

THE MATHEMATIZABLE PROPERTIES OF HUMAN BODIES IN RELATION TO MEILLASSOUX'S DISCUSSION OF PRIMARY QUALITIES

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ABSTRACT: One of the goals of Meillassoux's philosophy is to secure the claim that the mathematizable properties of a thing can be thought as real properties of that thing. He explicitly says that he has not accomplished this goal yet. What the claim implies is that those properties remain the same whether there is a subject that thinks of them or not. However, such a goal runs into a series of difficulties which, nonetheless, can be resolved. Specifically, it encounters the difficulty that it is possible to mathematize the properties of non-real entities. A more serious difficulty is represented by the fact that the properties of human bodies, such as weight and height, can be mathematized.

KEYWORDS: Quentin Meillassoux; Mathematics; Primary Qualities; Human Bodies.

1. INTRODUCTION

Meillassoux seeks to rehabilitate the distinction between primary and secondary qualities in contemporary terms. He claims that the mathematical properties of an entity can be thought as real properties of that entity:

“In order to reactivate the Cartesian thesis in contemporary terms, and in order to state it in the same terms in which we intend to uphold it, we shall therefore maintain the following: *all those aspects of the object that can be formulated in mathematical terms can be meaningfully conceived as properties of the object in itself.* All those aspects of the object that can give rise to a mathematical thought (to a formula or to digitalization) rather than to a perception or sensation can be meaningfully turned into properties of the thing not only as it is with me, but also as it is

without me.”¹

But the problem with this, he says, is that after Kant, that distinction has become questionable. This is because primary qualities no longer refer to properties of things in themselves, but to properties of phenomena. All of the aspects of the object that can be described in mathematical terms are now aspects of a phenomenon, not a thing in itself.

Meillassoux’s claim regarding the mathematizable properties of a thing is proposed as a goal, which he explicitly says that he has not achieved in *After finitude*. We believe that in order to achieve this goal, there is a specific difficulty which will need to be resolved. This difficulty pertains to the mathematizable properties of human bodies. But before we discuss this difficulty, let us take a look at the body of literature that has discussed Meillassoux’s thesis on the mathematizable properties of things. We will only cite the works in which Meillassoux’s reflections of mathematics has been criticized, in order to show that the *aporias* that we present here are different from them.

Johnston² analyzes the similarities and differences between the philosophies of Badiou and Meillassoux. In relation to Meillassoux’s proposal to rehabilitate the distinction between primary and secondary qualities, Johnston says that the distinction in question has been variable throughout history. As an example, he mentions the case of Galileo, who thought that certain properties were secondary qualities because they could not be quantified. A few centuries later, those supposedly secondary qualities were re-conceptualized as primary qualities, because it was shown that they could be quantified. Johnston adds that Meillassoux is aware of the historical aspect of mathematical discoveries, but he only discusses this historical aspect in relation to Badiou’s reflections on mathematics, and not with regards to his own project in *After finitude*.

Saldanha³ provides an enthusiastic and highly positive review of Meillassoux’s first book, although he also identifies some of its problems. Among these, he says that Meillassoux does not give the same attention to the non-mathematical aspects of contemporary sciences, as the one he gives to its mathematical aspects. Contemporary science, argues Saldanha, cannot be reduced to what is mathematizable, neither can reality for that matter. Reality has a richness, a qualitative richness, which is not

¹ Quentin Meillassoux, *After finitude: An essay on the necessity of contingency*, trans. Ray Brassier, New York, Continuum, 2008.

² Adrian Johnston, ‘The World Before Worlds: Quentin Meillassoux and Alain Badiou’s Anti-Kantian Transcendentalism’, *Contemporary French Civilization*, 33(1), 2009, pp. 73-99.

³ Arun Saldanha, ‘Back to the great outdoors: Speculative realism as philosophy of science’. *Cosmos and History: The Journal of Natural and Social Philosophy*, 5(2), 2009. pp. 304-321.

entirely captured by the quantitative procedures. If the mathematical aspects of science are more important than its non-mathematical aspects, then this needs to be demonstrated. Yet, according to Saldanha, Meillassoux does not provide such a demonstration, he only posits the importance of the mathematical aspects of contemporary science over its non-mathematical aspects.

Purcell⁴, in his examination of Badiou's and Meillassoux's philosophies in relation to hermeneutics, highlights several difficulties in their respective philosophies. In Meillassoux's case, Purcell argues that the importance that Meillassoux ascribes to mathematics as a way of thinking the absolute disregards logic, conceived as a formal discipline distinct from mathematics, but related to it in several ways. Purcell mentions, as an example, that the acceptance of true contradictions (dialethias) permits one to prove that the Zermelo-Fraenkel set theory is complete, although inconsistent. The point is that although mathematics and logic are different sciences or disciplines, this does not mean that they are completely isolated from each other. Another problem that Purcell notes is that Meillassoux seems to be ascribing to mathematical reductionism. If that is the case, then he is neglecting the non-mathematical aspects of physics and biology, for example. And, Purcell adds, that even if Meillassoux were to reply that he's not referring to mathematics in a restricted sense, but in a broad sense, the problem would still persist. To paraphrase this point: even if one speaks about mathematics in a broad sense, as that kind of thinking which can access the absolute, one still has to demonstrate why logic and the non-mathematical aspects of contemporary science don't have the same epistemic privilege.

Gironi⁵ compares Meillassoux's reflections on mathematics to Max Tegmark's mathematical universe hypothesis, or MUH, examining their similarities as well as their differences. For Tegmark, the Universe is one gigantic mathematical structure. The difference with Meillassoux, says Gironi, is that for Tegmark the mathematical universe is neo-Pythagorean and necessary. By contrast, Meillassoux is not a Pythagorean, because he states that mathematics is not reality itself, rather it is the language which allows us to think reality in itself. Additionally, he does not think that mathematical language or reality as it is now are necessary, but contingent. Gironi says, in regards to Meillassoux's Berlin lecture, that mathematics can describe reality as it is stems from the fact that formalized languages are meaningless and arbitrary. It is not because they are necessary that they can accurately describe unreason, rather it is

⁴ Sebastian Purcell. "After Hermeneutics?". *Symposium* 14(2). 2010, pp. 160-179).

⁵ Fabio Gironi, Meillassoux's Speculative Philosophy of Science: Contingency and Mathematics. *Pli: The Warwick Journal of Philosophy*, 22, 2011, pp. 25-60.

precisely because they are arbitrary that they can describe the arbitrariness of unreason itself.

Harman⁶ says, regarding Meillassoux's thesis on primary qualities, that these are not completely independent of human beings. This is because even if they are properties of a real thing, they are still properties which we, as human beings, can relate to, specifically by way of our knowledge. Thus, they are not entirely independent of human knowledge. In addition to this, Harman says that some of Meillassoux's predecessors, and even some of his peers, claim that mathematizable properties are actually secondary qualities, and that the primary qualities are those that elude symbolic formulation, even that of mathematics.

Harman⁷, in an article about the relation between his philosophy and literary criticism, makes a reference to Meillassoux's thesis on mathematizable properties. Paraphrasing his argument, he says that even if the properties of an object can be mathematized, this does mean that the mathematical properties of an object are what is ontologically fundamental about that object. To think that an object can be reduced to, or is nothing more than, a group of fundamental particles or a set of mathematical properties is a form of reductionism.

Johnston⁸ says that if Meillassoux's distinction of primary and secondary qualities is correct, then he has to explain why Galileo and Newton weren't in possession of a series of truths regarding physics, which would have remained true despite Einstein's groundbreaking theories. He also charges Meillassoux and Badiou with confusing the domains of pure and applied mathematics, insofar as these are understood to pertain, respectively, to the distinction between the ontological and the ontic. Johnston says that if pure mathematics pertains to being *qua* being and applied mathematics to specific entities which have mathematizable properties, then it has to be explained how the probabilistic argument against contingency can be refuted with respect to both domains. Specifically, the problem is the following one. Meillassoux says that the thesis about the contingency of natural laws cannot be refuted by saying that it would be extremely improbable for them to be contingent. This answer, argues Johnston, only pertains to the domain of ontology, but not to the domain of the ontic. It may be the case that one cannot apply a probabilistic reasoning to the totality of possible worlds, but one cannot say the same thing about an event which occurs in one of those worlds.

⁶ Graham Harman. Meillassoux's Virtual Future. *Continent* 1(2), 2011, pp. 78-91.

⁷ Graham Harman. "The well-wrought broken hammer: object-oriented literary criticism". *New Literary History*, 43(2), 2012, pp. 183-203.

⁸ Adrian Johnston. "Hume's Revenge, À Dieu, Meillassoux?" in L. Bryant, L.; N. Srnicek, & G. Harman (eds.), *The Speculative Turn: Continental Materialism and Realism*, Australia, Re-press, 2011.

Hallward⁹ offers a positive review of Meillassoux's philosophy, although he also advances a number of criticisms. Among these, we will focus exclusively on the criticism that pertains to Meillassoux's reflections on mathematics. Hallward suggests that Meillassoux seems to confuse the domains of two different branches of mathematics, which are pure and applied. This becomes especially problematic, Hallward argues, if one conceives primary qualities as pertaining to pure mathematics, as Meillassoux seems to do. Because the problem with this is that pure mathematics, far from being the way in which we can access the real properties of things in themselves, actually represent "the supreme example of absolutely subject-dependent thought", one which is completely unrelated to any exterior. For our part, we may add to this that when a mathematician elaborates a new geometry, such as a non-euclidean geometry, he does not proceed by way of seeking a possible relation between his geometry and the physical world. If it has such an application, as in Einstein's theory of relativity, this is an issue of applied mathematics. But, in any case, the elaboration of a new geometry, as an example of pure mathematics, is not independent of human beings, because it is specifically related to the work of mathematicians.

Brown¹⁰ elaborates a response to Hallward's (2011) criticisms of Meillassoux. Regarding the issue of mathematics, Brown says that Meillassoux does not confuse the domains of pure and applied mathematics. As for pure mathematics, Meillassoux uses Cantor's concept of the transfinite in order to refute the probabilistic argument that natural laws cannot be contingent, supposing that it is extremely improbable that they are contingent. Applied mathematics, on the other hand, pertain to the distinction between primary and secondary qualities, especially to the measurements of the dates of arch-fossils, Brown says that what is at stake here is the chronological succession of events versus the logical succession of our knowledge of them. It's not exactly the case, Brown argues, that the primary qualities of an arch-fossil are completely unrelated to thought. Rather it is that thought relates to these qualities in such a way that they show a chronological order from past to present which cannot be reconciled with the logical order of present to past.

⁹ Peter Hallward, "Anything is Possible: A Reading of Quentin Meillassoux's After Finitude" in L. Bryant, L.; N. Srnicek, & G. Harman (eds.), *The Speculative Turn: Continental Materialism and Realism*, Australia, Re-press, 2011.

¹⁰ Nathan Brown, 'The Speculative and the Specific: On Hallward and Meillassoux', in L. Bryant, L.; N. Srnicek, & G. Harman (eds.), *The Speculative Turn: Continental Materialism and Realism*, Australia, Re-press, 2011.

Clemens¹¹ offers several criticism of Meillassoux's philosophy. Among these, he says that when Meillassoux speaks about mathematics, he is only considering particular and specific branches within mathematics, such as the axioms of set theory. However, Meillassoux extrapolates the concepts found within such branches of mathematics, in a way that they cease to have the same import outside of their original frame of operations. In addition, Meillassoux uses the terms "mathematics", "logic" and "science" as roughly equivalent, but this is done in an allusive way. Furthermore, Clemens notes that Meillassoux is lead into the awkward position of having to deny that being is inherently mathematical, since this would amount to Pythagoreanism, and at the same time he claims that mathematics is the only way of thinking the real properties of things.

Galloway¹² holds that mathematics cannot be thought ahistorically, like Meillassoux does. Because mathematics today, says Galloway, has become a fundamental component of capitalism. Specifically, it has become a fundamental component of software, which is used by several different kinds of enterprises and multinational companies. Mathematics today is a fundamental part of the mode of production. Thus, Galloway says that the distinction between primary and secondary qualities has a historical aspect, one that Meillassoux neglects.

Golumbia¹³, in a highly critical article, says that Meillassoux fails to mention that mathematical Platonism is committed to the view that numbers exist outside of the human mind and that they are discovered rather than invented. In addition, he says that very few contemporary thinkers, if any, deny that mathematical statements present serious epistemological and metaphysical challenges. Golumbia says that if correlationism is to be understood as a philosophy which denies the existence of these challenges, then it is not the case that such a correlationist philosophy exists. Returning to the issue of mathematical Platonism, Golumbia says that this view has been upheld by analytic thinkers such as Frege, Russell and Gödel. None of them claimed that mathematical entities exist only in relation to a subject. Quite the contrary, they held that mathematical entities exist independently of the human mind. Meillassoux's philosophy, thus, does not seem to account for this.

These are some of the criticisms that have been advanced against Meillassoux's reflections on mathematics. In what follows, we will formulate a different series of

¹¹ Justin Clemens, "Vomit Apocalypse; or Quentin Meillassoux's *After Finitude*". *Parrhesia* 18, 2013, pp. 57-67.

¹² Alexander Galloway, "The poverty of philosophy: Realism and post-fordism". *Critical Inquiry*, 39(2), 2013, pp. 347-366.

¹³ David Golumbia, "'Correlationism': The Dogma that Never Was". *Boundary 2*, 43(2), 2016, pp. 1-25.

difficulties.

2. MATHEMATIZABLE PROPERTIES OF NON-REAL ENTITIES

Suppose that I'm thinking about a group of unicorns, let's say ten of them. Each unicorn has four legs. How many unicorn legs am I thinking of? The answer is quite simple, there are forty unicorn legs in total. Now the question is: if I stop thinking about those unicorns, what happens to the total of forty unicorn legs? They disappear. There would not be forty unicorn legs if I did not think about them. If the mathematizable properties of an entity are real properties, independent of human beings, then how can we explain the fact that we're capable of thinking about mathematical properties of imaginary entities, such as unicorns? Since I can count the legs of an imaginary group of unicorns, this means that it is not the case that the mathematical properties of an entity are real properties of that entity, because in the case of imaginary entities, the mathematical properties of those imaginary entities are imaginary properties rather than real properties.

Let's consider a different case, that of visual perspective. When I'm standing on a railroad track and I look towards the horizon, it seems to me that the two tracks converge at a point. This can be mathematized, because the two tracks that seem to meet at the horizon form an isosceles triangle if I'm standing right at the center of the tracks. However, the tracks don't really meet, they're parallel. The isosceles triangle that they seem to form is illusory, yet it can be mathematized, since it can be represented by a geometrical figure. This kind of example is different from the unicorns we were talking about earlier, because I cannot change my visual perspective in the same sense that I can choose to change the number of unicorns in an imaginary herd. Yet, the isosceles triangle that the tracks seem to form requires that I be present. Therefore, that geometrical figure does not remain as a property of the tracks if I'm no longer there to look at them.

Finally, there is the case of the mathematizable properties of entities that cannot even be imagined, absurd entities such as square triangles. I can visually represent to myself a group of unicorns, but I cannot conceive a visual image of a square triangle. But even though these objects cannot be represented in any way, not even in imagination, they can still be mathematized. Suppose I think of five square triangles, even if I cannot visually conceive them, and I subtract two of them. How many absurd entities are left? The answer is three, and if I'm no longer there to think this, these objects disappear, along with their quantity.

Let's remember that Meillassoux says that all mathematical properties of an object can be conceived as real properties of that object. The preceding examples challenge

that claim, because the mathematizable properties of imaginary objects, of illusory objects and even those of absurd objects, cannot be conceived as real properties of those objects. In order solve these difficulties, it could seem that Meillassoux's thesis could be modified in the following way: the mathematical properties of a *real* object (different from imaginary, illusory and absurd objects) can be conceived as real properties of that object. But the problem is that this modified thesis presupposes that which has to be proved: the reality of those properties and the reality of the object in question.

Nonetheless, the preceding difficulties can be resolved. We will present these solutions before presenting a more serious objection to Meillassoux's thesis on primary qualities.

3. POSSIBLE ANSWERS TO THE PRECEDING DIFFICULTIES

Here we will examine some possible answers to the difficulties we have advanced in the preceding section. Let's start with the case of the herd of unicorns. The answer to that objection begins with an analogy. Suppose that you made a painting of a herd of forty unicorns. How many unicorn legs have you painted on the canvas? The answer is that you painted forty of them. Does this mean that unicorns exist? Of course not. But notice that, while unicorns are not real, the paintings of them are indeed real, insofar as they are paintings. What the painting represents is not real. But the painting itself, as a certain amount of physical paint on a canvas, is real. Suppose that you paint three horses. Horses are real, but the representation of them in a painting is not. However, the painting itself, as a physical object, is real. When you count the number of legs in a painting of ten unicorns, what you are actually counting are forty different sections of physical paint on a canvas (assuming that all of the legs have been painted). Therefore, what you are counting is something real. It is a real property of a real thing, because the sections of physical paint on a canvas are real properties of that canvas. The situation with a herd of unicorns that is being imagined instead of painted is similar. Instead of dealing with a painting, what we are dealing with here is an image generated by the human mind or brain. Notice that it does not matter, for the sake of this argument, if one adheres to the mind/brain dualism or if one rejects it by reducing the mind to the brain, or by eliminating the concept of mind altogether. Be they acts of the mind or brain processes, the images of unicorns that are formed by thinking are real insofar as they are mental acts or brain processes, just like the painting of a unicorn is real insofar as it is physical paint on a canvas. Thus, when you count the number of unicorn legs that you imagine, what you are actually counting are the different sections of an image generated by the mind or brain.

Let us turn to the example of the railroad tracks that seem to converge at a point

on the horizon. The difficulty that this example poses can be solved by comparing the human eye to a photographic camera. When you take a photo of a pair of railroad tracks with a camera, the photo will exhibit a perspective similar to that of the human eye. But the camera is not alive, nor does it have subjectivity. Thus, the isosceles triangle that can be seen in the photo in no way depends upon life or thought, since if it did, then the camera would have to be alive. Just like the painting of a herd of unicorns does not represent something real, so too the photograph of a pair of railroad tracks that seem to meet at the horizon is not entirely representing something real. Of course, the railroad tracks that it represents are real, but the illusion of perspective that the photograph exhibits is not real, since in reality both tracks are parallel to each other. But the photograph itself, *qua* photograph, is something real, just as physical paint on a canvas is something real, *qua* physical paint. Just as the sections of paint on a canvas can be counted, so too can a triangle be formed by the physical image in a photograph of two railroad tracks. And, just as one can count the sections of an image generated by the mind or the brain, so too one can form a triangle with the image of two converging railroad tracks that human sight generates. What visual perspective represents is not entirely real, but visual perspective itself, *qua* ocular phenomenon, is real, just as a painting is real insofar as it is a painting, just as a photograph is something real insofar as it is a photograph.

In the case of absurd entities, like square triangles, these cannot be painted like the herd of unicorns, nor can they be simulated like the photo camera simulates the illusion of visual perspective. But they can be counted by a computer program. All it takes is a program where you enter, for example, the formula “4 square triangles plus 6 square triangles”, and the program calculates the result. Neither you nor the program need to know what a square triangle is, all that it takes is to perform mathematical operations on them, such as addition. By comparison, one can *think* about square triangles, without having to *visually imagine* a square triangle, which is impossible anyway. When I think about ten square triangles, I am not forming a mental or cerebral image of them. But since I am indeed thinking about them, my thought of a square triangle is an act of the mind (if I accept the mind/brain dualism), or a brain process (if I don't accept the mind/brain dualism). Whatever the case may be, mental acts and brain processes are real *qua* mental acts or brain processes. Their content may not be real, such as in the case of square triangles. But just as a painting of unicorns is real insofar as it is physical paint on a canvas, and just as the thought of a herd of unicorns is real insofar as it is a thought (or a brain process), so too the thought of square triangles is real insofar as it is a thought (or a brain process).

The difficulties we had initially advanced have been resolved. However, there is

one more difficulty which is more problematic than the preceding ones, and it pertains to the mathematizable properties of human bodies. As we shall see, what makes this last difficulty especially problematic is that it rekindles the three preceding difficulties which we have just solved.

4. MATHEMATIZABLE PROPERTIES OF THE HUMAN BODY

Let's suppose that I weigh 85 kilograms. Since my weight is mathematizable, it should be a primary quality. But the weight of a person depends on the presence of that person's body. If that person's body is no longer present, then the mathematical property that we call "weight" ceases to be. It is therefore a property that is not independent of whether the person is there or isn't there. What has been said about the person's weight can also be said with regards to that person's height, mass, figure, and other mathematizable properties of the human body.

Here we are not dealing with mental acts (or brain processes) like in the cases of unicorns or square triangles, nor are we dealing with illusory entities such as visual perspective. What is problematic of the mathematizable properties of a human body is that it re-introduces the difficulties of the preceding examples. Because if a herd of unicorns that I imagine is a mental act or a series of brain processes, then this means that this mental act or series of brain processes would disappear if I am no longer there. It is not only the case that that an imaginary herd of unicorns is real *qua* brain process, it is also the case that this brain process, despite being real, would no longer take place if there was no living human being in which this brain process occurs.

The same problem appears in the case of visual perspective. What visual perspective represents is not entirely real, in the sense that the two railroad tracks do not really converge at a point on the horizon. But it is not only the case that visual perspective *qua* ocular phenomenon is something real, it is also the case that ocular phenomena in general could not continue to exist if there was no living creature endowed with visual organs. A photograph may continue to exhibit the illusion of visual perspective even after the human species becomes extinct, but the same cannot be said about human sight, which requires living human beings in order to take place.

Finally, in the case of absurd entities, there is the same problem. Although the content of the thought of absurd entities is not real, that thought itself *qua* series of brain processes is real. However, that series of brain processes cannot occur outside of a living human body. A computer program may continue to perform mathematical operations with entities defined as "absurd" even after the extinction of humanity. But this is not the same thing as saying that the thought, the human thought, of an absurd entity can continue to exist independently of human beings. And it does not matter, for

the purpose of this argument, if one adheres to the mind/brain dualism or rejects it in favor of the brain. In both cases, it is necessary that there be human beings in order for the thought of absurd entities to take place.

So we see that the example of mathematizable properties of human bodies rekindles all of the previous difficulties, which we had initially resolved. Our solutions to those other difficulties consisted in showing that the *content* of a thought or an ocular phenomenon is not the same thing as that thought or ocular phenomenon *itself*. The content may not be real, but the “container”, so to speak, is real insofar as it is a mental act or a series of brain processes. The problem is that by reducing those entities to mental acts or brain processes, we end up claiming that they cannot be independent, nor take place, in the absence of a living human body, however real mental acts and brain processes may be. The thought of a herd of unicorns, insofar as it is reduced to a series of brain processes, is not something that is floating around in the world, disembodied from an actual and living human being. Neither is visual perspective nor the thought of absurd entities.

5. CONCLUDING REMARKS

In *After finitude*, Meillassoux explicitly states that he has not accomplished the transition from the Kantian in-itself to the Cartesian in-itself. He has only indicated the problem. Thus, his proposal to rehabilitate the distinction between primary and secondary qualities has not yet been secured. One of the problems that the proposed rehabilitation will have to solve is to explain how the mathematizable properties of a human body can be conceived as properties which are independent of human beings.

The solution to this problem, we believe, is connected to Meillassoux’s discussion of the possibility of thinking one’s own death. If my death was related to my subjectivity or act of thinking in the manner of a secondary quality, then I could never die. Death is the cessation of life and also of thought, in the case of living creatures capable of thinking. Death is the complete becoming-other of life, it is a radical change from life to non-life. There can be no death if there was not previously a living organism, and in this sense we can trace a parallel to our discussion of the mathematizable properties of human bodies. But the fact that there can be no death if there was no living being previous to it, in no way means or implies that death is dependent upon life. For if it was, then death could never take place. In analogous fashion, it could be argued that there can be no mathematizable properties of human bodies if there were no human bodies in no way means or implies that these properties depend on human bodies. A mathematizable property such as mass or length in no way depends on the existence of human bodies, since human bodies are not the only entities which have mass or length.

However, we cannot pursue this line of argumentation here, rather we can only indicate it in a preliminary fashion.

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