added), he applies no judgment as to whether one should or should not, expressing only that one may be inclined to, seeing the option to do so.[19] In this respect, Meillassoux is taking a position that is rather quite well founded, and he is probably shooting himself in the foot by not maximizing his argument with examples of this sort, especially if he wants to persuade philosophers of science that work much more closely with the hard science.

Yet, in this response of Meillassoux's, why is the word "law" not just explicitly rejected? I certainly have an idea about why this is. Let us consider Harman's "assault" —if that isn't being too harsh— on Meillassoux for his use of the word law, particularly, when Harman says, 'If someone were commissioned to write an article 'Meillassoux's Mereology,' it would be difficult for this person to find much to say' (*Quentin Meillassoux* 39).[20] Harman's pronounced

mind; but I should note that Harman touches on Lobachevski, but fails to make the observation of eliminative restriction, as I have here (*Quentin Meillassoux* 45).

[19] My opinion is that Kuhn is too often read as an anti-realist, as though this were his position. This reading is — there is no doubt in my mind— a product of the temporal proximity of SSR's publication and the rise of the social construction movement in the philosophy and sociology of science. Instead, I assert that Kuhn was metaphysically agnostic, supplying no judgments on the basis of metaphysics, paying attention only to givenness and what is thought about the given. Esteemed professors having the honor of sharing a friendship with Thomas Kuhn support this assertion. I would like to thank Indiana University Bloomington's Arnold and Maxine Tanis Chair of History and Philosophy of Science, Lisa Lloyd, who shared such a friendship with Kuhn, for her numerous discussions with me regarding this topic.

[20] Quick refresher: 'Mereology (from the Greek μερος, "part") is the theory of parthood relations: of the relations of part to whole and the relations of part to part within a whole' (Varzi). This relates to physical law, in the sense that

agitation on the issue is understandable, and it makes complete sense that he brings up laws, in numerous capacities, throughout *Quentin Meillassoux: Philosophy in the Making*: Meillassoux simply fails to address basic concepts like what he thinks "law" and "thought" are. However, extrapolating a bit —hopefully not a bit too much— Meillassoux does accept locally temporal stability amidst given events, even if non-local contingency reigns. This is not to say that contingency doesn't dominate briefer durations, but that less contingency, by comparison, is seen within those shorter durations than in longer ones. What Meillassoux may have in mind is that, like objects, which have temporally extended and contingent existence, where they come into existence, exist for some time, and then jump out of existence, such may be the case with laws. Of course, additional aspects would have to be added to formally cohere this thinking with the rest of the Meillassouxian framework, because laws would need to be some sort of quasi-object, or something, which has a temporally extended existence. Simply stated, like the contingency of objects, jumping into existence, existing for some duration, and jumping back out of existence, laws may behave similarly. This suggestion seems to be wholly consistent with Meillassoux's project, given that such "laws" (really, they are just temporally extended regularities) are themselves contingent. In this line of thinking, if the reader has seen a Minkowski diagram, one may liken laws and objects so as to consider them as both having, what is called in relativity theory, "world lines," lines that represent the spatial and temporal coordinates in which an object has existed. Mentioned above, Meillassoux seems to have an eye toward this sort of thinking, when he mentions constants found in nature. It has popped onto the radar of many physicists that constants in nature, such as the fine-structure constant, the cosmological constant, maybe even the speed of light, are varying with time. While Meillassoux, to his own detriment, does

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a necessary set of such relations constitutes the nature of the physical world vis-à-vis fundamentalist-minded constitution.

not adduce such examples, it is nonetheless the case that these non-static elements of ontology, which appear to change for no reason, provides empirical evidence for Meillassoux's thought on contingency.

I have picked on the Harman's quote about mereology for a very good reason: I think he is missing the point of Meillassoux's endearment to givenness. For Meillassoux, everything, including science, begins with that which is given. That is the point of the first chapter, which may seem out of place upon a first reading. Mereology is, in essence, the terminology at the antipode that Meillassoux would use, because it is fundamentalist, in the sense that philosophers Nancy Cartwright and Steve Clarke use it. The thinking that givenness is constructed, even in a mereological sense, simply misses the mark. One of the points of stressing the sentiment that Kant is a central nemesis, and that Kant's project is synthetic (i.e., one that centrally features construction), was to provide a sense in which Meillassoux would come at the correlationist camp, namely, by taking the opposite approach. Later on, when we get to *ascesis*, a process of negating and taking apart various aspects of givenness, it will become clear that Meillassoux is doing the exact opposite of what a fundamentalist wants to do. The fundamentalist seeks to construct, as if axiomatically, and in a way that is as formally codified as possible, the world as it is given, and to do so form fundamental elements.[21] It is much better to suggest that Meillassoux's intention is rather to cut away aspects of the given, in order to derive the contents of science, not the other way around, that his intention would be to synthesize, like Kant. In fact, there is a sense in which Meillassoux is defeating some of the problems that Kant faced, and

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[21] Even sciences that are not properly mathematical in their substance, like chemistry, attempt to achieve this form axiomatic (i.e., fundamentalist) framework. For instance, the periodic table, though its pieces bear no *a priori* relationships —that is, one cannot tell what elements will stick together before experimentation—, though there are supposedly such relations between Euclid's elements. On the latter point, this can be contested, of course, noting that Euclidean demonstrations were constructed, and were not, as Hilbert would later portray them, rudimentarily axiomatic.

does so with virtually no involved argumentation. In Kant's discussion on extended magnitudes,

homogeneity of the parts into the whole was of first-rate importance, because surfaces of objects

exhibit homogeneity and contiguity; and it was obviously a little disconcerting to Kant as to how

elemental parts (keeping with the fundamentalist train of thought) could come together and

create said contiguity and homogeneity. By taking givenness are prior to cutout parts,

Meillassoux has no problems, because one may take the plenum of givenness and cutout any

finite piece thereof. On this basis, Harman simply seems to have the mereology issue

backwards; givenness is ontologically prior to any view in which givenness is constructed by any

kind of constitutive parts. It is the whole that is antecedent to the parts, and this will be clearer

when I discuss Meillassoux's paper, "Subtraction and Contraction," featuring *ascesis*.

§ 6. "Potentiality and Virtuality"[22]

In this section, I will be taking a step back from *After Finitude*, as this makes for a place to further discuss Meillassoux's ideas on "potentiality" and virtuality, and what he has to say in relation to aleatory reason. Foremost, Meillassoux advances the necessary ingredients for a non-static ontology in this paper, entitled "Potentiality and Vrituality," and it is worth discussing because it does provide a new kind of interpretation for classic works of philosophy of science, such as the aforementioned *The Structure of Scientific Revolutions*. The establishment of a non-static ontology is achieved by simply noting that static ontologies take for granted that all possibilities are capable of being indexed and totalized, as though one could have, *a priori*, a list of all possibilities, and then acknowledging the simple fact of life, that there are advents in the contingency of everyday goings-on that have never before been encountered. Meillassoux would ask, then, in what sense have these heretofore-never-encountered phenomena of givenness indexed? Had he phrased it like this, he'd be completely right: one of the curiosities in science is the seemingly inexhaustibility of natural phenomena. This stands as a mystery in the philosophy of science. Contingency, qua non-indexible/non-totalizable ontology, provides an explanation to this mystery. Non-totalizability of all possibilities is what is meant by the word "virtuality," and the comparison between potentiality and virtuality can be expressed in an example.[23]

Suppose we have two socks, one is a potentiality sock and the other is a virtual sock, the difference being that the former has within it a static ontology, the latter a non-static ontology. Chance reigns in the sock of potentiality, so one can expect a certain number of objects to exist

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[22] As mentioned in the introduction, the third chapter of *After Finitude* will not be treated because other sections of this text provide sufficient commentary and criticisms, especially this section and the next-to-last section, which addresses Kant's first antinomy of pure reason.

[23] The technical details of the mathematical ontology that Meillassoux is exploiting will be drawn out in a discussion involving one of the later chapters of *After Finitude*. At that point, important details regarding "non-totalizability" and its origin will become clear.

in and a certain number of additional rules to govern the outcomes of what is drawn from the sock of potentiality. For example, the tallied number of marbles of various colors indicates the index collection of possibilities, and there are some (implicit for the everyday thinker) rules that govern, such as two marbles at room temperature will not fuse, or that one will spontaneously change colors. Probability governs the static ontology, and provides it with potentiality. Contingency would be the correlate of chance, and virtuality would be the correlate of potentiality. While one knows what will come out of the sock when the sock's inside is that of a static ontology —if there are three green marbles, three red, and four blue, then it is a matter of basic probability to determine the likelihood of selecting a green one (30%)—, such is not the case for a virtual sock, the ontology being non-static. This is where the word "non-totalizable" begins to make numerical sense, and the idea really does appeal to human intuition, once some of the fundamentalist assumptions are dropped. Very tersely, the number of total possibilities in the sock with the static ontology is set, while the total number of possibilities in the sock with the non-static ontology is not set. That is, the virtual sock may possess marbles that currently exist, no longer possess some that have existed, and has the capacity for spontaneous advents, contingency, i.e., those marbles (or anything, really, e.g., an elephant or some up-till-now non-existent entity) that had never previously existed.[24]

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[24] This is a good place in the text to note another valuable aspect of Meillassoux's philosophy. The sort of thought that his concept of "virtuality" is precisely the sort of notion required of quantum physics for the advent (and disappearance) of quantum particles and like phenomena; the concept of "contingency" provides is the sort of notion that science needs to explain phenomena like the advent of new species. On the former point, Heisenberg's uncertainty principle proposes that approximately empty space is a sort of sea of uncertainty, with <u>virtual</u> particles pervading all extension, and so a philosophy that spurns the principle of sufficient reason might be the way to go; and this is not to mention the cosmological value (some of which regarding the Big Bang Theory will be touched upon later in this text), such as Lee Smolin's idea of evolving universes, though he bizarrely features the principle of sufficient reason as central to his philosophy underpinning the science. On the latter point, it should be of no surprise that nobody has ever presented an index of all possible species outcomes based on something like genetics or molecular biology —the point being that if it is simply not possible to gather up all ontological possibilities in observable phenomena not yet observed, then this might be an ontological issue, not just the assume epistemological problem, which is to say that there is no *a priori* ontological structure in place.

The general point that Meillassoux wants to make in this paper appearing in *Collapse* II is that science and, more generally, the nature of experience predicates regularity in a way that differs from the metaphysical philosophical framework that features *a priori* structures that necessitate this or that goings-on. Moreover and more explicitly, the idea of the uniformity of nature is being attacked as a faulty assumption. Further treatment of Hume will be provided, when we look to *After Finitude*'s chapter on "Hume's Problem," but this point brought up in "Potentiality and Virtuality," regarding uniformity of nature, is precisely Hume's problem: it is the problem that, by rational means, we have no basis of justification for taking it to be the case —and definitely not proving— that future events will resemble past events. A natural consequence of this thinking is Meillassoux's radical contingency, and the necessity thereof. All of this, the immediately preceding, is why Meillassoux makes the incredibly insightful remark — one that all philosophers of science and, more generally, all philosophers and intellectuals should take note of:

> Science does not experiment with a view to validating the universality of its experiments; it carries out repeatable experiments with a view to external referents which endow these experiments with meaning (*After Finitude* 17).

If the philosopher of science simply looks at cases studies of science, bearing in mind works of philosophers like Pierre Duhem (see: *The Aim and Structure of Science*), who have pointed out that there seems to be no establishable criterion for marrying data to theory, then Meillassoux's philosophy is realized as having much more substantiality.[25] It's this lack of non-necessity of future events resembling past events and some of the

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[25] The value of the history of science to the philosophy of science can never be overstated, and this is an instance in which that is abundantly clear. Historically, no theory has been connected to its accompanying data in such a way that a necessary link is seen to be instantiated, except within the scope of the minds of scientists working in a present-day hard science, regardless of the period of said science; for them, in their dogmatic minds, their theory is often thought to be necessarily connected to their data. History tells a different story, and any present-day science is eventually evicted, moved into the annals of history. It is this history which serves as the data upon which philosophers ought to work.

non-indexical aspects[26] that makes the virtuality of the ontological landscape and the contingency of individual events extremely plausible, and worthwhile to consider, if not outright compelling us to embrace. Philosophers and scientists have been proceeding for so long under the pretext that there is some metaphysical framework underlying physical phenomena, without many notable achievements, that it is, perhaps, time to embrace the alternative, that there is no principle of sufficient reason at work. Endeavoring on a path that has dispelled the myth of the principle of sufficient reason has numerous consequences, among them being that Kant's antinomies of reason are seen, not as epistemic failures rooted in experience and that can't be disentangled by reason (being beyond the bounds of reason, but as ontological consequences of contingency.[27] Another consequence is the fact that, when apparent contingencies are found —"apparent" in the minds of the philosophers and scientists adhering to the ground-up metaphysical picture of the natural world—, there is no need to create a vicious cycle of positing immutable, constant meta-laws that transcend the apparently contingent laws, with the intention of preserving aforementioned pretext. As Meillassoux puts it in his article:

> This perspective must be distinguished from any thesis affirming the necessity of the changing of laws – for such a thesis would be a variant of the solution envisaged by Hume: this changing of laws, precisely in so far as it is necessary, would suppose yet another law, in a higher sense – a law, itself immutable, regulating the future changes of current constants. Thus it would lead straight back to the idea of a uniformity of nature, simply pushing it back one level ("Potentiality and Virtuality" 57-58).

The idea of "pushing it back one level" is precisely what the ground-up metaphysics approach requires —and should those laws appear contingent, even if stable for longer durations, then meta-meta-laws will be called for by static-ontology proponents. Such an approach taken by static-ontology proponent, Lee Smolin, is particularly puzzling, for instance. Having the right

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[26] Or we may simply say, here, that it appears to be that no *a priori* conditions in nature have been found that reveal, in toto, the workings of nature, thereby exhausting all potential phenomena and putting an end (i.e., completing) to science, obviating further scientific inquiry.
[27] This will be discussed in some detail in the last full section of the present text, prior to the conclusion.

idea about a contingency-oriented approach to cosmology, Smolin adheres to Leibniz' principle

of sufficient reason in his *Time Reborn*.[28] A brief description of the principle and Meillassoux's

respective intentions, regarding non-static ontology, are given by Meillassoux as follows:

> To speak in Leibnizian terms, it would be world *emancipated from the Principle*
> *of Sufficient Reason* – a world discharged of that principle according to which
> everything must have a reason to be as it is rather than otherwise: a world in
> which the logical exigency of consistency would remain, but not the metaphysical
> exigency of persistence ("Potentiality and Virtuality" 60).

Part and parcel elimination of causal necessity is what Meillassoux is pushing his readers toward.

Based on what shall be said later, particularly concerning my and Harman's reservations

regarding surrounding the nature of laws and Meillassoux's use of the word "law," I am inclined

to fire a first volley, that eliminating causality, altogether, is not quite what needs to be done.

Instead, my suggestion would be to treat causality as something that contingently works

necessarily, meaning that the local (temporal and spatial) continuity of future events resembling

past events will tends to hold for very short durations and extensions; but this is not to say

anything much different from what Meillassoux is saying, because causality is still entirely

contingent, and events with little temporal distance may not resemble one another, only that there

is an increased likelihood that temporally proximal events will resemble one another. As I

explain later, the existence of laws (i.e., "laws") should be thought of as objects, which are

temporally extended, not having always existed, existing for a while, and popping out of

existence for no reason. In a word, the existence of laws should be thought of as wholly

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[28] Actually, "adherent" is probably not strong enough to be fitting: "acolyte" is more fitting to describe his
Leibnizian love affair.

contingent, just as objects.[29] To generalize, all identities that correlationists would say exist, be

they ideal or materiality in their consideration, should be considered contingent in this way. In

sum, Meillassoux's desire to cut out the principle of sufficient reason is nothing more that

seeking to gut the world of metaphysics —and "metaphysics" represents, for Meillassoux, the

'postulation of real necessity' ("Potentiality and Virtuality" 61). Note that the proposition of

laws as analogous to temporally extended object, contingent in the same way as laws, does not

undercut Meillassoux's initiative to gut the world of its metaphysics. This discussion makes a

wonderful point, which does not get enough attention in the literature —a point to be made more

thoroughly in this text, at a later point:

> …once the idea of necessary constancy of law is refused, can Hume's question
> [about where one is to find necessary causal connection] still be posed in the form
> of a *problem* to be resolved, and more precisely as an ontological problem
> ("Potentiality and Virtuality" 62)?

 In the light of radical contingency, in what sense is there a Humean problem? Meillassoux's

response is that there isn't one. This is why Meillassoux's perspective on experiment, contra

popular belief among scientists, is of first-rate value. In a note of tremendous importance, which

should have been worked into the body of the text, Meillassoux sagely remarks:

> I believe that an equally mathematical —more specifically, probabilistic—
> argument underlies the Kantian transcendental deduction of the categories in the
> *Critique of Pure Reason*. Kant's argument… seems to me to be in perfect
> continuity with what we might call the argument of "good sense" against the
> contingency of natural laws. …[the thinking that] if laws were contingent, they
> would change so frequently, so frenetically, that we would never be able to grasp

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[29] Meillassoux, rather circuitously (in my opinion and by my interpretation) and non-committally affirms something
to this effect ("Potentiality and Virtuality" 62).

anything whatsoever, because none of the conditions for the stable representation
of objects would ever obtain ("Potentiality and Virtuality" 65-66).

Meillassoux's right on, on this point. It would have been ever better, and would have been much, much more potent, had Meillassoux commented upon the formal problem within Kant, as far as dealing with probability. The notion of mathematical probability, for instance, as a sort of "sometimes-necessary causation" has been a sustained bane for modern defenders of Kant. Nonetheless, Meillassoux's proclamation that assuming that the "universal Die" has a set number of faces, which then yield the structural probability that metaphysicians so ardently maintain fidelity to, has no justification. In summary of this section of Meillassoux's "Potentiality and Virtuality," his point is that the thinking a contingently existing entity or regularity can't remain so, supposing a non-static ontology, is bogus: of course, something existing contingently may do so for some duration, as such does not require us to posit a mythical metaphysics that induces the necessity in said duration. Such mythicizing would be preposterous, because something that contingently endures does not, by any line of reason, necessitate necessity. It is only the original imposition of thought —the thought that any endurance be necessary— that introduces the necessity, which is a *petitio principii*, i.e., necessity is necessary, because necessity is necessary, and so on, *ad infinitium*.

§ 7. Chapter 4 & 5 of *After Finitude*: Hume's Problem and Ptolemy's Revenge

Meillassoux begins chapter four saying, 'So long as we believe that there **must** be a reason why what is, is the way it is, we will continue to fuel superstition, which is to say, the belief that there is an ineffable reason underlying all things' (*After Finitude* 82) (emphasis added). The "must" really highlights what I said at the end of the preceding section. The "must" is that axiomatic antecedent in the *petitio principii*. Meillassoux goes further, however. The ineffability of this purported reason that underlies things is coming straight from the mouths and pens of correlationists, the most clear instance coming to my minds being Kant's proclamation in his *Prolegomena to Any Future Metaphysics*, where he says that nature will never disclose its internal constitution (*Prolegomena to Any Future Metaphysics* 79). When Meillassoux says, 'no such reason will ever be vouchsafed to us' (*After Finitude* 83), he is making the same point I make elsewhere in this text, that, for such a reason to be known, the phenomena of the world will have been exhausted. That's the criterion for such vouchsafing to be so.

Hume assails necessary causality in the following way that Meillassoux describes:

Soince we cannot demonstrate the necessity the necessity of causal connection, he [Hume] argues, we should stop asking ourselves why the laws are necessary and ask instead about the origin of our *belief* they are necessary.

One of the truly fascinating turns in Meillassoux's *After Finitude*, for those unfamiliar with Alain Badiou's *Being and Event*, is the employment of transfinites to put into perspective the nature of virtuality, the manifestation of non-staticity of ontology. Georg Cantor had a brilliant idea regarding infinities: the density of some infinite sets are greater than others. For example, if one is considering the (infinite) set of integers, $\mathbb{Z}$, on the one hand, and the (infinite)

set of rationals[30], Q, on the other, then, at every interval betwixt two integers, there are infinitely many rationals. How could this be? If there are infinitely many integers, and to each integer there is an infinity of corresponding rationals, essentially, for each integer, then there would seem to be a number larger than infinity. Cantor's novelty was to introduce cardinality to infinite collections, thereby establishing a contrast class with an inherent order among the cardinal numbers. In other words, *countably* infinite sets can be arranged with respect to one another on the basis of this criterion. For Meillassoux, '…the ontological pertinence of Cantor's theorem [involving the abovementioned transfinites], …reveal[s] *the mathematical conceivability of the detotalization of being-qua-being*' (*After Finitude* 103). That is, Cantor's work is indicative of the mathematical consistency of espousing a non-idexable ontology, consequently meaning that the ontology would be virtual, assailed by advents, emergences, and so on, that we have heretofore called "contingency." The discussion of chapter 4 and 5 has been done to make manifestly obvious the follow point: Hume's problem is one of non-totalization, the permission of such coming by way of Cantor, and embracing a non-static ontology means that Hume's problem is, then, no problem at all.

What Meillassoux wants to do in "Ptolemy's Revenge" is ask the question, "How are we to reconceptualize a science that spurns the diachronic universal-fact-centric view for the experimental view that science strives for repeatable experiments?" —and answering it. Perhaps more importantly, Meillassoux asks the virtually rhetorical question of how science, as presently conceived, is to attribute the universality (that it espouses to) to its statements. One has to think that, while writing chapter 5 of *After Finitude*, Meillassoux hand a fiendish smile. The reason for thinking so is manifestly obvious to every philosopher of science: no one has really been able

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[30] As a refresher, for p and q (q ≠ 0), such is the case that p & q $\subset \mathbb{Z}, \frac{p}{q} \subset$ Q.

to construct a philosophical framework that affords statements of even the hardest science with the predicates "universal," "necessary," and "certain," when referring to the statements as being some form of positive knowledge about the world. The remarkable thing about Kant is that his philosophy nearly did that, and had only fallen when concepts like non-Euclidean geometry and probability arose.[31] The failure for any philosopher to achieve the predication of these attributes is possibly one of the strongest justifications Meillassoux's project has: given a history of philosophy of science, in which science has failed to justify its statements as universal, necessary, and certain, Meillassoux tempts us with the opposite; and, if we look closely enough, modern science may be doing similarly.

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[31] Here, we kindly ignore the disrepair/mess that Kant's schema is in, giving him the benefit of the doubt.

§ 8. "Subtraction and Contraction: Deleuze, Immanence, and Matter and Memory

Perhaps, the most important allusion to this paper in *After Finitude* is the hint that Meillassoux gives near the start of the chapter, entitled "The Principle of Factiality": 'How then is thought to carve out a path towards the outside of itself?' ("Subtraction and Contraction" 51). The imagery of carving out is tremendously important, both for understanding the rudimentary aspects of cognition and understanding how science works. Recall to mind that it was Plato, a major influence for Meillassoux, in his *Phaedrus*, who inserted into his dialogue the notion of cutting nature at its joints. Once again, as opposed to the synthetic projects that have exclusively in play since the turn in early modern philosophy, the activity of partitioning is what Meillassoux is advocating. Partitioning of what? The answer: partitioning and parsing out of givenness.

On the points of parsing and partitioning, Meillassoux says, regarding Bergson's ideas on perception:

> The theory of pure perception is what we might call a substractive theory of perception: it seeks to establish that there is less in perception than there is in matter —less in representation than in presentation ("Subtraction and Contraction" 72).

In essence, this is the idea of *ascesis*. In Meillassoux's philosophy, '[p]erception does not connect, it disconnects…It does not enrich matter, but on the contrary impoverishes it' ("Subtraction and Contraction" 75).[32] A further-detailed exposition of this process is not

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[32] Two points could be made here, which, unfortunately go well beyond the scope and measure of the present text's intentions. The first is that this is an Aristotelian idea, which makes for an interesting conundrum to be posed to Meillassoux: Why embrace Galileo, given that Galileo represented a turn away from Aristotelianism, and, additionally, given that Galileo sought to undermine the ontological status of secondary qualities, as in his *Assayer*? Secondly, this rich notion of disconnecting has, possibly, a rich value for the cognitive sciences, which, rather than

necessary. What is necessary is that, when discussing the nature of givenness, this process is

borne in mind.

Aside from *ascesis*, the paper is important because it talks about immanence, which I will

discuss more substantially in the section on Meillassoux and idealism. What's important is the

fact that Meillassoux uses Deleuze and Bergson to facilitate language of "immanence being

immanent to itself," and things of the like, pointing out that Bergson maintained that

consciousness is immanent to immanence, for example. When I move to discuss givenness and

what Meillassoux really could mean by it and thought, this paper on "Subtraction and

Contraction" will be a valuable resource.

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seeking a synthetic mode of understanding cognition, as if something out of the pages of Kant's critical project, might induce a search for seeing the mind as negating, abstracting, and disconnecting from reality, so as to make the world comprehensible to the finite computing capacity of the mind. In other words, it may be highly profitable for cognitive scientific endeavors to see the mind as something that negates a large swathe of infinitude so that the finite processing power thereof might comprehend some small portion of that infinitude.

§ 9. Meillassoux as Idealist? & Metaphysics

In the forgoing, it has been pointed out that that "thought" is an issue for Meillassoux, if understood in the sense that it typically is. That is, "thought," as something a subject does, proves unwieldy for Meillassoux, given that, in eliminating the correlates of thought, one is left with just thought, i.e., ideas. The question immediately becomes: In what sense is Meillassoux's philosophy different from George Berkeley's idealism, when it comes to thought? The issue is that Meillassoux, in eliminating the correlates of thought, has, apparently, formulated an argument that is not very unlike Berkeley's, wherein Berkeley's refutation to materialism involves a similar strategy of cutting out, altogether, the contents (the referred) "out there" that co-relates to the contents (the referent) of the mind. Simply put, '…Berkeley rejects is that material things are *mind-independent* things or substances' (Downing 5). For Berkeley, if all things are merely extant within the domain of mind, and Meillassoux has eliminated the correlate to which classical philosophy has sought to link ideas in adequation (a variety of truth criterion), then it seems Meillassoux has performed a similar task with his argument as Berkeley had with his. In both cases, subject is left with thought, and the "out there" has been effectively annihilated, and getting outside of thought seems impossible, despite what Meillassoux has said in the first chapter of *After Finitude*.

My intention, here, is not to defend Meillassoux on his own terms. To be brutally honest, I am not sure such is possible, on the strict basis of what he has said alone, though I make some efforts to sympathize, probably giving more credit than is due. Again, the problem is what Meillassoux could possibly mean by thought that disqualifies it from being something that a subject does. Meillassoux needs to expound on what he means by "thought," in order to properly defend his framework, as he would defend it. Instead, I will take this space to argue that

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Meillassoux's philosophy can successfully be defended as being properly non-correlationist. The strategy of the argument, in its complete formulation, would carry us well beyond the scope of the present text, carrying us into the texts of Heidegger, the texts of Latour, and an explication (and judgment) of the Harman-Latour debate.[33] Instead, I seek to touch upon the preliminary points of the argument, temporarily couching Meillassoux's language in the language of phenomenology —which will undoubtedly agitate some philosophers, but patience is asked for, because what I have to propose must, given the freshness of the perspective, be understood on its own terms.[34]

With the above qualification made, my strategy for beginning to handle the issue of how Meillassoux is not an idealist is fairly simple. The approach boils down to removing thought from a subject and allowing thought to sit, essentially, in what a correlationist would call the "phenomenal plane." By the end of this discursion, we will revert by to Meillassoux's language, which is to say, we will convert "phenomenology" into "givenness"; but a necessary intermezzo must be performed prior to the conversion. It is important, first of all, that even the radical phenomenology of Heidegger —though he makes some incredible efforts to get out of the correlationist circle, and may even deserve some credit for inspiring the speculative turn— is, in fact, correlationist. Nonetheless, there is a very tangible sense in which one may view Meillassoux as possibly pushing towards, even if not fully realizing, an absolutized

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[33] The decision to not go into the full line of the argument I have in mind is based on a couple of reasons. First, the details are not completely worked out at this time, and is already convoluted enough that, if not fully fleshed out, would be incredibly difficult to follow. The second reason is that the full argument has more to do with how Meillassoux's philosophy can be catapulted to the status of full-fledged philosophy of science, when harmonized with Latour's corpus (and the friction between the bodies of work smoothed out), and so, being just a preliminary assessment on Meillassoux's philosophy and its ability to serve as a foundation for a speculative philosophy of science, the full argument has been foregone, saved for a later, much more argumentative, paper.

[34] Over and above freshness, the speculative vocabulary is still very sparse, so, even though one would ideally eliminate languages that are fundamentally correlationist, producing a rapid succession of neologisms is not only impractical, it also makes it difficult to contextualize (and supply analogies and metaphors) the philosophical uniqueness of what is trying to be accomplished in this deviation from Meillassoux's actual texts.

phenomenology.[35] He's nowhere near it in *After Finitude*, but he is definitely well on his way to

something like this in his paper, "Subtraction and Contraction" in *Collapse*. Since Meillassoux

does not give us satisfaction, leaving out any kind of discourse about the nature of thought, and it

appears, as we have said, that Meillassoux's philosophy looks an awful lot like Berkeley's

subjective idealism (*After Finitude* 4), I propose that we, first, look at Meillassoux's givenness as

phenomenology.

> The *Stanford Encyclopedia of Philosophy* defines "phenomenology" as:
>
> Phenomenology is the study of structures of consciousness as experienced from
> the first-person point of view. The central structure of an experience is its
> intentionality, its being directed toward something, as it is an experience of or
> about some object. An experience is directed toward an object by virtue of its
> content or meaning (which represents the object) together with appropriate
> enabling conditions (Smith 1).

Based on this definition, it is fairly natural to relate the contents of thought in Meillassoux to

phenomenology, though Heidegger's phenomenology will prove particularly important. It is

from here that we begin to move from phenomenology to a different understanding of what

Meillassoux could mean by "givenness." The clever, and probably too much overlooked, point

that Meillassoux makes in "Subtraction and Contraction" is that cognition is an active process.

Meillassoux doesn't say it like this, but, then again, of the numerous similarities between his

thought and Kant's, Meillassoux is either oblivious or simply doesn't wish to explicitly

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[35] It is worthwhile to bear in mind that Meillassoux is working with Bergson's ideas in *Matter and Memory*
surrounding, what Bergson calls "pure perception." When the terminology is compared and contrasted with what I
am calling "absolutized phenomenology," the difference may only be in ontological structure, the latter being much
more firmly non-correlationist because of that ontological structure. It is, after all, the case that the 'fundamental
objective of *Matter and Memory* was to render Kantian critique unnecessary, and thereby to deny the need for
limiting the applicability of metaphysical knowledge' ("Subtraction and Contraction" 70), the chief pursuit of
Meillassoux, as it were.

acknowledge that there are so many similarities between his and Kant's thought.[36] The

difference between them that is substantial, and which Meillassoux undoubtedly instantiates for

the sake of running counter to Kant's philosophy, is that of *ascesis*: Kant's philosophy provides a

model of cognition in which the phenomenal world is built from the ground up, and constructed

by the mind, whereas Meillassoux's philosophy provides a model where phenomenal experience

is a plenum in which content is negated and cut away; and it is this way that Meillassoux

maintains that we cognize objects (as sorts of Bergsonian images)[37], the *modus operandi* being

the opposite of synthesis, while Kant constructs objects, hence the importance of his "extended

magnitude" construction in the *Critique of Pure Reason*.

Effectively, what one is looking at, taking givenness as preliminary (i.e., the starting

point for Meillassoux), the world is structured top down, not bottom. For instance, it is not

ontologically prior that a chair is made of string theoretic components, which, perhaps, comprise

quarks and their associated fields, and so on to protons and neutrons, finally until we have a

chair; it is that the chair is ontologically prior to those mentioned "constituents" in its givenness.

Since Meillassoux has said nothing about thought, it is very natural to ask him, as we are wont to

do, "givenness to whom?" or simply "given to whom?" If Meillassoux is to escape the

correlationist circle, the answer to this question given on Meillassoux's behalf must answer the

question without supplying a "whom." Is that possible? I think so. The value in considering

phenomenology is that it supplies an initial subject, and, from there, illustrating how Meillassoux

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[36] Mentioned earlier, the mathematical ontology that Meillassoux borrows from Alain Badiou is another fin
example: Like Immanuel Kant's opinion in the *Metaphysical Foundation of Natural Science*, in which he makes
clear that mathematics is the source by which a science's power is derived and which establishes the certainty of
scientific epistemology, Meillassoux places a similar emphasis on mathematics (as an absolute primary quality that
inheres in the world). The substantial differences between them are the static (Kant) and non-static (Meillassoux)
ontologies, and the psychologism (Kant) versus anti-psychologism (Meillassoux). Ceteris Paribus, the positions,
with respect to science, possess quite a few isomorphic features.
[37] Referring to "images" in *Matter and Memory* by Bergson. Even Bergson is treads very dangerously close to
idealism.

could rid himself of the subject, Meillassoux's philosophy could, at last, remove doubts about whether he has successfully achieved a non-correlationist philosophy.

Intentionally provocative with the earlier mention of Heidegger, the key to Meillassoux's great escape from correlationism requires an idea from Heidegger's *Being and Time*. Heidegger supplies the notion of an interface between Dasein and the world, which he called "mood." Mood is neither in Dasein or in the world. There is something paramountly non-correlationist about this notion. What's fascinating about it, over and beyond the fact that the subject-object distinction is unnecessary for its ontological status, but that it can be understood from the correlationist's thinking, in that it can be place in a conceptual space that separates the subject and the object. Once the subject and object are removed, what one has is a givenness that would seem to be given independent of the subject —because this thing called "mood" is ontologically independent of the human, or even organism. If we go back to the definition of phenomenology, where it says that phenomenology is the study of the structures of consciousness, some very interesting points can be made about the ontological structure of "mood." First of all, it is given, but not necessarily given to a "whom," which exactly satisfies the criterion laid out for removing Meillassoux's philosophical framework from the correlationist circle. The question is only: How does this ontological structure of mood assimilate into Meillassoux, especially, considering the anti-Heideggerian nature of Meillassoux's corpus? I will turn to this question in a moment. A second interesting thing to note is the fact Heidegger's "mood" does something in his oeuvre that brings a certain kind of culmination, historically, to the phenomenologists' project. In a sense, the history of phenomenology seems to entail pressing the contents of the world closer and closer to the subject, and, in my opinion, this is what is seen by the time we come to Husserl, who is, himself very much an idealist, having pushed the contents of the world into the mind. However,

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Heidegger is doing something differently in *Being and Time*, as I see it: he is pressing the "out there" into the phenomenal plane —though not into the subject—, and he is beginning to press the internal contents of the mind into the phenomenal plane, as well. Consciously trying to overcome the subject-object chasm, his strategy seems to be to press both internal and external contents as close as possible into the phenomenal plane, and then provide the fundamental ontological structures that afford for their unity through relation, hoping to allow unity to, in a way, jut out of the phenomenal plane, as if the phenomenal plane were responsible for the contents of Dasein and being-in-the-world. This strategy, popular opinion seems to have declared, has failed. Where it does not seem to fail is in "mood," which is ontologically different from virtually all other onto-structural conceptions that Heidegger presents. To put it simply, mood's ontological structure is that of a phenomenology which has been absolutized, and I mean "absolutized" in the Meillassouxian sense. Precisely as Meillassoux seeks to absolutize the nature of primary and secondary qualities, Heidegger has achieved an ontological setup that provides the necessary details as to what such an absolutization would (and *should*) look like. Meillassoux's reasonably thorough treatment of those contents that correlate to thought fails to acknowledge an important critical point, that thought is the correlate of what is out in the world, and eliminating only one correlate or the other just means placing one's philosophy in some variation of the camps of materialism and idealism.[38]

Extending the strategy, which manifested in the ontological structure of Heidegger's notion of mood, to the concept of "givenness" seems to be an effective strategy for removing

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[38] This is a potent reason for my thinking that Meillassoux is a bit confused about his usage of the word "materialism" in his naming of his position "speculative materialism." It is difficult for me to see how materialism could be a non-correlationist concept. I do see that there is some wiggle room for idealism, though, in general, that which is true of materialism is true of idealism. On this basis, it is a question as to whether Meillassoux is an idealist, but entirely incomprehensible to me in what sense he could really be a materialist, as much as he might like to be one.

Meillassoux's framework from any correlationist shortcomings that might inhere within it. As it were, imposing the ontological structure of mood upon all structures of consciousness means absolutizing phenomenology; and, in fact, the term "consciousness" falls out of the mix, because whatever exists in givenness is absolutely given, independent of the giving to a subject. This brings up an important point, however, and it is not just a linguistic problem, but a semantic one. The problem is that, as I noted early on, "givenness" implicitly suggests that there is something that is not given, that there is a realm of not-currently-givenness (*Towards Speculative Realism*[39]). This issue will be resolved in what follows, but I will not give a complete detailed account as to how this works, as it extends well beyond my intentions for the present discussion.[40]

The way around the existence of a kind of non-givenness, when givenness is absolute, is via *ascesis*. Before explaining this, let's explain precisely what the problem is, and let's begin thinking about it like this: first, early modern philosophy privileged the contents of existence that would be consider a subset of the subject's experience, so non-givenness might be either non-existent or beyond thought. Rather than as one would find in a synthetic variety of philosophical project, where what is not given, in terms of correlationist-speak, is non-given, what is truly

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[39] A fine (and pertinent) discussion of Husserl's adumberation-of-givenness is presented in this volume by Graham Harman.

[40] I maintain that Latour's (obviously non-correlationist) philosophy and study of the nature of science could provide much of what is needed for Meillassoux to formally codify a speculative philosophy of science. The matter is in no way trivial, because developing a discussion between Latour's study of science and Meillassoux's philosophy requires altering numerous perspectival facets of Meillassoux's philosophy (he often argues so effectively, but embraces consequents that simple do not follow; or, by some freak intuition, has the right consequent, and presents a poor argument), as well as dismantling Latour's studies, implementing the philosophical rebar of Meillassoux's framework, and entirely repackaging the product. As I have suggested, I think Heidegger's failing to ascend to the status of true non-correlationist was in not going all the way and absolutizing phenomenology. Furthermore, I think Harman's gut feeling that there is a link between Heidegger and Latour that needs to be explored, though I disagree with some of Harman's points and some of Latour's points of resistance. The recent publications (see the references at the end of this text) associating mostly harmonies, but a few points of tension, between Heidegger and Latour are simply evidential that there needs to be a much more in-depth discussion about Heidegger and Latour. Seeing beyond that, I think such an endeavor is propaedeutic to putting Latour and Meillassoux into conversation, and developing a wholly coherent and self-consistent speculative turn in the philosophy of science.

given (for the non-correlationist) is the non-given, which is then cut down by *ascesis* to provide what the classical (i.e., early modern) philosopher would call "the given." On this point, the thought of philosophies of old are turned on their head: it's not what is classically "given" that is the sum total of givenness, but only subset of the totality of what is given. The emendation I propose to Meillassoux's body of texts produce the following effect: what the absolutization of phenomenology and *ascesis* allow for is a shift in privileged status from givenness, qua the product of ascesis, to givenness, qua the entire plenum —the plenum of all givenness, which constitutes, for early modern philosophers onward, the union of the given and the non-given— that is to be chopped, parsed out, and negated. The error, then, made by Kant, Descartes, etc., was in privileging a small subset of what really is given. However, there is a rather natural reason for this error, and this error would come to the notice of philosophers of science at the first part of the twentieth century —or, more accurately, the issue would begin to float to the top of intellectual awareness in the times of Maxwell Boltzmann, manifested particularly in the (anti-)buzz surrounding the notion of the "atom."

I think the above ideas of Heidegger's ontological structure of mood[41] and givenness allow for some fancy philosophical footwork. Quoted earlier in this paper, Meillassoux makes an interesting point, which may be the only thing he says that can be construed in such a way as to reveal his thoughts on "thought" (though, admittedly, it's a stretch): Referring to the general scientific sentiment and mentality inherent to scientism, he says that this variety 'discourse [is one] whose meaning includes a *temporal discrepancy* between thinking and being…' (*After Finitude* 112). As an attempt to reconcile and make coherent the whole of Meillassoux's

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[41] For the concerned reader, I am not talking about mood as if to discuss a position between subject and object, once again, because there is nothing in which the mood depends on the relata for, and so those correlates are dismissed, here, without mention.

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thought, try to bear with the following rationalization, keeping in mind that I understand that this interpretation of this quotation is a stretch. If Meillassoux is suggestion that there is to be no temporal distance between thought and being, then it could be that thought is something that occurs in the absolutized phenomenological plane, that is, in the plane of givenness. Putting it differently, thought could be something that occurs in the world (remember, subject has been removed) in such a way that it also has the ontological structure of mood. What one arrives at is a world in which the world self-reflects locally, as though the plenum of givenness can ignore some aspects of the whole, and this is the mode by which thought is to be understood. In some ways, this is very much a world of monism à la Spinoza (Charlton). In fact, this is supported by the emphasis Meillassoux puts on immanence, and in the fact that Meillassoux calls Spinoza the "prince of philosophy," because Spinoza, in his opinion, has never compromised on the point of transcendence (*Quentin Meillassoux* 66-67). This proposed interpretation gets a little odder, as one ruminates on it. The human and non-human have been eliminated in it, as have all varieties of correlate, but one is left with the question: is thought something that the world does about itself in a localized fashion, and, if so, how can this be so?

This is where things get tricky, but the interpretation, still, is consistent with other positions that Meillassoux defends. For example, he provides a "continuist" response to reductionism in life sciences. In a length, but important, passage, he says:

> Either a 'continuism', a philosophy of immanence – a variant of hylozoism –
> which would have it that *all* matter is alive to some degree; or the belief in a
> transcendence exceeding the rational comprehension of natural processes. But
> such a division of positions can once more be called into question once irruption
> *ex nihilo* becomes thinkable within the very framework of an immanent
> temporality. We can then challenge both the necessity of the preformation of life

within matter itself, and the irrationalism that typically accompanies the affirmation of a novelty irreducible to the elements of the situation within which it occurs, since such an emergence becomes, on the contrary, the correlate of the rational unthinkability of the All. The notion of virtuality permits us, then, to *reverse the signs*, making of every radical irruption the manifestation, not of a transcendent principle of becoming (a miracle, the sign of a Creator), but of a time that nothing subtends (an emergence, the sign of the non-All) ("Potenetiality and Virtuality" 79-80).

Commentary by Harman sums of this varied stance on hylozoism[42], as he remarks that there is a kind of gradualism of difference in the process of thinking that occurs in different "material" things. This allows for the escape from the human-non-human contrast class, and it annihilates the need for subject qua subject, as well as object qua object. Guilty of consistently writing too few words, if this is what Meillassoux meant, and he has placed thought in the plane, called world-being-as-givenness[43], then he has not done enough to make this clear.[44] Nonetheless, this is interpretation gibes with what Meillassoux has said plainly and explicitly.

The confusing part, which Meillassoux may or may not have considered, is one of a conceptual mathematical sort. What kind of whole has parts that can be spoken of as unitary, yet having localized (conceptual[45]) areas that entertain seemingly different modes of thought? This kind of thinking is entirely permissible in a branch of mathematics, called "analysis." The student-mathematician is often introduced to this area of study as "classical elementary

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[42] Yet another valuable contribution to the philosophy of science, this time coming in the vitalism, biology, etc., discussion.

[43] Actually, what I, here, call "world-being-as-givenness" seems to be close enough to "immanence" that this line of reasoning and interpretation should be given some serious thought.

[44] One thing that needs saying is that this world is suddenly very interesting, because of the fact that it is a monist's world that can have non-uniformities, in the sense that localized parts of the plane, in which no part transcends, is capable of a different localized thought. This explains the illusion of subjects quite well. Being a unitary whole, points within the unscaled whole, which is never ontologically totalized, affords for the paradoxical prospect of various modes of the whole to reflect upon itself.

[45] We are not talking about space per se, but conceptual locality, a kind of "distance" that is not quantified, but that is qualitative, allowing for the illusion of subjects and out-there-ness.

analysis." What is interesting about this area of mathematics is that extension is considered, but not in a way that is quantifiable in the general sense that one might use in physics. The reason is that there are localities denoted by points, in a language that talks about points, but not in a way that the parts can ever be summed, as one would in the algebraic function of addition. Asking how "long" the extension of the space is makes no sense, yet a mathematician can make claims about limits. The ultimate reason for this is that distance across some such space is that there is an uncountably infinite succession of points spanning this region. If we were to impose this concept upon Meillassoux's givenness, we could get away with many of the relevant tenets he needs to support this aspect of his framework.

§ 10. Conclusion

On numerous philosophical grounds, such as the elimination of Hume's problem, Meillassoux speculative realism seems to provide a very good foundation for a speculative turn in the philosophy of science, so long as a few critical points within his framework are tended to. This is alluded to in section three, dealing with cosmology. Some examples of these, given above, include a consistent discussion of what could be meant by "thought" that avoids the correlationist (and especially the subjective idealist) label[46], explaining how there is not a non-givenness that would be implied by the use of the word "givenness," and so forth. Many of the strengths of Meillassoux's framework, which could serve as a foundation for a philosophy of science, are derived from his non-static ontology. We could very quickly enumerate a whole slew of areas in science in which non-static ontology appears to apply: Lee Smolin's evolving cosmology, Darwinian natural selection, autopoietic systems (including the more physics-embedded notion of self-ordering criticality), quantum ontology and Kant's antinomies.

Meillassoux has his problems, but, as I have tried to show, some creative and restructuring of his project could produce exactly the foundation a speculative turn in the philosophy of science needs. Among the issues listed are the meanings of words like "thought," what the true nature of givenness is for Meillassoux, and so on. Between Meillassoux's word choices, which border on polemics-for-the-sake-of-polemics, and the paucity of his explanations, he has done much harm to his own project. Nevertheless, I encourage readers to try to get out as much as possible from Meillassoux, because he obviously has much more in mind than what he is explicitly presenting. If redoubted, as I have ventured to do to some small extent, his

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[46] Another reason to examine Heidegger in relation to Meillassoux, as much as Meillassoux would hate this. Heidegger, in my opinion, successfully overcame solipsism, for one, by focusing on ontological relationships, particularly *Sorge*.

speculative philosophy can prove vastly more interesting than it already appears. Moreover, more than any other speculative philosophy currently available, Meillassoux's framework appears capable of providing the sort of ontological backdrop that could provide a foundation for a speculative turn in the philosophy of science, not only resolving issues in the philosophy of science, but also adding perspective to the endeavors of practicing scientists. I think it is beyond doubt that Meillassoux's philosophy, in a pure sense, has much to offer science, the history of science, and the philosophy of science.

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