
I am also of the opinion that materialism must be destroyed

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Received 28 March 2010; in revised form 4 June 2010

Abstract. This paper criticizes two forms of philosophical materialism that adopt opposite strategies but end up in the same place. Both hold that individual entities must be banished from philosophy. The first kind is ground floor materialism, which attempts to dissolve all objects into some deeper underlying basis; here, objects are seen as too *shallow* to be the truth. The second kind is first floor materialism, which treats objects as naive fictions gullibly posited behind the direct accessibility of appearances or relations; here, objects are portrayed as too *deep* to be the truth. One major thesis of this paper is that these two forms of materialism are parasitical on one another and need each other's resources to make sense of the world. The second major thesis is that both forms of materialism thereby stand condemned, and that philosophy must be rebuilt from the individual objects that the two forms of materialism disdain. These points are made through a detailed consideration of the book *Every Thing Must Go* by the analytic structural realists James Ladyman and Don Ross, which has gained a surprising following among some speculative realists in continental philosophy. Ladyman and Ross claim to preserve objects by treating them as “real patterns”, but they do so at the price of destroying their autonomous reality. Furthermore, they are unable to tell us whether the mathematical structures they see as the basis of human knowledge are also the basis of reality itself. In short, their ontology is scientism for scientism's sake (or ‘Bunsen burner realism’) and must be eliminated in favor of a genuine realist metaphysics of objects.

1 Introduction

This paper refers to two kinds of materialism that have grown increasingly popular in recent philosophy. One kind is usually motivated by scientific realism; the other, somewhat paradoxically, often draws on German idealist currents. In what follows I will describe in detail a lucid example of the first kind of materialism (that of James Ladyman and Don Ross) and speak briefly about its deep similarity with the apparently opposite kind. I will then urge that both be rejected and propose an alternative. These two senses of ‘materialism’ might seem different from a positive use of the word that may be more familiar to readers of this journal. In this positive sense of the term, materialism refers to a standpoint that breaks down the tired dualism of subject and object, allowing these two poles to interpenetrate and mutually constitute one another. Michel Foucault (see especially Foucault, 1977) is usually regarded as one of the heroes of this brand of materialism. Yet Foucault is not among my own intellectual heroes precisely because ‘human subject’ and ‘world’ remain the two dominant poles of his universe, even if they are now glued together rather than left in lonely Cartesian solitude. A truly multipolar cosmos requires that the human being be treated as just one kind of entity among trillions of others, not as a full half of a dual monarchy: a mere Habsburg Metaphysics.

In 1999 I coined the whimsical phrase “object-oriented philosophy” (Harman, forthcoming-a) to describe my own multipolar model of the world; the phrase caught on, and I am now happily married to it. Object-oriented philosophy is based on two central ideas. First, there is the aforementioned principle that all relations are on equal footing. While philosophy since Immanuel Kant's 1781 masterwork *Critique of Pure Reason*

(Kant, 2007) has been obsessed with the single gap between human and world—whether to assert, dissolve, or finesse that gap—Alfred North Whitehead in the 1920s (see Whitehead, 1978) invited us into a non-Kantian world where the relation between prisons and human subjects is of no higher status than that between the various bricks in a prison, or between prison rats and the cosmic rays annihilating protons in their brains. The human–world relation is of obvious interest to humans, but it cannot serve as the foundation for philosophy. But we must avoid Whitehead’s tendency to *reduce* the entities of the world to their interrelations. While this may feel like a breath of fresh air in comparison with the rigid old theories of substance, it makes a bad fit with reality—for it fails both in explaining how change could ever occur, and also in accounting for counterfactual cases such as the arrival of other relations (Harman, 2009, pages 130–132). Whitehead’s vision of all entities on equal footing must therefore be supplemented with Heidegger’s insight into the withdrawal of entities from their relations, and indeed from any sort of presence at all (Harman, 2002). The world is filled with a vast array of objects receding from mutual contact into strange private vacuums, but somehow making contact through indirect or vicarious means (Harman, 2007a). This is the vision of object-oriented philosophy, which has already had an effect throughout the arts and humanities and was officially launched as the object-oriented ontology (OOO) movement in Atlanta in April 2010.⁽¹⁾

Now, much of the present paper consists of a critical overview of the Ladyman and Ross book *Every Thing Must Go* (2007), a remorseless work of analytic scientism that might seem far removed from my own philosophical concerns. Yet Ladyman and Ross are relevant here for both systematic reasons and contingent ones. The systematic reason is as follows. Although Ladyman and Ross are perhaps the most *anti-object-oriented* philosophers one could imagine (just look at their title: *Every Thing Must Go*), their exact ‘evil twin’ inversion of my own position points to our shared preoccupation with the status of individual things. The contingent reason has to do with the continued splintering of the speculative realist movement into competing subgroups. In 2006 I joined Ray Brassier (it was his idea initially) in founding speculative realism, which held its first public event the following year at Goldsmiths College in London. There we were joined on stage by our comrades Iain Hamilton Grant and Quentin Meillassoux (see Brassier et al, 2007). In this way, four philosophies were briefly united that have surprisingly little in common beyond a shared rejection of what our sole French member (Meillassoux, 2008, page 5) brilliantly terms “correlationism”: the philosophical view that we can neither think human without world nor world without human, but only the primal correlation or rapport between the two. Among other drawbacks, correlationism prides itself on the novel approach of *uniting* human and world, though in so doing it merely cements the post-Kantian dogma that human and world are the two basic elements of reality (see my earlier remarks on Foucault).

Yet the four philosophies of speculative realism have vastly different approaches to overcoming correlationism. Elsewhere I have contrasted my object-oriented philosophy with the ideas of both Grant (see Harman, forthcoming-b) and Meillassoux (see Harman, 2009, pages 163–186). Brassier’s position differs notably from the others in his commitment to science-minded eliminationism, which leads him to express outright contempt for the works of figures central to my own position such as Edmund Husserl (see Brassier, 2007, pages 26–31) and especially Bruno Latour (see Brassier, forthcoming). Brassier’s attitude must be addressed in due course, since the contrast between our positions is perhaps the most glaring and hence the most interesting in all of speculative realism. Yet he remains a moving target; I and others

⁽¹⁾ See the conference website at <http://ooo.gatech.edu>

have detected a shift in his thinking since *Nihil Unbound* (Brassier, 2007), which makes that book an inconvenient subject of engagement as we await a full public account of his new position. But from various remarks by Brassier in correspondence, and from the proclamations of his colleagues on the staff of the journal *Collapse*, it is clear that Ladyman and Ross have infiltrated Brassier's position to a considerable degree and served as a rallying point for his faction. This, then, is the contingent reason for my focus on Ladyman and Ross: their 2007 book seems to be a clear and accurate guide to the leanings of the scientific wing of speculative realism, of which Brassier remains the undisputed guru, and which I frankly regard as an unhealthy turn in the movement.

2 Two forms of materialism

"I am also of the opinion that materialism must be destroyed": the historical reference of my title is well known. Before the destruction of Roman archenemy Carthage in 146 BC, Cato the Elder acquired the habit of ending speeches on just about any topic with the phrase: "I am also of the opinion that Carthage must be destroyed", famously shortened in Latin to *Carthago delenda est*. But my related phrase "materialism must be destroyed" is meant as a provocation for thinking, not as a literal call for eradication. In the first place, to destroy one's opponents in philosophy is usually not a wise aspiration, even on those rare occasions when it is possible. For there is generally a grain of truth in the positions we dislike that cannot be eliminated. Furthermore, the word 'materialism' has been used promiscuously for so many theories that to destroy it might mean to destroy every philosophical position that exists. And finally, the attempted destruction might also strike the thrower in a boomerang fashion. Consider the most recent book of Jane Bennett (2010), whose philosophical views have often been described as similar to my own. Bennett uses materialism in a way that could easily apply both to object-oriented philosophy and to the closely related writings of Latour. She takes materialism to be a suitable name for any philosophy that dissolves the usual strict opposition between free human subjects and inert material slabs. Naturally, I am all in favor of this dissolution; I simply doubt that 'materialism' is the best name for it.

In one sense, terminology is always somewhat arbitrary, and we should be free to coin and use it as we wish. But as a general rule, it seems best to avoid confusion by grounding terms in their tradition of historical use. What links Bennett's position most closely with Latour's and my own is that she opposes reduction as a general philosophical method: music and governments cannot be reduced to carbon, oxygen, metal, or some deeper alternative structure. Instead, all human and nonhuman things of every scale are placed on the same footing. By contrast with this position, materialism throughout the ages has generally been reductive, and its victim of choice has been medium-sized everyday objects. One form of materialism tears these objects down to reveal their deeper physical foundations, as if mocking them from below. Another rejects the reality of these objects for precisely the opposite reason, denying them any depth beneath the way they are given to us, as if jeering from above. Given the apparent opposition of these two strategies, it is remarkable that *both* are often denoted with the term 'materialism'. Although I used to wonder why the second was called materialism at all, I now think there is good reason to accept this dual usage. For the two positions share much in common, are beginning to form a strong unspoken alliance, and are even on the brink of dominating continental philosophy in our time.

The first great upsurge of materialism in the West can be found in pre-Socratic philosophy [Zeller (1980) is a nice introduction]. Whatever their rich diversity, the pre-Socratics can easily be divided into two basic groups. The first chooses some specific physical material to be the underlying root of things: whether it be air, water, fire, four

elements together, or atoms. But the second views these materials as too specific to serve as the bedrock of the cosmos and instead gives us a boundless *apeiron* deeper than any physical element. All are agreed in showing little respect for the famous ‘medium-sized everyday objects’, which they reduce to a more primitive basis. Only two of the pre-Socratics deviate slightly on this point. Pythagoras does so by making number the ground of everything, and Anaxagoras by retaining medium-sized objects in minuscule form as the *homoiomereiai*: everywhere the world is laced with tiny horses, sharks, and trees. But note that even these two thinkers hold that there was once a shapeless *apeiron* later destroyed to make way for their new elements of choice. Thus, the original meaning of materialism is that all compound and nonphysical things can be reduced to a simpler physical basis. It need not be hard red billiard balls: a churning, shapeless *apeiron* will do, and there are other alternatives as well. In any case, this form of materialism seeks to eliminate all composite and immaterial beings, unmasking them as the gullible reveries of an unphilosophical populace. Such materialism has a proud history of debunking superstition and has often done service for human enlightenment, and I reject it without mocking it.

But another form of materialism is with us today; in some respects it is the opposite of the first. It emerges from the German idealist tradition that it wants to turn upside-down, though in my view without escaping it. I speak of *dialectical* materialism, a theory of social relations rather than of tiny components deeper than all relation. Familiar everyday things are not so much illusions, but vulgar fetishes granted a false independent identity. As Leon Trotsky writes in 1939:

“Vulgar thought operates with such concepts as capitalism, morals, freedom, workers’ state, etc as fixed abstractions, presuming that capitalism is equal to capitalism, morals is equal to morals, etc. Dialectical thinking analyses all things and phenomena in their continuous change, while determining in the material conditions of those changes that critical limit beyond which ‘A’ ceases to be ‘A’, a workers’ state ceases to be a workers’ state” (Trotsky, 1970, page 357).

These relations among “all things and phenomena in their continuous change” are not withdrawn into some dusky underworld of things in themselves, but are concealed from us only by ‘ideology’, which will eventually be eliminated. This type of materialism is obviously more compatible than the first with Slavoj Žižek’s otherwise shocking statement that “the true formula of materialism is not that there is some noumenal reality beyond our distorting perception of it. The only consistent materialist position is that the world does not exist ...” (Žižek and Daly, 2004, page 97). It is found as well in the “speculative materialism” of Meillassoux (2008), who freely admits his debt to Marx. Meillassoux’s principle of ‘ancestrality’ has been widely misunderstood: even by me, at first (see Harman, 2007b). Meillassoux is not a classical realist any more than are Žižek or Alain Badiou. Although none of these authors want to be called idealists, they are realists even less. Despite Meillassoux’s valuable critique of correlationism, he has stated clearly in print that he thinks correlationism is basically right: we cannot *think* an unthought X without immediately turning it into an X *that is thought*. The correlational circle cannot be escaped, but only radicalized from within (see his remarks in Brassier et al, 2007, pages 408–435). This is materialism repackaged in immanent form, with nothing lying beyond its possible accessibility to thought. There is no need for a material stratum deeper than all access, since access itself *is* the material stratum; the rest is mystification.

In what follows it will be useful to have shorthand names for both of these doctrines. But experience has taught me that to assign them existing names, such as scientific realism or dialectical materialism, merely stirs up distracting controversy. After all, dialectical materialism also claims to be scientific, and many scientific

realists are understandably touchy about being lumped together with positivists. And finally, to attack the replacement of metaphysics by science is often mistaken for an attack on science itself, and the indifference to science by the past century of continental philosophy is too regrettable to deserve even a hint of endorsement. For this reason I will adopt a more drolly neutral set of terms, and speak instead of ground floor materialism and first floor materialism (following the European rather than the American system of numbering).

The apartment where I live in Cairo is located in a classy older building on Brazil Street, in the leafy neighborhood of Zamalek. On the ground floor of the building one finds a powerful national bank, perhaps the hidden basis of economic activity in the neighborhood. Let this bank serve as a mascot for the sort of materialism that seeks to eliminate hypocrisy, alchemy, folk concepts, and deities and instead trace everything back to its real underpinnings. Meanwhile, the first floor is home to no businesses but only people, myself included. Each residence is equipped with a stunning terrace that overlooks the street and provides a clear view of everything that happens. And yet the most fascinating part of the building is neither the ground floor nor the first floor. Conveniently enough for this allegory, there is also a partly concealed mezzanine level. This cryptic intermediate zone is home to perhaps the finest art dealer in the city: the Zamalek Art Gallery. A humble sign in the entryway alerts the public that the gallery exists, but otherwise there is nothing to announce its presence beyond fame and rumor. By the terms of this analogy, materialism can be described as a philosophy that either goes to the bank or sits on a scenic terrace and gazes at the world, or that even does both on the same visit. What it misses in each case is the concealed art gallery lying directly between those two activities. But take note: I am not saying that objects are hermaphrodites transgressing the boundary between a pure physical world on one side and a pure subjective sphere on the other; this view cannot be maintained after reading even thirty or forty pages of Bruno Latour (1993). Instead, my position is that both the bank and the terrace are art galleries as well: with trillions of others stretching to the ninth floor and beyond, and infinite galleries burrowing deep into the Earth. There is no ground floor, no first floor, and hence no unification of the two. It's galleries all the way down.

3 The ground floor materialism of Ladyman and Ross

In recent writings I have made a number of challenges to first floor materialism. These can be found in the long final chapter of *Prince of Networks* (Harman, 2009) and an additional statement on the matter will be found in my forthcoming book on Meillassoux (Harman, forthcoming-d). At times I have also written on ground floor materialism, though it might be claimed that my attacks on the undermining of objects have been more effective against the pre-Socratic physicalist forms of materialism than against the more cutting-edge materialisms available today. For this reason I will speak about ground floor materialism in connection with the remarkably acerbic book of Ladyman and Ross (2007). It is true that the authors show some indifference to the term 'materialism', and that they openly deny the existence of any ground floor of the world. Nonetheless, they still meet the prime criterion for ground floor materialism insofar as they undercut the everyday world of familiar objects with what they call "structure". They are materialists through their dismissive attitude toward individual objects. And they live on the ground floor insofar as they undermine objects rather than 'overcome' them. That is to say, Ladyman and Ross obviously do not make the correlationist argument that everything is trapped in the circle of thought, since their whole point is to claim that knowledge makes contact with a reality lying *outside* thought. To deny this would defeat the whole purpose of a science-based metaphysics

like their own. Structural realism, the philosophical current to which they belong, was launched precisely in order to account for how scientific contact with the real is preserved despite changes in scientific theory over time. Even if many past objects of scientific knowledge (phlogiston, partless atoms, the planet Vulcan) have vanished under the onslaught of scientific progress, structural realism claims that a certain amount of mathematical structure has been preserved all along.

The book *Every Thing Must Go* is worth considering for several reasons. First, Ladyman and Ross seem to have written as vehement a work of *anti*-object-oriented philosophy as one could imagine while also endorsing many claims that have a familiar ring for readers of object-oriented thought. This gives the book a paradoxical flavor. At first they seem rather aggressive in their dismissal of both objects and the related topic of causation. Nonetheless, they also claim to replace sterile desert landscapes with a “rainforest” (their term) of what, following Daniel Dennett (1991), they call “real patterns” descending endlessly without limit. Ladyman and Ross also tacitly oppose the correlationist argument in the name of realism, as I do more explicitly. A second reason for choosing this book is that, despite its 300-page length and vast supply of footnotes and technical terms, *Every Thing Must Go* proposes a relatively simple metaphysical position. A longer treatment of the book would be worthwhile, yet it is still possible to give an accurate description of its contents as briefly as one describes the shape and position of France on a globe. Third and finally, Ladyman has recently joined Thomas Metzinger, Paul Churchland, Wilfrid Sellars, François Laruelle, and sometimes Badiou on the list of heroes of the scientific nihilist wing of speculative realism—just as Latour, Whitehead, Xavier Zubiri, Marshall McLuhan, and Alphonso Lingis are the frequent heroes of the object-oriented splinter of the movement.

“We admire science”, say Ladyman and Ross, “to the point of frank scientism” (Ladyman and Ross, 2007, page 61; unless otherwise noted, all further references in this paper are to this book). In this way they accept ‘scientism’ in the same manner as other insulted groups once adopted ‘impressionist’, ‘fauvist’, or ‘queer’—former terms of abuse now embraced by their targets as proud slogans. Their scientism leads them to make unusually harsh remarks about some of their colleagues, which they justify by saying that they care too much about philosophy to speak anything less than the painful truth (page vii). More specifically, they hold that “analytic metaphysics ... fails to qualify as part of the enlightened pursuit of objective truth, and should be discontinued” (page vii), and they mock it throughout the book as “neo-Scholasticism”. It may safely be assumed that they also do not view *continental* metaphysics as part of the enlightened pursuit of objective truth; this still-tiny subfield is probably not even on their radar. While Ladyman and Ross do describe their own work as metaphysics, they are prepared to denounce any “armchair” metaphysics not based on or inspired by the natural sciences. But in a surprising pragmatist twist reminiscent of Latour himself, they hold that the standards of best current scientific knowledge are determined by institutions, down to and including grant proposal committees.

“No scientist”, they say, “has any reason to be interested in most of the conversation that now goes on under the rubric of metaphysics” (page 26), and for them the indifference of scientists counts as damnation. They denounce “esoteric debates about substance, universals, identity, time, properties, and so on, which make little or no reference to science, and worse, which seem to presuppose that science must be irrelevant to their resolution. [For these] are based on prioritizing armchair intuitions about the nature of the universe over scientific discoveries” (page 10). Such armchair intuitions are rejected for reasons already endorsed by devotees of Wilfrid Sellars and Paul Churchland: namely, “what people find intuitive is not innate, but is rather a developmental and educational achievement [W]e should expect developmental

and cultural variation in what is taken to be intuitive, and this is just what we find" (page 10), and they cite the pop relativist example that Americans tend to blame crimes on individual people, and Chinese on circumstance. In their view, science *outstrips* intuition: "no one's intuitions, in advance of the relevant science, told them that white light would turn out to have compound structure, that combustion primarily involves something being taken up rather than given off, that birds are the only living descendants of dinosaurs, or that Australia is presently on its way to a collision with Alaska" (pages 11 – 12). For this reason, science trumps armchair metaphysics: "Special Relativity ought to dictate the metaphysics of time, quantum physics the metaphysics of substance, and chemistry and evolutionary biology the metaphysics of natural kinds" (page 9). Their scientism is frank indeed.

But the sciences are not a democracy for Ladyman and Ross; there is a queen in their kingdom. One of the pillars of the book is what the authors call the PPC, or "primacy of physics constraint". They formulate this principle as follows: "Special science hypotheses that conflict with fundamental physics, should be rejected for that reason alone. Fundamental physical hypotheses [by contrast] are not symmetrically hostages to the conclusions of the special sciences" (page 44). But while endorsing naturalism, they reject the physicalism that views the world by way of "a physics of objects, collisions, and forces", which they sometimes ridicule as "the philosophy of A-level chemistry" (page 44). They even name names, finding examples of this amateurish science in such prominent neo-Scholastic thinkers as Jaegwon Kim and David Lewis.

Ladyman and Ross view the task of metaphysics as the unification of physics with the special sciences. As they put it, "we should surely have our metaphysics informed by our best physics" (page 149), though here the phrase "informed by" turns out to be a euphemism for 'utterly dominated by'. And since forces, things, and essences "find no representations in mathematical physical theory" (page 247), we can say that they do not exist. The authors have no sympathy for the metaphysics of individual entities: "naturalists should not believe in 'material objects' [These] are not what physics (or any other science) studies; they are pure philosophical inventions" (page 302). The wish for an ontology of individuals amounts to "the demand that the mind-independent world be imaginable in terms of the categories of the world of experience" (page 132). Objects are merely pragmatic devices used to orient oneself in the world. As they put it: "There are no things. Structure is all there is" (page 130). Objects merely belong to the world of the "manifest image" (page 158). They are the product of human psychology (page 155) and of "the parochial demands on our cognition during our evolution" as well as, they biting add, "an education in the classical texts of the metaphysical tradition" (page 188). Reality is not a sum of concrete particulars. After dismissing objects and causation as folk products, they are biting once more with their mock concession that "folk metaphysics generally makes for better poetry than scientific metaphysics" (page 297).

Hence, Ladyman and Ross would seem to be the anti-object-oriented thinkers par excellence. This impression is initially heightened when they gear up to attack the theory of emergent levels of the world. Knowing the authors' scientism and their celebration of physics as Queen of the Cosmos, the reader might well assume that they view all large-scale and medium-scale entities as illusory byproducts of a micro-layer of reality. But somewhat surprisingly, this is not what happens in the book. Unlike many whose temperament and worldview they share, Ladyman and Ross *support* the idea that emergent properties are unexplainable, unpredictable, and irreducible to what came before. Whereas many critics of emergentism are annoyed that it gives medium-sized entities *too much* autonomy from their component pieces, these authors accuse it of granting *too little*. With admirable strangeness, they simply do not

think that gold atoms, gold molecules, chunks of gold, and display cases filled with gold jewelry have any sort of causal or compositional relationship at all. The reasons for this will be clarified shortly, but the point is that, rather than denying that an individual is something over and above its components, they deny that individuals are discrete units engaged in compositional layering at all. In short, if they dislike the theory of levels of the world, this is not for the usual reason that their world has only one level, but rather because the levels of Ladyman and Ross have no mutual influence at all. In their view, to say otherwise would merely amount to a folk poetry of cohesive individual things engaged in causal relations.

With this we begin to see what an unusual metaphysics Ladyman and Ross serve up for the reader, one so different from the more familiar versions of scientism. First, although physics is said to have asymmetrical priority over the special sciences, these sciences are granted independence nonetheless: there are specifically geological and chemical facts about reality, and according to the authors, there are even facts about traffic jams. Despite their complaints about poetry, they indulge at one point in their own quasi-poetic “Latour litany” (Ian Bogost’s term for the long lists of concrete things favored by object-oriented philosophers). Just listen to this example: “[The sciences] do not ... lead a whole parade of special-science objects into metaphysical purgatory. Prices, neurons, peptides, gold, and Napoleon are all real patterns, existing in the same sense as quarks, bosons, and the weak force” (page 300). This passage might easily have come from one of my own books, or one of Latour’s. The authors even boast that they make room for a rainforest of realities: a breath of fresh air in comparison with the usual appeals to Occam’s Razor and Quine’s desert landscapes. The world is swarming with real patterns, some undiscovered and some of them literally impossible to discover. It follows that an infinite number of still unknown sciences lie in our future, each dedicated to types of patterns still unknown. And this is perhaps the most surprising aspect of their book. At first their scientific program and generally abrasive tone makes them seem like aggressive, annihilating bullies of the stereotypical sort—roaming the streets in their leather structural realist jackets on a Friday night, roughing up poets and neo-Scholastics with switchblades and brass knuckles. But now their ‘rainforest’ approach, their world of noninterlocking and scale-dependent objects, makes them look as inflationary as an all-you-can eat buffet hosted by Alexius Meinong. This latter remark is simply a playful exaggeration, of course, since much is still eliminated in the model of Ladyman and Ross. But the point is that their jungle of patterns, each cut off from genuine causal or mereological links with its neighbors, sounds a great deal like the occasionalist dream of a pluralist landscape of independent realities in need of a deeper force to link them. But there are at least three key differences between ontic structural realism and object-oriented philosophy, and these differences show why Ladyman and Ross are materialists and I am not. The first is that they are quite strict about distinguishing real patterns from mere ‘folk’ patterns that can be eliminated by the usual procedures of scientism: and for them, unsurprisingly, the folk patterns include sensory qualia. The second difference is their denial of any genuine composition or causation in the world. The third difference is that their ultimate reality is ‘structure’, which has nothing at all to do with individual things, but which so closely resembles Kantian *noumena* that they are forced to spend several paragraphs denying it. Let’s take a brief look at this strangely imaginative brand of rainforest scientism.

If the physics of the past featured genuine tiny objects such as chemicals and atoms, Ladyman and Ross are concerned only with the most up-to-date quantum theory. And in this theory they find no objects and no causation of any traditional sort. Let’s not argue with this claim, which they rightly admit to be controversial (page 191).

Let's focus instead on their concession that the special sciences (all sciences other than physics) *do* deal with such matters. "The following worry now arises", they concede: "It is easier to give up on self-subsistent individuals in physics than it is in the special sciences because the latter, but not the former, express many (or most) crucial generalizations in terms of transmission of causal influence from one (relatively) encapsulated system to another" (page 191). They say that reality, instead of being made up of objects and causes, is structure. Yet they also say that "to be is to be a real pattern" (page 226). Or as they put it earlier, "the tentative metaphysical hypothesis of this book ... is that the real patterns criterion of reality is the last word in ontology, and there is nothing more to the existence of a structure than what it takes for it to be a real pattern" (page 178). That they call this hypothesis "tentative" is a bit misleading, since they push it aggressively as the centerpiece of their book. It is tentative only in the sense of supposedly being open to empirical falsification, though it is difficult to see what experimental test could possibly pull off such a feat.

Reference is made to John Conway's Game of Life [made famous by Gardner (1970)], in which black squares on a grid follow simple rules of generation and decay. As is well known, these simple rules often generate elaborate patterns that have an enduring reality over and above their component squares: so-called "gliders" move across the screen, and there is even an elaborate "glider gun" pattern that shoots out new gliders endlessly. Ladyman and Ross defend the reality of the large-scale patterns in the Game of Life, invoking Dennett's view that the scale-level description of these shapes is more efficient than the bit-map description. For them this is enough to let gliders, eaters, and shooters count as real patterns. They also accuse "conservative metaphysicians" of denying reality to anything other than the individual dots in the game, although mainstream materialism is surely just as guilty of this. Shifting to more serious domains, they also claim that the genius of Charles Darwin in biology and Charles Lyell in geology lay in recognizing "scale ascendance" in their respective domains. That is to say, they recognized the existence of patterns that are not found in the tinier elements of any situation; each layer of the world is thus granted a certain autonomy. For example, natural selection in evolution is invisible at the level of individuals but becomes easily visible at the level of populations. Nor can the mountain ranges and fault-lines of geology be found in the individual pebbles of which they are composed. But as already stated, Ladyman and Ross want to increase this autonomy exponentially to the point that patterns are not causally composed of smaller patterns at all. They even claim that emergence in the compositional sense violates the second law of thermodynamics, a claim best left for another occasion (page 215).

But if "to be is to be a real pattern", then we should ask what a real pattern is and how it differs from those supposed gullible fictions known as objects. The first thing to note is that, despite the adjective 'real', these real patterns are treated largely in pragmatic terms. This is not your father's hardcore scientism: Ladyman and Ross often express their admiration for pragmatism in the book. To take an example, Napoleon is not an individual for these authors but a real pattern. What this means is that "observers tracking him in 1801 could get lots of highly useful leverage projecting the pattern forward to 1805; so (sure enough) Napoleon is a real pattern" (page 229). Providing "useful leverage for observers" edges toward becoming a key criterion of reality itself. By contrast, "the object named by 'my left nostril and the capital of Namibia and Miles Davis's last trumpet solo' is not a real pattern, because identification of it supports no generalizations not supported by identification of the three conjuncts considered separately" (page 231). The authors assure us that "no observer ever has access to the complete extent of a real pattern" (page 241) and that *this* is what forces us to be pragmatic about real patterns. The reason we never have such access is not

due to some sort of Heideggerian withdrawal into cryptic, veiled reality, but rather because a certain amount of information must always be inaccessible to observers: the exact number of hairs on Napoleon's head at Waterloo is now irrecoverable information, as are the events so distant that no human will ever be able to observe them. Deprived in this manner of the total reality of things, we must pragmatically focus on "core" properties that allow us to "very reliably predict" that our attention "is still tracking the same real pattern through any given operation of observation (and reasoning)" (page 241). We make do with individuals, which for Ladyman and Ross are "only epistemological bookkeeping devices" (page 240). This is said to be true for animals no less than for humans. If individual things are "constructs built for second-order tracking of real patterns ... [they] are not necessarily *linguistic* constructions, since some non-human animals ... almost certainly cognitively construct them." However, they add, "all questions about the relationship between real patterns and the individuals that feature in special sciences concern individuals constructed by people" (page 242). But as for real patterns, there are "real patterns all the way down" (page 228).

To repeat, everything that exists is a real pattern. But they come in two kinds: representational and extrarepresentational. The latter are those that are not "second-order" (page 243) with respect to any other real pattern. And as the authors say, "the overwhelming majority of real patterns that people talk directly about are ... representational" (page 243). Restated in Kantian terminology, "this is the not-very-exciting idea but true point at the heart of the exciting but false idea that people think only about 'phenomena' while what really exist are 'noumena'." For as they put it, "people *can* think and communicate about extra-representational real patterns but don't usually try to; scientists often try and *succeed* in so thinking and communicating" (page 243). The real can be known, but through formalization rather than natural language. When discussing the famous example of Eddington's two tables—the table encountered practically and the material table of physics—their interesting twist on the problem is that the *scientific* table is the one that does not exist. And they are proud of how their metaphysics is able to handle this case:

"It is an advantage of our view that it makes it possible to understand how both the scientific image and the common-sense image can capture real patterns. The everyday table is probably a real pattern. Strictly speaking there is no scientific table at all because there is no single candidate aggregate of real microscopic patterns that is best suited to be the reductive base of the everyday table" (page 253).

Moreover, "we deny that everyday or special science real patterns must be mereological compositions of physical real patterns" (page 253). And finally, the only difference between physics and the special sciences is "that fundamental physics discovers something of a kind that special sciences don't; and we call this kind of something a universal real pattern" (page 283).

Too much exposition easily becomes dull. But before putting an end to the current dose of it, we need to touch on the thoroughly *relational* character of this new scientism. For after defending the role of institutions in establishing scientific truth, and speaking in praise of networks, Ladyman and Ross have a *third* Latourian moment when they identify their metaphysics as a form of relationism. Real patterns not only do not exist as autonomous causal agents: they do not exist independently of their context at all. This theme recurs throughout the book. The authors approvingly cite Mauro Dorato as saying that "entities postulated by physical theories are to be regarded as a web of relations, not presupposing substance-like entities or 'hangers' in which they inhere", as well as Cassirer's words (as Leibniz spins in his grave) that they are "a definite aggregate of relations and [consist] in this aggregate" (page 245).

“It’s relations all the way down” (page 152). Classical metaphysics believes in the principle of the identity of indiscernibles and treats every Pound Sterling as unique. But mathematics and quantum theory do not, insofar as the relational properties of both Pounds are the same—and it is these disciplines we must follow, rather than neo-Scholastic metaphysics. Most vividly of all, Ladyman and Ross call it “beguiling nonsense” for a naturalist to think that things can be transported to “radically new environments in space and time” while remaining the same thing, since “nothing in contemporary science motivates the picture” (page 294). Here, whether they like it or not, they have both Latour and Whitehead on their side as they try to close the deal with the following thought experiment:

“Take giant pandas to Saturn, or 6000 [million years ago] backwards in their light-cone. It’s easy to *think about*, isn’t it? But organisms are unusually strongly cohesive real patterns, unlike many real patterns studied by scientists. Now imagine taking the market in airlines risk derivatives to Saturn or 6000 [million years ago] back ago in its light cone. That was a bit harder even to imagine, wasn’t it?” (page 294).

And finally, it should be added that the authors have little use for causation, though they agree that the special sciences need it as a “heuristic device” for discovering real patterns. On the one hand, they call it “[a folk idea] that has caused no end of confusion in metaphysics” (page 246). They ridicule causation with the nickname of “microbangings” and take the following position instead: “Because we think fundamental physics describes ... real patterns, we believe there are universal laws. We do not believe they are about causal factors” (page 289). For them it is wrong to believe in microbangings for the simple reason that, even if the analytic metaphysics of 2007 believes in them, the physics of 2007 does not: “[the] question is for fundamental physics to settle, and it *now* speaks against them” (page 289, emphasis added). But despite all this, they oppose Bertrand Russell’s attempt to eliminate causation from the sciences altogether (page 270). For as they put it, “though physics doesn’t require the metaphysician to work causation into the structural fabric, it is harder to avoid this while maintaining a realist attitude toward the special sciences” (page 159). Generally, they prefer to replace the word “causal” with the phrase “information-carrying” (page 221), though this issue must be left for another time.

4 Disconnected turtles, all the way down

The surprising brand of materialism proposed by Ladyman and Ross is one that they happily describe as “turtles all the way down”, though with an unusual twist: the turtles are not standing on one another’s backs, or connected at all. Different turtles, different real patterns, are simply found at different scales without being supported by or composed of others. But there is an obvious tension between the pragmatic scale-dependence of these patterns and the claim that they are real. In fact, the patterns are ‘real’ only in the minimalist sense that they are not mere patterns in the mind that can be eliminated by being compressed into a more efficient description. If we stumble into the real pattern known as a table, it blocks our progress or injures us, which proves its mind-independence. Let’s ignore for now that the ambiguous status of causation in the book ought to make it difficult for the table to do any such thing and ask instead why there are supposed to be real patterns *in the plural*. If the world is structure, and if structure is a relational whole broken into discrete patterns only at the specific scales occupied by human or animal observers, then there is a problem with knowing how patterns can exist in the plural, and with the related issue of why there are different scales in the first place. If my friends and I and my pack of wild dogs and their fleas all witness the world at different scales, this means that there are discrete observers and perspectives in the world. And if there are discrete realities of this sort,

then there must already be individuals, whether or not they are the enduring things of traditional substance theory.

There are two options here, and both face insuperable difficulties. The first option is that structure in its own right is already broken up into diverse patterns and scales. But in this case it would have individual (or at least ‘pre-individual’) zones, and there would be no reason not to use the term ‘things’ for the various humans, monkeys, and zebras observing patterns at various scales, as long as our definition of ‘thing’ is broad enough. The second option is that structure itself *does not* have discrete zones, with the result that specific patterns must emerge for the first time only when paired with the observers who confront them. This carries the additional difficulty that the observers themselves would also have to surge into existence from an incompletely differentiated structure. But even if we think there is no difficulty with a real pattern and its observer emerging simultaneously, it is unclear why a global relational structure would ever generate discrete scales of observers and observed at all.

Yet there is an even more basic problem with this model of the world, which is that Ladyman and Ross never fully clarify the relation between patterns, structure, and mathematics that lies at the heart of their metaphysics. Recall that they insist on real patterns (“real turtles”) all the way down. But they also say there is structure all the way down. And this leads to one of several surprisingly tough questions aimed at Ladyman by *Collapse* in their 2009 interview of him. Namely:

“what exactly is it which [your philosophy] affirms to be ontologically fundamental when it insists that ‘structure’ is all that there is? Is it mathematical structure itself, or is it those ‘extra representational real patterns’ which mathematical structures are taken to represent?” (Ladyman, 2009, pages 165–166).

Ladyman responds with refreshing candor: “this question gets to the heart of the matter and I must confess that I am not sure what the answer to it is” (page 166). The reason for Ladyman’s uncertainty is not that he accidentally froze up with anxiety during the interview; in fact, he and Ross are already quite candid on this topic in their book. There they say that physical structure is in fact physical, not just mathematical. But what exactly makes it physical rather than mathematical? Their reply: “That is a question we refuse to answer” (Ladyman and Ross, 2007, page 158). A strange response from such hardcore rationalists! But at least they attempt a justification for their remarkable answer: “The ‘world-structure’ just is and exists independently of us and we represent it mathematico-physically by our theories” (page 158).

In passing, they bluntly concede that this sounds Kantian. For it now sounds as if structure were nothing more than a noumenal physical realm that can never be approached, although they are absolutely sure (as Kant was not) that it contains no individuals. After all, they are convinced in advance that individuals are merely the folk product of the manifest image. They see no more reason to be “agnostic” about the possible existence of objects than about “two-headed gerbils that sing the blues” (page 131). And obviously they *cannot* endorse such a Kantian model of unknowable noumena: for this would defeat the very purpose of structural realism, whose whole *raison d’être* is to assert that even obsolete scientific theories have some sort of mathematical contact with the real that can survive the very downfall of these theories. During four paragraphs of damage control late in the book, they ask: “since we can only represent the real patterns in question in terms of mathematical relationships, in what sense are the patterns ‘real’ other [than] that in which, according to Kant, noumena are real?” (page 299). They answer with something no better than table pounding: “our differences from Kant are profound. Unlike Kant, we *insist* that science can discover fundamental structures of reality that are in no way constructions of our own cognitive dispositions” (page 300, emphasis added).

And here we find the deadlock not just of this single book by Ladyman and Ross but of materialism as a whole, which they are simply more candid than others in revealing. Namely, there is an irresolvable tension between realism and verificationism, two principles that the authors want to embrace simultaneously. In fact, they are quite proud of having combined them in what they see as an original fashion, as is clear from the closing paragraph of the book:

“We thus conclude that what we defend in this book, having assumed naturalism, are verificationism and realism. Since these two things have generally been thought to be incompatible, it is no wonder that a significant logical space in the metaphysics of science has gone unexplored, and some conundra have seemed insurmountable” (page 310).

But far from being new, I would suggest that the attempt to combine the real (as in realism) with an accessibility of the real (as in verificationism) in one and the same philosophy is the key feature of materialism as defined at the outset of this paper. At the outset, Ladyman and Ross want a real that is physical rather than mathematical—even though they “refuse to say” what that difference would mean, and sometimes “confess” that they are not sure. When it is observed that this sounds like nothing more than the inaccessible Kantian noumenon, they change tack and assert: no, because our knowledge is of reality itself and not just of structures imposed by the human mind. For despite being verificationists, they insist that they are not *positivists* and that there is in fact a real world outside our representation of it. But we have seen that this never allows them to attain anything more than a weak sense of realism.

In the end, it becomes impossible to determine whether Ladyman and Ross are ground floor or first floor materialists. From one side they look more like neo-Fichtean (or first floor) than neo-Kantians (ground floor) when they edge toward the notion that the real is what can be mathematized, despite the watery caveat that some information is irretrievably disconnected from us (the number of Napoleon’s hairs, the interior of black holes). But from another angle, when they shy away from the consequences of this mathematization of the universe and its markedly antirealist implications, they veer toward Kant and posit a noumenal physical structure beneath the mathematical one—all while refusing (not just forgetting but *refusing*) even to say in what the difference consists. Thus, the world of Ladyman and Ross is made up of two zones that mutually implode into one another. The first is the luminous mathematical district of the known and the knowable, dominated by the greatness of Science. Such knowledge may never be final, but it does always have some significant contact with the real thanks to a mathematical core that endures into next-generation scientific theories. But this cannot be the whole story, or we would have a purely mathematized universe resulting in either Berkeleyan idealism or neo-Pythagorean mathematism. Thus, Ladyman and Ross posit a nonmathematical real is to add bulk and *gravitas* to what would otherwise be unmitigated mathematical idealism. In short, the world of Ladyman and Ross offers only two basic ingredients: (a) real physical structure, and (b) human or animal observers who stand at a specific scale and thereby encounter mathematical structure in the form of representational real patterns. There can be no possibility of individual things lying outside this human-world or animal-world pair, because such things are supposedly just “epistemological bookkeeping devices” for those who encounter them. Everything boils down to a correlation between physical structure-in-itself and mathematical structure-for-living-creatures, even though the mathematical is also granted partial contact with the physical. In short, this purportedly realist philosophy of science quickly reverses into a form of *correlationism*: a term that we normally do not associate with scientific naturalism, to say the least. It should no longer be a surprise, as it once used to surprise me, that so many philosophies

of directly correlationist lineage also call themselves ‘materialist’, with Žižek, Badiou, and Meillassoux all outstanding examples of this trend. It is true that these three figures are not strictly correlationists in Meillassoux’s sense, given that correlationism as he describes it is a skeptical/agnostic position marked by finitude, whereas Žižek, Badiou, and Meillassoux all belong to a post-finite landscape moved by the spirit of the absolute. Nonetheless, all are correlationists in the wider sense allowed by Meillassoux himself. For in fact he admits to finding it quite compelling that to think something outside the circle of thought thereby converts it into a thought. Hence we cannot escape the correlational circle of thought and world. Philosophy must proceed as an ‘inside job’, with no reference to relations between inanimate things apart from human access to such relations.

Now, Ladyman and Ross are sufficiently proud in their realism that they would never openly accept the correlationist argument. Yet in practice, their metaphysics turns out to be indistinguishable from the view that ‘to think an unthought X is to turn it into an X that is thought’, and which always tries to avoid charges of idealism by appealing to some excess beyond what is currently formalized: Žižek’s real-traumatic kernel, Badiou’s inconsistent multiplicity, Meillassoux’s virtuality. The Ladyman and Ross version of this excess is the physical structure lying beyond mathematics, which they openly refuse to describe. As for correlationism, I leave it to another occasion to say more about how the Žižek/Badiou/Meillassoux first floor materialism also implodes into the ground floor; my task in this paper was to depict the converse movement. But what both positions share is their combination of a lucid sphere of human intellection, with a largely formless physical remainder left over as their supposed ‘realist’ component. Meanwhile, both skip the level of individual objects altogether. Stated more simply, what materialism really means is this: *idealism with a realist alibi*.

As for Ladyman and Ross, how could these authors be led to such an impasse that they either refuse to reveal or to confess their ignorance as to the central distinction of their own philosophy, in which real patterns of different scale magically appear to specific people and animals who this philosophy grants no room to exist in the first place? The answer is obvious: it is their specific brand of *scientism* that leads them to this juncture. The more general point of their scientism is that metaphysics should be based on or at least inspired by science and should limit itself to attempts to unify the various branches of science at any given moment in history. Their more specific point is that quantum theory does not allow for individual things, and hence metaphysics must disqualify them, too. The latter point is easily disposed of by noting that this is by no means the universal interpretation of quantum theory; if experimental results have not yet disproven the metaphysics of Ladyman and Ross, its aforementioned ‘armchair’ contradictions certainly do. But as concerns the more general point: *why* exactly is it the mission of philosophy to limp along after the science of its time? It is not clear why philosophers must prematurely unify their own speculations on space, time, and substance with those of a quantum theory and relativity that are not yet even unified with each other. In fact, there is little evidence that the scientists even want philosophers to limp along after them. Despite the strange claim of Ladyman and Ross that a certain suggestion by philosopher of biology David Hull was “one of the *rare* cases of philosophy influencing science” (page 296, emphasis added), it is well known that Albert Einstein profited greatly from his studies of Kant and Ernst Mach, as did Niels Bohr from reading Søren Kierkegaard. The relativity of time and space was first proposed by G W Leibniz, perhaps from a miserable armchair, and certainly not from a laboratory. A related moment occurs in the *Collapse* interview, when Ladyman is asked about physicist Carlo Rovelli’s statement that

“if a new synthesis is to be reached, I believe that philosophical thinking will be once more one of its ingredients As a physicist involved in this effort, I wish that philosophers who are interested in the scientific conceptions of the world would not confine themselves to commenting [on] and polishing the present fragmentary physical theories, but would take the risk of trying to look *ahead*” (Ladyman, 2009, page 182, emphasis in original).

In response, Ladyman fires back with the weakest answer in his otherwise skillful interview. He responds that “some philosophers have the capacity to work at the cutting edge of physics or theoretical biology, and have done so and of course should continue to do so” (page 183). But this simply dodges the point. Rovelli was not asking philosophers to work at the cutting edge of these sciences, but to work *beyond* the cutting edge. Yet this is a possibility of which Ladyman cannot even conceive, since he assumes that any metaphysics operating independently of present-day science is merely armchair philosophy. But let’s not forget that the word ‘armchair’ is no argument. It is a clever verbal weapon, useful for scoring debating points. But in intellectual terms it is really no better than if I were to refer to the Ladyman/Ross position as “Bunsen burner realism”, another clever insult with which I could score debating points in turn. Moreover, their claim that philosophical *intuitions* are invalid since what is taken to be intuitive changes historically and geographically is a red herring, and it relies on the ambiguous meaning of a priori as both ‘prior to experience’ and ‘necessary’. For instance, the fact that Heidegger’s tool-analysis may not seem intuitively plausible to the great Chinese philosophers of 2750 AD does not entail that his concept of readiness-to-hand must be subjected to empirical tests today. There is plenty of a priori work to be done in philosophy, and plenty of rigor to be found in a war of competing a priori intuitions. The problem with the philosophy of Ladyman and Ross stems less from any failure to unify the scientific facts of the present day than from their insufficiently imaginative a priori deliberations.

And here I have a specific a priori reflection to offer, one that was neither conceived nor written in an armchair. We have seen that Ladyman and Ross are not sure whether extrarepresentational real patterns are made of the same mathematical stuff as knowledge, or whether they exist in some other physical fashion whose difference from the mathematical they remain unable (or unwilling) to specify. In either case they are sure that real patterns are not *individuals* but part of a relational or contextual structure. For them nothing makes sense when taken out of context: certainly not airlines risk derivatives markets, but finally not even pandas. A pattern, for these authors, is a bundle of relations no less than a bundle of qualities. The reasonable objection that there can be no relations without relata is quickly dismissed by the authors as an old-fashioned gimmick, in the eye-rolling spirit of ‘here we go again’. And yet they must tacitly concede that our knowledge of specific subject matter is never exhaustive at any given moment; science changes and advances. For this difference between representational and extrarepresentational real patterns is the key to their whole position, since it is all that allows them to maintain realism against an idealism that would hold that whatever science thinks at any given moment is always true. Our knowledge of the planet Neptune is surely incomplete, and hence our current mathematization of that planet is at best a translation of the real pattern Neptune itself, even if it were granted that certain mathematical aspects of our current translation will survive into any future understanding of it. In short, the real pattern Neptune is something more than our or anyone else’s *relation* to it. This means that they already accept a distinction between relation and relata at one level, at least. But as soon as representation is taken out of the picture and we move to the realm beyond representation, we supposedly find that Neptune belongs

to a giant relational structure rather than being a discrete individual. In other words, although Neptune cannot be dissolved into observers' current relations with it, Neptune itself is supposedly dissolved into the relational structure of the world, having no status as an individual except when viewed by an observer from a specific scale. In this way, representation is granted an almost magical power to create distortions by making a unified relational structure falsely discrete. But this supposition reawakens the mystery of how a continuum of relational structure without individual zones would differ from the monism of a whole-without-parts. There is the further mystery of why such a structure would fragment into specific pieces for an observing entity, and the related riddle of why such an observer would be distinct enough from the rest of the structure to occupy a specific scale to begin with.

Moreover, the clearest example offered by Ladyman and Ross in defense of relationalism does not accomplish its intended labor. I refer to their claim that the market for airlines risk derivatives cannot be imagined as situated six billion years earlier in its light cone, given how dependent this market is on its relational context. But this claim is based on a typically ambiguous use of the word 'relational', one that is quite often found in such arguments. After all, to move this market six billion years backward in time would amount to moving it to a place where the Earth itself does not exist—much less airlines, the insurance industry, and a populace willing to invest in exotic financial markets. Obviously, no one would claim that the derivatives market could exist under those conditions. But neither would anyone claim that the *panda* could be moved back six billion years if its body parts were left in the present. In other words, the thought experiment is only fair if an entity is subtracted from its 'foreign' relations with other things. The fact that individuals are all dependent on the 'domestic' relations of their own pieces is a different problem. The fact that I cannot exist if all my internal organs are removed does not entail that I am not the same person when removed from Cairo or Dundee.

If we try a less radical experiment and simply imagine the panda and the derivatives market on a day-to-day basis in our own time, we can see that their context is *constantly* shifting without the panda or the market thereby being destroyed. New investors appear and purchase and discard shares in the market; the supply of bamboo waxes and wanes; governments rise and fall; the weather changes; hairs fall from the head of Wellington's descendants; and babies are born and elderly sages perish. All these occurrences are certainly part of the 'context' of both the panda and the derivatives market, yet it would be purely arbitrary to say that each of these changes automatically alters the panda and the market. Assuming that the market is as real as the panda, as the Ladyman/Ross rainforest certainly allows, both must be robust enough to endure at least a limited number of external shocks, or they would not differ from anything else in the first place. The wider philosophical point is this: there is not just a difference between Neptune and our current scientific knowledge of Neptune; there is also a difference between Neptune and its context. Uranus and Pluto do not drink Neptune to the bottom of the glass any more than we do.

5 In conclusion

There are two key problems with the Ladyman/Ross philosophy described in this article. First, it allows for no genuine plurality in its model of the real. Second, its concept of reality is insufficiently deep. Let's take these points briefly in order. Perhaps every reader is easily persuaded that the ancient Greek *apeiron* model of the real is hopelessly abstract. If the world itself were really just a monolithic lump, it is impossible to see why there would be myriad separate phenomena for an observer, especially since that observer should already have melted into the lump along with the

rest of the cosmos. And this is precisely why no one openly embraces the *apeiron* as a model of the real anymore, with the possible exception of the brave young Emmanuel Levinas in *Existence and Existents* (1988). Instead, we now meet with more sophisticated models of a real world without full-blown individuals. These models invariably try to have it both ways, blending the continuous with the discrete by means of initial fiat alone. Consider Gilbert Simondon's "pre-individual" (2005), which displays both aspects at once, or Manuel DeLanda's (2002) Bergsonian references to a "heterogeneous yet continuous" realm. Consider too the 'structure' of Ladyman and Ross, which is a totally relational structure, but one that is also supposedly blessed with a *multitude* of real patterns. The problem is that there is genuine strife between the continuous and the discrete, and it cannot be resolved simply by positing a magical underground kingdom where cake is both eaten and preserved. It is instead a genuine paradox, as seen from the tortuous labors of Aristotle's *Physics* (2008) on up to today's quest for the elusive quantum gravity. Any philosophy must find some way to account for both the quantized and the continuous aspects of the world, but not by programming their synthesis into the game in advance. For there is a paradox here, and work to be done. We must work our way up to a resolution of this problem, and not by claiming that the puzzle is an easily dismissed 'pseudo-problem'. And since all will agree that the idea of a monolithic world-lump magically reversing into a plurality of appearances is incoherent, this leaves us with the sole remaining option that the world in itself is many. Contra Ladyman and Ross, the world swarms with individuals. And since it would be strange to hold that these individuals meet up only in our minds, we need to reopen the theme of causation between inanimate things as a key philosophical topic for our time. Objects are not a gullible fetish resulting from a sad, reactionary obsession with the manifest image. Instead, individuals are needed in philosophy due to the futility of all other options.

My second major complaint about ground floor materialism (applicable also to the first floor kind) is that its sense of the real is insufficiently deep. When the real is made commensurable with knowledge of the real, it survives merely as a phantom, an alibi consisting of just one memorized line: "I am not an idealist." It is the table on which we bang our knee, proving itself to be more than a dream. It is the physical structure that differs from mathematics in ways that cannot be revealed or even discussed. It is the formerly excluded multiple erupting to shake up the boring state of the situation. It is the traumatic-real kernel leaving us wounded and in search of the spear that smote us. None of these are sufficient models of the real, not only because they grant no plurality to the real but because they leave it too commensurate with our *knowledge* of it, even when it comes from the outside.

Let's imagine that we were able to gain exhaustive knowledge of all properties of a tree (which I hold to be impossible, but never mind that for the moment). It should go without saying that even such knowledge *would not itself be a tree*. Our knowledge would not grow roots or bear fruit or shed leaves, at least not in a literal sense. Even in the case of God, the exhaustive knowledge of a tree and creation of a tree would have to be two separate acts. Now, it has sometimes been objected to this point that it is a straw man. After all, who confuses knowledge of a tree with an actual tree? The answer, of course, is that *no one* does, since no one could openly identify a thing with knowledge of it and still keep a straight face. Yet the point is not that people defend this view openly, which they do not. Rather, the point is that many people uphold a model of the real that *entails* that knowledge of a tree and a real tree would be one and the same, and hence their views are refuted by *reductio ad absurdum*. Namely, if someone holds that there is an isomorphic relationship between knowledge and reality, such that reality can be fully mathematized, then it also follows that a perfect

mathematical model of a thing should be able to step into the world and do the labor of that thing. But this is absurd. Every model we form of a thing is an oversimplification: a *translation*, to use Latour's terminology. And if even the exhaustive, godlike knowledge of a tree does not add up to a real tree, the point is all the more evident in our lesser everyday sorts of knowledge. The real object is invariably withdrawn from all access. It is unified (Harman, 2007a), and hence we cannot even say that it is known with 78% or 83% accuracy, since we cannot even have *partial* knowledge of a thing that is one. For in the strict sense, insofar as an object is one, it has no parts (Leibniz, 1989). But just as our encounter with objects can only be a kind of translation, the same holds of the relations of objects among each other: as they cut, break, burn, and melt each other according to the same rules by which human scientists, mystics, carpenters, and clowns turn objects into caricatures.

In short, materialism must collapse into object-oriented philosophy, and this holds for *both* families of materialism. Although object-oriented ontology (or OOO) remains a minority camp even within speculative realism, let alone continental philosophy or philosophy plain and simple, there is no good alternative to the OOO model of a real world deeper than all access, broken in advance into individuals, each withdrawing from the other no less than they withdraw from us, accessible through allusion rather than direct contact, and perhaps approachable only with a good deal of the 'poetry' to which some concede no cognitive value at all (Harman, 2007a). It is a philosophy in which to be *does not* mean 'to be a real pattern', but to be a unicorn roaming across bridges and lunar craters, unable to make contact with anything else that exists.

The slogan that we cannot think an unthought X without turning it into something thought still has tremendous prestige in contemporary philosophy, and it is vehemently defended by many of our best thinkers both young and old. And yet I must oppose it, not least because I find it historically troubling. In asserting that what is thought is thereby converted entirely into thought, and that what lies outside thought must always remain unthinkable, the correlationist rejects the etymological sense of the word *philosophia* as that which both has and does not have wisdom and therefore *loves* it. In short, the correlationist unwittingly embraces Meno's paradox: whatever we have we already have, and whatever we do not have we can never obtain. At the risk of sounding pious and saccharine, in the debate between Meno and Socrates I will always choose Socrates. Philosophy remains the *love* of a wisdom that is never attainable: it is neither a wisdom about thought nor a wisdom about nature nor a wisdom about what can be mathematized. And although it is no longer controversial to say that philosophy should not be the handmaid of theology, we should beware instead lest it become the handmaid of physics, mathematics, sociology, or politics. Philosophy is the handmaid of nothing: for it is not wisdom, and must not serve anything that claims to be wisdom. And furthermore, I am also of the opinion that materialism must be destroyed.

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