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## **Lockean Matter and its Discontents**

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# Lockean Matter and its Discontents

Konstantinos Chatzigeorgiou

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Materialism/physicalism purports to be a significant metaphysical doctrine about the nature of reality, being the standard position in many contemporary philosophical debates. It is my view that this doctrine is misguided, a remnant of the categories of the 17th century. To argue for my position, I examine Locke's commitment to corpuscularianism – a prevalent view about the nature of matter in the early scientific period – and the erroneous conclusions he draws from it. This historical reflection serves me to make a broader point: we do not anymore hold a strict conception of the material or the physical for good reasons, while these terms have no place in our technical subjects of inquiry. I conclude that materialism and any ontological position which depends on it are of no consequence.

## INTRODUCTION

A common pronouncement among contemporary philosophers is that the nature of the world is fundamentally material, or physical. More often than not, this metaphysical claim is taken to be substantial and informative. Thus, in the introduction of his critical full-length treatise on the foundations of physicalism, Jeffrey Poland notes that '[t]he physicalist programme, [promises] to deepen our understanding of ourselves and the world in which we live.'<sup>1</sup> In this paper, I would like to discuss John Locke's understanding of matter with the purpose of deflating, and even motivating the abandonment of such convictions. I hope to persuade the reader that Locke's perspective on the nature of the material was flawed, independently of the constraints of his epistemological theory. My main argument risks being misunderstood, since it will be suggested that any 17<sup>th</sup> century understanding of matter has long been superseded by advances in the natural sciences. This is indeed true, though the point I wish to make is more subtle: Locke's insistence on equating matter with the corpuscles and their properties bears striking similarities to some of our own attempts to define the material,

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<sup>1</sup> J. Poland, *Physicalism, The Philosophical Foundations* (Oxford, 1994), 1.

and, consequently, can help demonstrate certain overwhelming implications for any materialist/physicalist (as well as dualist) ontology. Thus, I follow Chomsky<sup>2</sup> and Van Fraassen<sup>3</sup> in their own critical discussions of materialism, concluding that there is little reason to take such doctrine – as it is conventionally understood – seriously.

## THE HISTORICAL CONTEXT

The 17th century was a period of uncertainty in natural philosophy where the correct scientific methodology, as well as the theoretical assumptions that accompanied it were contested. In fact, this was an era of polemics between different scientific conceptions, the most prominent of which were Aristotelianism, Cartesianism, and corpuscularianism. Providing a comprehensive overview of the differences and similarities of these conceptions would be an interesting task in its own right, though it would divert me from my main argument. However, I believe some general remarks on the period to be of specific importance.

It would be helpful to view the rise of Cartesian and corpuscularian physics as two reactions to Aristotelianism. The Aristotelian scholastics favoured a teleological and qualitative approach to natural philosophy, according to which the world was a highly ordered, hierarchical and finite system where ends, values and purposes played a role in theoretical explanations. Indeed, the scholastics offered a physics that did not drastically depart from many of our everyday experiences and whose prevalent status relied on Aristotle's authority. Yet, despite being commonsensical, dogmatic or otherwise, scholastic physics formed the basis of a theoretical understanding of the world for many centuries.

In contrast to Aristotelianism, the Cartesians, inspired by Galileo's breakthroughs in the study of motion and Copernicus' advances in astronomy, emphasised the importance of mathematical methods to the study of nature. Descartes' discovery of analytic geometry was an event of immense importance in the subsequent development of mechanics, and, arguably, one of the single greatest achievements of the human mind. Ultimately, the identification of the physical world with our geometrical models questioned the world of sense perception, our world of common sense.

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<sup>2</sup> N. Chomsky, 'Language and Problems of Knowledge', *The Managua Lectures* (The MIT Press, 1988).

<sup>3</sup> B. Van Fraassen, *The Empirical Stance* (Yale University Press, 2002).

Despite this radical departure from Aristotelianism, Cartesianism left much to be desired in the experimental aspect of physical inquiry. Although Cartesian physics were not entirely a priori, it is true that Descartes sought a deductive inquiry based on indubitable first principles. This approach was evident throughout his physics: the impossibility of vacuum, the infinitely divisible matter and the postulation of vortices in planetary motion followed from Descartes' understanding of body as Euclidean extension.

The corpuscularian conception of matter – a conception advocated by Locke himself – on the other hand, sought to remedy this imbalance between theory and experiment. While the corpuscularians followed the ancient atomists by postulating indivisible particles as the basic constituents of matter, they differed from their ancient predecessors by assuming that the primary/essential properties of these particles were apt to both mathematical formalisms, and experimental investigation.<sup>4</sup> Moreover, this new atomistic hypothesis sought to understand the world in mechanical terms, where corpuscles and their immediate interactions – adequately described in the language of mathematics – would form the basis of an explanation of macroscopic phenomena. Corpuscularianism was a view of the world adequately suited for some of our perceptual content. After all, measurements were vital for empirical confirmation and a radical disconnect between the microscopic and the macroscopic would be unwelcome. Under corpuscularian-mechanical assumptions ontological reductions – such as the reduction of colours and sounds to the intrinsic properties of corpuscles – were sensible, and indeed pursued.<sup>5</sup>

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<sup>4</sup> My account of the character of corpuscularian science is undoubtedly simplified. While it is true that many corpuscularians were undertaking experimental work, it is also true that their doctrine was influenced by the French philosopher and astronomer Pierre Gassendi who argued against the Cartesian conception of matter (and space) on conceptual grounds. The influence of Gassendi shows, as the historian of science Alexandre Koyré acutely describes, '[that] in the history of scientific thought, especially in its creative and critical periods such as the seventeenth century ... it is impossible to separate philosophical thought from scientific thought. The one influences the other; to isolate them is to condemn oneself to understanding nothing of historical reality.' - A. Koyré, *Metaphysics and Measurement* (Gordon and Breach Science Publishers), 119.

<sup>5</sup> Once more, this is a simplified version of what occurred since Robert Boyle, one of the most influential atomists of the time and a close friend of Locke, considered chemistry to be distinct from physics, allowing for the possibility of fundamental chemical substances by means of emerging chemical properties. Interestingly, Boyle's treatment of chemistry as a semi-autonomous science entailed the limits of a strictly mechanical interpretation of nature, even before Newton's

Yet, scepticism was not absent: the philosophical foundations of corpuscular science were not based on indubitable axioms in the spirit of the Cartesians, but allowed for ‘a large degree of uncertainty’<sup>6</sup>, primarily due to the hypothetical nature of corpuscularian mechanism. The underlying metaphysical assumption of the doctrine was that some, or all of the essential/primary qualities of the corpuscles (their motion, figure, shape etc.) were manifested in macroscopic objects (though the primary qualities do not exhaust the observable properties of these objects) so that some form of experimental inquiry could enjoy a degree of empirical confirmation. In turn, the epistemic foundations of the doctrine, largely provided by John Locke himself, rested on the assumption that some of our ideas (the atomic-like objects of thought in Locke’s psychological theory) truthfully represent the primary qualities of corpuscles. In the end, corpuscularianism offered a compromise between a foundationalist Cartesian science and a counter-productive scepticism, allowing for modest and important positive work to be undertaken by natural philosophers.

## LOCKEAN MATERIALISM?

The polemical nature of the debate arising from these aforementioned early-scientific conceptions is reflected on John Locke’s ‘Essay Concerning Human Understanding’ released in 1689, just two years after Isaac Newton’s release of the *Principia*. I have already noted that Locke seems to be generally committed to a corpuscularian conception of matter, though this interpretation can be contested for Locke is also quite explicit on the limits of corpuscularian mechanism:

I have ... instanced in the corpuscularian hypothesis, as that which is thought to go furthest in an intelligible explication of those qualities of bodies; and I fear the weakness of human understanding is scarce able to substitute another which will afford us a fuller and clearer

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discovery of gravitational attraction – see A. Clericuzio, *Elements, Principles and Corpuscles, A Study of Atomism and Chemistry in the Seventeenth Century* (Kluwer Academic Publishers, 2000).

<sup>6</sup> L. Laudan, *Science and Hypothesis, Historical Essays on Scientific Methodology* (D. Reidel Publishing, 1981), 66.

discovery of the necessary connexion and coexistence of the powers which are to be observed united in several sorts of them.<sup>7</sup>

It would appear that Locke's adherence to corpuscularianism is idiosyncratic, ultimately resting on his doctrine of ideational empiricism which is supposed to set the limits of 'human understanding'. Ideational empiricism should be understood as a thesis about human cognition, suggesting that experience is the main source of any substantial knowledge. In order to vindicate his doctrine, Locke postulated ideas as the mental counterparts of atoms and these objects were to play a pivotal role in his accounts of experience, action, language and thought. In perception, for example, when an apple is observed the mind would, according to Locke, acquire the simple ideas of a red colour, a round shape, and a particular smell and then associate them in a way that would allow us to form the complex idea of the substance we call apple.

Beside their positive role, ideas also framed the limits of our cognitive faculties since anything that stood beyond them remained hard, if not impossible, to discern. Thankfully, the resemblance of some of our ideas (such as our idea of shape) to the primary properties of corpuscles rendered corpuscularianism well suited for our mental faculties. The crucial point here is that while Locke potentially modelled his theory of mind on the demands of corpuscularian science, it is his psychology that comes first; our ideas form the foundations of knowledge. Therefore, while the corpuscularian hypothesis is our best theory of matter, its epistemic foundations entail that the hypothesis is fundamentally incomplete. Our cognitive limitations will not permit us to penetrate deeper into the nature of the world.

Despite its plausibility, I believe that the above picture is largely mistaken.<sup>8</sup> Locke's acknowledgment of the imperfectness of our concept of matter should be contrasted

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<sup>7</sup> J. Locke, *An Essay Concerning Human Understanding* (Wordsworth Editions Limited, 2014), 539.

<sup>8</sup> Therefore, I do not agree with Downing that 'the *Essay* is a work of epistemology which presupposes and is grounded upon a certain amount of metaphysics' and I also question the intelligibility of her overall discussion which seems to presuppose a demarcation between epistemology, metaphysics, and experimental science. Such a demarcation is extremely doubtful in the context of 17<sup>th</sup> century science. Locke could have easily adopted a different conception of matter, which would probably create implications for his psychological (hence, epistemological) theory, and yet, he did not. Therefore, a deference to the corpuscularian hypothesis was assumed which was in turn based on complicated metaphysical premises and on certain epistemic assumptions about the character of the scientific method, some of which are mentioned in this paper; Lisa Downing 'The Status of Mechanism in Locke's *Essay*' (1998) 107:3 *The Philosophical Review* 414.

with some of his more assertive and confident remarks, where corpuscles and their properties dominate the discussion. Reflecting on Locke's overall scepticism, his theory of language, the nature of gravitational attraction and, finally, his views on the relation between matter and mind will help me illustrate the strict nature of Locke's account. Firstly, I wish to begin by responding to the suggestion that Locke, motivated by his acknowledgment of the limits of the human mind, avoids providing a comprehensive account of the concept of the material. Let us call this view 'the agnostic view.' Strictly speaking, the agnostic view is correct since Locke does not examine our idea of matter in any significant detail. Yet, to believe that Locke did not understand matter in certain terms is also highly implausible since (a) as we have seen, he already accepts an, at best, incomplete corpuscularian hypothesis, and (b) the concept of the material seems relevant to many of his assertions. For example, in an illuminating passage in the fourth book of the *Essay*, Locke mentions that,

[...] it is repugnant to the idea of senseless matter that it should put into itself sense, perception, and knowledge, as it is repugnant to the idea of a triangle that it should put into itself greater angles than two right ones.<sup>9</sup>

Here Locke seems to suggest that 'senseless' matter cannot, by itself, generate, or is incompatible with mental processes. Thus, Locke offers a partially negative definition of the material in terms of what it is not, and what it cannot cause. One can already observe a quite dogmatic conception, scarcely resembling Locke's earlier sceptical remarks and plausibly restricting the material to the mechanical properties of corpuscles.

A second suggestion, motivated by Locke's theory of language, might concede that the nature of the material is essentially unknowable since we are only acquainted with the nominal essences of corporeal substances, i.e. their observable qualities, and not their real, natural constitutions. For instance, when we are perceiving the substance of water we are acquainted with its observable qualities such as its lack of odour and its diaphanous nature, not its corpuscular composition.

This response has some initial plausibility but it faces a similar objection to the agnostic view. Corpuscles are hypothetical, unobservable entities and yet Locke confidently assumes knowledge of their essential properties. In fact, Locke's epistemological theory of perception assumes a resemblance-thesis between some of our ideas and the primary

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<sup>9</sup> Locke, *An Essay Concerning Human Understanding*, 610.

qualities of corpuscles. The worry is that there seems to be an asymmetry between our knowledge of the nominal essences of macroscopic objects, and the real essences of the microscopic corpuscles. I believe that Locke could avoid this objection by assuming a taxonomy of corpuscles, and by suggesting that while we do possess a complete general knowledge of the properties of corpuscles, knowledge of their real essences requires explicit knowledge of their distinct geometrical magnitudes. Whether this rejoinder is satisfactory remains unimportant, however. The point I wish to emphasise is that Locke supposes possession of a complete knowledge of the general properties of corpuscles.

So far, I have only touched upon the potential epistemological limitations for a Lockean understanding of matter. However, a third and major source of conflict stems from Newtonian advances in mechanics where the postulation of gravitational attraction greatly disturbs the mechanical worldview by suggesting interaction of bodies through the void.<sup>10</sup> Consequently, an interpretative issue arises: how are we to make sense of gravitational attraction within the Lockean framework? Locke's discussion in his 1693 treatise titled 'Some Thoughts Concerning Education' is revealing:

[I]t is evident, that by mere matter and motion, none of the great phaenomena of nature can be resolved: to instance but in that common one of gravity, which I think impossible to be explained by any natural operation of matter, or any other law of motion, but the positive will of a superior Being so ordering.<sup>11</sup>

Indeed, Locke does not take gravitation to be a natural, let alone an inherent property of material bodies. Moreover, its propagation requires the intervention of a superior Being. Unsurprisingly, Locke never includes gravitational attraction in his list of the primary qualities of bodies, despite the fact that it is the unifying element of Newtonian physics. Locke's definition of matter remains strict, excluding qualities from its ontological category.

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<sup>10</sup> 'Action at a distance' may indeed have been the sole possible interpretation of gravitational attraction under Newtonian assumptions. A. R. Hall suggests that while Newton thought that such a conclusion was absurd, speculating that the existence of the aether whose role was to propagate the gravitational force could be the cause of the phenomenon, he could not have considered the aether-hypothesis 'as a profounder theory underlying the force-version, for it takes a totally different view of the ultimate properties of material particles.' - A. R. Hall & M. B. Hall 'Newton's Theory of Matter' (1960) 51:2 *Isis* 135.

<sup>11</sup> J. Locke, *The Works of John Locke in Nine Volumes* 8 (Stirling and Slade, 1824), 184.



Finally, let us turn to Locke's views on mentality:

We have the ideas of matter and thinking, but probably shall never be able to know whether any mere material being thinks or no; it being possible for us, by the contemplation of our own ideas, without revelation, to discover whether Omnipotency has not given to some systems of matter, fitly disposed, a power to perceive and think; ... God can, if he pleases, superadd to matter a faculty of thinking.<sup>12</sup>

Predictably, Locke's attitude remains the same since his conception of mentality renders it incompatible with, and ontologically distinct from the material world. In order to explain the relation between the body and the mind, Locke appeals to supernatural intervention by evoking a relation of superaddition which suggests that God intervened by infusing minds to insensible corpuscular structures. A charitable reading which emphasises sceptical interpretations of Locke's quote seems to me erroneous, since the 'mere' materiality that Locke refers to has definite content: the corpuscles and their primary qualities.

In a stimulating discussion on the nature of superaddition and the 'limits' of corpuscularian mechanism (hence, material explanation), Margaret Wilson concludes that Locke 'is in effect indicating ... that most of what goes on in the world is incomprehensible from the point of view of [corpuscularian] mechanism.'<sup>13</sup> Indeed, neither gravitational attraction nor mentality fit Locke's concept of the material. Remarkably, Locke advocates that most of our world is immaterial, non-physical, and that adequate explanations may have to invoke a supernatural entity. After all, gravitational attraction has universal status, affecting objects of all sizes from the miniscule corpuscles to the entirety of our planetary system, while mentality remains another undeniable fact of nature. Consequently, given our concepts, intelligible explanations have to appeal to the unintelligibility of the Divine; in essence, our world has to be cut in half. Locke's conclusions are incredible, though they should not surprise given his fundamental assumptions. After all, the corpuscularian conception of matter does not only manage to be a general and complete description of the material/physical aspects of the world, but is also capable of determining the world's ontological borders:

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<sup>12</sup> Locke, *An Essay Concerning Human Understanding*, 532.

<sup>13</sup> M. Wilson, 'Superadded Properties: The Limits of Mechanism in Locke' (1979) 16:2 *American Philosophical Quarterly*, 149.

whatever does not conform to the Lockean properties of corpuscles, is immaterial and non-physical by definition.

## MATERIALISM AND ITS DISCONTENTS

What I take to be a reasonable reaction to Locke's treatment of matter is to conclude that it is erroneous. The reasons are numerous: in the case of gravitational attraction, for example, we do not consider gravitational forces to violate locality, though this is achieved by acknowledging that masses (and even massless objects like photons) cause the curvature of spacetime whose geometry could not even be entertained in Locke's Euclidean universe.

But, perhaps, such direct comparisons are unfair. After all, since the 17<sup>th</sup> century many conceptual revolutions have taken place, gradually altering the way we appreciate the concepts of natural inquiry. It can, therefore, be argued that even if Locke's concept of matter is inadequate, it does not follow that the concept fails to pick out something concrete. Unfortunately, this is also a mistake. Careful examination of our contemporary notion of matter reveals, as the physicist and philosopher of physics Eftichios Bitsakis points out, that '[m]atter is not a scientific concept' but rather a term that 'in a general sense ... denotes the object of scientific research.'<sup>14</sup> We have correctly abandoned the restrictive Lockean (as well as the Cartesian, and the Aristotelian) conception(s) because, nowadays, whatever we come to discover is shortly after understood as material, or physical. Still, our ongoing pursuit for wider and more complete explanations entails our acknowledgment that we do not yet fully comprehend our world. Subsequently, contrary to Locke, we abstain from categorising counterintuitive possibilities or undiscovered facts as non-physical. Instead, as Chomsky observes, 'any intelligible theory that offers genuine explanations and that can be assimilated to the core notions of physics becomes part of the theory of the material world.'<sup>15</sup> Simply put, domains of inquiry where progress has been slow, unfruitful, or even hopeless highlight our inability to penetrate nature rather than any robust ontological categories.

At this point, I think it is proper to revisit some of this paper's themes. A recurring theme of materialist metaphysics is a scepticism towards (and quite often, a downright denial of) mentality. The reaction is understandable, stemming from our peculiar commitment

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<sup>14</sup> E. Bitsakis 'Mass, Matter, and Energy, A Relativistic Approach' (1992) 2:1 *Foundations of Physics*, 74.

<sup>15</sup> Chomsky, *Language and Problems of Knowledge*, 144.

to the categories of the dominant physical theories of the 17<sup>th</sup> century. As I have previously noted, the Aristotelian pluralist conception of the universe was replaced by a mathematical, ontologically austere, and highly reductionist picture. The Cartesians and the corpuscularians, guided by the ideals of the mechanical philosophy, sought to explain phenomena by reference to the motions and collisions of the minute constituents of matter. The subsequent revolutions of natural inquiry greatly challenged this picture, but the allure of the mechanical worldview has been hard to shake off.

However, an asymmetry is evident since despite our inability to move beyond certain aspects of the 17<sup>th</sup> century, our initially restraining concept of matter matured and underwent revision, ending up being replaced by a more general concept, that of 'the physical'. This new concept was more open, allowing for a wider interpretation which included some of the special sciences (chemistry and biology), and, moreover, incorporating bizarre entities like fields, spacetime, and, astonishingly, an inherently probabilistic quantum world. Even so, an (allegedly) unbridgeable gap between this 'physical' world and the world of introspection and qualitative experience remained. In the end, one of these two worlds either has to be eliminated, be explained by reference to the other, or be separated from the other on Lockean, ontological grounds. But Locke's mistaken conclusions render these solutions presently unwarranted, if comprehensible at all. There is no dualism of the physical and the gravitational, as there is no dualism of the physical and the probabilistic. A dualism of the physical and the mental remains equally dubious.

Given what we have said so far, it is odd why materialism is a live option. The doctrine's popularity is indeed paradoxical primarily because, as Van Fraassen emphasises, '[m]aterialism is a hardy philosophical tradition that appears differently substantiated in each philosophical era.'<sup>16</sup> Locke's conception of the properties of matter was, on reflection, more robust and coherent than ours, since we often avoid providing definite content to a materialistic ontology. Quite plausibly, a contemporary materialist does not strictly adopt a metaphysical position at all, but simply defers to the ever-growing (or ever-changing) ontology of science. Thus, the materialist position is, at best, an epistemic one, appealing to the success of particular methods of inquiry. Nonetheless, the sciences are far from complete, and speculation on future, unknown unifying theories is premature, and, more importantly, anti-naturalist.

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<sup>16</sup> Van Fraassen, *The Empirical Stance*, 58.

Here, it may be argued that as far as physical theory is concerned, we may recognise a continuity in its mathematical formalism and conceptual structure which will allow us to exclude mentality (or our common sense conception of it) from a materialistic picture of the world. Advocates of this view often appeal to a completeness of physics<sup>17</sup> that is supposed to guide our ontological distinctions. Putting the groundless assertions about the impossibility of further conceptual revolutions in the sciences aside, we still lack compelling reasons to take this position seriously. Locke assumed the completeness of material explanations in the nature of corpuscularian mechanism. If our counterpart is a, yet unknown, physical mechanism which aspires to unify all the 'physical' phenomena then the only thing we are actually stating is a belief that the physical sciences may, at some point, establish that the physical world is unified; trivialities rarely provide any understanding.

In the end, Locke has still things to teach us, despite his shortcomings. As a representative of the emerging sciences, Locke quickly realised their explanatory potential. He, therefore, aspired to provide a model of mentality, while also articulating the relation of his own science to the doctrine of corpuscularianism. His commitment to theoretical explanations and unification remain important and should be further explored. On the other hand, Locke's reflection on the metaphysics of his own system led him to absurdities. This is the error we need not repeat. Leaving Locke's 17<sup>th</sup> century behind requires an acceptance of the vacuous nature of materialism: we do not know the world's ultimate contents and lack any serious insight on what these might be. Hence, unlike Locke, we lack a robust conception of the material, and cannot find a place for it in any of our serious theoretical explanations. This conclusion may seem obvious, even mundane, but, apparently, it is not. Hopefully, my analysis of Locke's story will have helped establish it.

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<sup>17</sup> See T. Nagel, *Mortal Questions* (Cambridge University Press, 1979) & J. Wilson, 'On Characterizing the Physical' (2006) 131:1 *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 61-99.

## CONCLUSIONS

Ultimately, Locke's case remains interesting both for its failings as well as for its successes. Locke aspired to provide a complete psychological theory that postulated objects and properties on potentially equal ontological grounds with his favourite, material corpuscles. He sought an explanatory theory for mentality. The boundaries of Locke's ontological categories, undoubtedly influenced by the prevailing physical theories of his era, have now shifted though keeping them around, especially in a world that is immensely more complex than Locke's, may not be wise after all. Ontological doctrines which presume the nature of the world without explicitly detailing its contents seem more apt to confusions rather than explanations. Even when some content is provided, the provisional nature of our explanations renders our ontological doctrines impotent. Consequently, materialism is beside the point for any serious inquiry on the nature of the world. Appreciating Locke's insightful and thought-provoking discussions remains important; borrowing his ontological distinctions is futile. Future discussions are going to have to reflect this fact.

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