

Science, Agency, and Ontology: A Historical Materialist Response to New Materialism

Abstract

In recent years the work of a diverse range of thinkers has been grouped together under the label 'new materialism'. This article offers a critical introduction to new materialism that challenges its understanding of historical materialism. It aims to demonstrate not that historical materialism is superior to new materialism, but rather that the latter would benefit from engaging with rather than ignoring or dismissing the former. It begins by defining new materialism in relation to its reappraisal of science, its concept of agency, and its underlying ontology. Second, it locates new materialism by demonstrating how and why many new materialists are hostile to historical materialism. Finally, it responds to new materialist criticisms of historical materialism, arguing both that there are potential areas of agreement between the two materialisms and that historical materialism offers valuable resources for analysing historically specific and asymmetric power relations.

Science, Agency, and Ontology: A Historical Materialist Response to New Materialism

In the final two decades of the twentieth century, radical Anglophone social and political theory frequently took its cue from post-structuralism, with its emphasis on the discursive and linguistic production of subjectivity. In contrast, numerous commentators have suggested that the first few years of this century have witnessed a materialist turn within the humanities and social sciences, with a new interest in the relevance of the material world to social and political concerns (e.g. Coole and Frost, 2010; Joyce and Bennett, 2010; Dolphijn and van der Tuin, 2012; Braun and Whatmore, 2010). This 'new materialism' is a broad movement. It is transdisciplinary, advanced by geographers, anthropologists, philosophers, sociologists and, increasingly, political theorists. The names associated with it include Bruno Latour, Manuel DeLanda, Jane Bennett, Rosi Braidotti, Graham Harman, and Karen Barad. These thinkers do not always agree with each other and they would not all necessarily accept the label 'new materialist'. Their work is conducted under various names: speculative materialism, vibrant materialism, weird realism, actor-network theory, assemblage theory, and so on. But while these names do not refer to identical methodologies or projects, they do reflect a kind of common atmosphere or shared problematic. That something called 'new materialism' exists is confirmed by the increasing number of books, conferences, roundtables, and journal editions that are dedicated to this phenomenon.

This article offers a critical introduction to 'new materialism', and it does so by relating it to an alternative, older materialist tradition, namely the historical materialism developed by Marx and his successors. Beyond its enduring influence throughout the social sciences, there are two reasons in particular for turning to historical materialism. First, because it is also a *materialist* theory it provides a useful point of comparison from which to evaluate the novelty and value of new materialism. Second, new materialist thinkers have often been highly critical of Marxism, and those criticisms deserve a response. In offering such a response, I will argue not that new materialism has nothing to teach us, nor that Marxism can teach us everything, but that we should be careful to resist the potential marginalisation of historical materialism by new materialism. This is, therefore, an invitation to dialogue: my argument is that new materialists would benefit from engaging productively with rather than dismissing or ignoring historical materialism.

Because it is such a large and amorphous body of thought, I begin the article by identifying what I mean by 'new materialism', defining it by reference to three criteria: its reengagement with science; its reconceptualisation of agency; and its reliance on a 'flat' ontology. Each of these three criteria is linked by an understanding of matter as active and creative rather than passive and inert. I then locate new materialism by exploring its relation to the historical materialism of Marxism, demonstrating that the former has been consistently

hostile towards the latter: new materialists have rejected the Marxist approach to science, its notion of agency, and its underlying ontology. Finally, I offer a response to new materialism from the perspective of historical materialism, arguing that while new materialists make some valid and useful claims, they have frequently done so at the expense of a caricatured version of historical materialism. As such, they have failed to recognise that historical materialism shares many of their aims and has even anticipated many of their central insights. At the same time, however, the two approaches are distinct. Whereas new materialism essentially defines materialism in a relatively conventional way – as philosophical reflection upon the nature of matter – *historical* materialism seeks not to (re)define matter but to interrogate the historically specific *material conditions* of human production and reproduction, and hence the material conditions of the development and uses of science, the production and role of objects and agents, and our labour within and upon nature. This, I will argue, means that historical materialism is better placed to analyse the historically variable power relations that permeate science, agency, and human-nonhuman relations.

Both historical materialism and new materialism are of course highly diverse bodies of thought, such that it might even be claimed that it is neither feasible nor desirable to try and compare them. But rather than trying to provide a definitive account of historical materialism, my aim is to draw upon a range of Marxist writers in order to formulate and defend a notion of historical materialism that is more nuanced and sophisticated than that which is attacked by new materialism. This will be a selective interpretation of historical materialism – but, given the tensions and inconsistencies within Marx’s oeuvre, let alone within the Marxist tradition as a whole, *any* account of historical materialism must necessarily be selective. As for new materialism, whilst its diversity is incontestable, I maintain that common elements can be identified, and it is to those common elements that I now turn.¹

Identifying new materialism

There are three central features of new materialism: a reappraisal of science; an emphasis on the agency of all things; and, underpinning all this, a ‘flat’ ontology. To explain these

¹ Beyond the criticisms of historical materialism found in new materialist texts, a small number of other essays have looked at the connections between historical and new materialism, but they do so in ways that differ from this article: Frow (2010) ultimately comes down in favour of new materialisms; Edwards (2010) seeks to supplement historical materialism to make it more compatible with new materialism; Washick and Wingrove (2015) are far more critical of new materialism, but while they touch on historical materialism they offer no systematic analysis of its claims or strengths; Cotter (2016) and Rekret (2016) write from a Marxist perspective but straightforwardly reject new materialism.

features, it is helpful to place new materialism in its appropriate contexts – both intellectual and socio-political.

Intellectually, the novelty of new materialism can be highlighted by contrasting it with post-structuralism. New materialists have not straightforwardly rejected post-structuralism: many post-structuralist thinkers – notably Foucault and Deleuze – display a materialist concern for the body and non-discursive practices, and to this extent they have had an important influence on new materialism. If post-structuralism is problematic for new materialists, it is insofar as it is part of a cultural or linguistic turn that foregrounds textual and discursive analysis. New materialism refuses the dominance of these hermeneutic and deconstructive approaches (Braidotti, 2012, p. 21; DeLanda, 2008, p. 160). Post-structuralism tended to emphasise the difficulty or impossibility of representing the real world, and hence treated the claims of the natural sciences with suspicion or indifference.² In contrast, new materialists engage much more constructively with science, and often describe themselves as realists (Latour, 2004, p. 231; DeLanda, 2006). This is, however, a ‘speculative’ or ‘weird’ realism: it insists that there is a material reality independent of human minds, but claims that this reality is more complex, heterogeneous, and unstable than traditional realism allows (Harman, 2010).

If new materialists have turned away from textualism and deconstruction in this way, it is not simply because they find them theoretically untenable, but because they view them as ill-equipped to respond to or explain our current socio-political context (Coole and Frost, 2010). Many post-structuralists simply bracketed the questions of science and reality. Increasingly, however, the political problems that we face are inextricably entwined with science and are undeniably real, bringing into question the value of theories that focus on the linguistic or social construction of our world. A whole range of developments – climate change, digital communications, genetic modification, new pharmaceutical drugs, cloning, and so on – call for a re-engagement with science. It is not simply that these developments raise new and challenging ethical and political dilemmas. More than this, new materialists argue, they call on us to rethink our basic categories. For example: in an age of bioengineering, how do we define life, or distinguish the natural from the technological, or the human from the nonhuman? It is not only conceptual boundaries that are broken down in this way, but also disciplinary ones: climate change, for instance, is both a natural and a socio-political phenomenon, and understanding it will require both scientific and social scientific analyses. For Latour (1993), it is characteristic of the modern world that it creates these ‘hybrids’ that are *both* natural *and* social and which resist the equally modern drive to

² There are of course exceptions to this claim – but the exceptions are thinkers such as Foucault and Deleuze, who as noted are unusual among post-structuralists in their influence on new materialism.

purify and distinguish nonhuman nature (left to the natural sciences) from human society (reserved for the social sciences and humanities).

This erosion of disciplinary boundaries is reflected in the way that new materialists draw upon science as a philosophical resource. Post-structuralist philosophers tended to turn to art and literature for inspiration, and if they discussed science at all it was to delimit its boundaries and curb its ambitions. In contrast, new materialists suggest that we should aim not 'to use the Humanities to think about the Sciences but to use the Sciences to rethink the Humanities' (Barad, 2012, pp. 50-1). By drawing on advances in the natural sciences, especially biology and physics, new materialists develop a portrait of a material world that is more dynamic and volatile than is presented in the traditional, mechanistic view (Coole and Frost, 2010, pp. 7-15). In doing so, they propose a reconceptualisation of matter that has important consequences for how we think agency. The Western philosophical tradition has tended to treat matter as something that is brute and inert: a passive substance to be mastered and manipulated by active human subjects. In this view, if matter acts upon us at all then it is only as a recalcitrant context that constrains our freedom. In contrast to this lifeless matter, new materialists posit what Bennett (2010) calls a vibrant materiality: the non-human world of things is itself creative and constitutive, producing effects and forming connections. Even apparently stable, inorganic entities such as metal are mobile and active. Matter does not need humans to shape or command it, because all matter has generative properties of its own (DeLanda, 2012, p. 43).

This vibrant materialism complicates our understanding of agency in at least two ways. First, it undermines claims to human mastery. If the material world is not simply passive, then our actions will have unpredictable consequences which we may not have wanted and which we may not be able to master. Understanding this point (new materialists would argue) is not merely an abstract philosophical requirement, but an urgent political priority. Many of the unintended outcomes of our actions – including loss of habitat, species extinction, climate change, and environment pollution – undermine our delusions of mastery in the most fundamental sense that they threaten our own existence. The point here is not so much that our domination of nature has led to our downfall, but that those hubristic claims of domination are exposed as hollow now that we have unleashed processes and events that we may be unable to control or reverse.

To the extent that the material world itself acts in ways that we cannot predict or control, we can therefore say – and this is the second point – that the concept of agency is extended beyond human beings. We do not live in a world in which humans act and non-human matter passively reacts. Animals, weather systems, oceans, even rocks and minerals, do not merely respond to our actions; they act in their own ways, with their own resources and trajectories. In Latour's (2013, p. 161) terms, nonhuman beings are

articulable, capable of making us act as much as responding to our actions. Traditionally, the notion of 'agency' has brought with it claims of intentionality: we are agents insofar as we intend to act. In order to avoid these traditional connotations, new materialists have coined alternative concepts. Bennett (2010), for example, adopts Latour's concept of an 'actant', defined as something that acts, makes things happen, or produces effects – such that an actant can be an animal, plant, mineral, or chemical as much as a human being. The claim is not so much that each actant is an agent but 'that agency itself is located in the complex interinvolvement of humans and multiple nonhuman actants' (Bennett, 2015, p. 88n10). Barad (2007, p. 33) uses the term 'intra-action' to signify '*the mutual constitution of entangled agencies*', or the way in which agency emerges through intra-action, rather than preceding an *interaction*. If agency incorporates the nonhuman in this way, then the association of agency with intentionality is undermined in another sense as well. We must admit not only that our intentions can be thwarted by the actions of nonhuman things, but also that those intentions are themselves ultimately the product of the actions of non- or sub-human actors, namely the various chemical, hormonal, and electronic interactions that take place within our own bodies and brains. In other words, not only are we surrounded by competing actors, we are inhabited by them as well (Bennett, 2015, pp. 86-87).

This new approach to agency is both based upon and calls for a specific ontological perspective. To claim that matter is vibrant and that everything has agency is to demolish certain philosophical hierarchies and to place all actants on an equal footing. This is reflected in the new materialist call for a 'flat ontology' (DeLanda, 2002; Latour et al, 2011, p. 89; Harman, 2010, p. 183). The central claim is that although entities may differ in terms of their capacity to produce effects, no entity is any more real than any other. Latour terms this position 'irreductionism': no entity can be explained by reducing it to some other primary reality (Latour et al, 2011, p. 27).

For Latour (1988, 2004) in particular, irreductionism necessarily means that we must abandon critique, precisely because critique has always proceeded by reducing one thing to another. The critical social sciences, Latour (1993) argues, have tended to take one of two paths: either they have tried to explain social phenomena in terms of Nature (as when, for example, poverty or gender roles or war are explained by reference to the natural laws of economics, evolution, or linguistics, etc.) or they have tried to explain natural objects in terms of Society (as when religious idols or consumer goods or works of art are explained as mere projections of human society and its interests and beliefs, without intrinsic properties of their own). Critique separates Nature from Society in order to explain one by the other, oscillating between a naturalistic reductionism and a sociological reductionism. This is why Latour's actor-network theory has proved so useful for new materialists: in place of the reductionism which relates everything to some pre-existing totality such as 'Society' or

'Nature', entities are instead placed within an *assemblage* or *network* in which each element is equally real. To rely on totalities such as Nature, Society, or The Economy is to indulge in what Latour (2013) calls 'bad transcendence': something which is at most the result of a series of concrete practices, interactions, and transformations is instead given as a prior foundation. Where bad transcendence claims that there are two levels or worlds, one of which is more real and which determines the other, flat ontology posits a symmetry between the human and the nonhuman, the social and the natural.

Locating new materialism

In summary, then, new materialism draws upon the insights of science to offer a new, 'flat' ontology that emphasises the agency of all things. Running through each of these defining elements of new materialism is a new notion of matter: it is by referring to the resources of contemporary science that we can escape the idea that matter is simply passive; if matter itself is active then we must extend and rethink our notion of agency; and such a concept of matter calls for an ontology in which the reality of all entities is acknowledged and which no longer separates Nature and Society. The thinkers of new materialism consciously situate their work within a materialist tradition: their writings are replete with references to Spinoza, Nietzsche, Deleuze, even Hobbes and Lucretius. There is, however, one significant materialist current that is not embraced: the historical materialism that originates with Marx. Although the editors of one important collection of essays try to associate new materialism with the recent revival of interest in political economy and even certain varieties of non-dogmatic or open Marxism (Coole and Frost, 2010, pp. 24-36), the attempt is unconvincing: if even a scholar like David Harvey can be called a new materialist, then the specificity and value of the term is diluted. In addition, it ignores the fact that a great number of new materialists begin with an explicit repudiation of Marxism. Manuel DeLanda (2008, 2012), for example, is quite clear that we need to reject Marxism. Similarly, Latour's (1993) reflections on the redundancy of critique begin from the alleged failure of socialism. This rejection of Marxism is not based on the contingent whims of a few individual new materialists: there are genuine and significant tensions between new and historical materialisms. In its development of a new approach to science, agency, and ontology, new materialism – albeit sometimes implicitly – tends to repudiate a historical materialist perspective.

As we have seen, new materialists distinguish themselves in part by their openness to science: they attempt to break down the traditional barriers between the physical or 'hard' sciences and the social or 'soft' sciences, often by appropriating scientific concepts.

Whereas it could plausibly be claimed that post-structuralism ignored or dismissed science, no such accusation could reasonably be made of Marxism. However, from a new materialist perspective Marxism's engagement with science has tended merely to replicate the critical reductionism identified above. On the one hand, many Marxists have performed a sociological reduction, in which science is reduced to its social and historical conditions, and Marxism is identified as the philosophy that can challenge the deceptions of bourgeois science and resist the dominance of instrumental reason. On the other hand, many other Marxists have performed a naturalistic reduction in which the scientific method is defended and celebrated as the sole gateway to knowledge of society, and Marxism itself is characterised as a science, able to develop laws of social and historical progress. This oscillation between historicism or constructionism on the one hand and positivism or scientism on the other has its roots in Marx and Engels' somewhat ambivalent attitude towards science. Whereas new materialists claim to be levelling disciplinary boundaries through cross-fertilisation, they can argue that Marxism only replicates the stale binary in which science is either exposed as the ideological reflection of its own conditions of emergence or venerated as the model for all knowledge.

For new materialists, Marxism likewise has an outdated understanding of agency. To an extent, the materialism of Marxism clearly disrupts conventional notions of the rationality and mastery of human agents. The Marxist claim that the human individual is a product of material forces and relations that may escape our control certainly undermines the traditional Cartesian subject. But new materialists could argue that it does not fundamentally alter the modern conception of agency. It remains a theory in which those material forces and relations are presented as structural constraints that limit or determine human action rather than as creative and self-organising actants (Bennett, 2010). At best, while there may be some acknowledgement that material things can act upon us, for historical materialism the agency of matter is always 'derivative of deliberate human agency': it is always an agency which is ultimately invested in things by humans, and it is seen as important only insofar as it affects humans (Frost, 2011, pp. 72-74). Arguably the ultimate aim for Marxism is for humans to regain rational control over both the natural world and our social relations: 'the full development of human mastery over the forces of nature, those of so-called nature as well as of humanity's own nature' (Marx, 1973, p. 488). The whole thematic of alienation and fetishism in historical materialism depends on the hope and expectation that one day 'the practical relations of everyday life between man and man, and man and nature, [will] generally present themselves to him in a transparent and rational form' and humans will regain 'control and conscious mastery' of social and natural life (Marx, 1976, pp. 171-3; Marx and Engels, 1976, p. 51). The critique of commodity fetishism expresses a desire for the restoration of a world in which man controls things rather than vice versa. In contrast, new

materialists have argued that, whatever its faults, contemporary commodity culture provides us with an opportunity to become enchanted by the animation of nonhuman beings (Bennett, 2001, pp. 111-130).

In short, new materialists suggest that although it recognises the influence of the material world, historical materialism continues to divide active human agents from an ultimately passive non-human matter in a hierarchical opposition: Man interacts with the natural world within which he is embodied, but ultimately he is (or should be) master of Nature. In Latour's new materialist terms, Marxism is typically *Modern*, denaturalising objects or naturalising society as is convenient: religious, cultural, and political phenomena are all explained away as distorted projections of our own *social* relations, yet at the same time society itself is explained in terms of economic forces that have all the power of *natural* laws (Latour, 1993, p. 36). Put another way, historical materialism operates with a topographical rather than a flat ontology, offering us a series of dualisms and hierarchies – between human and nonhuman, society and nature, base and superstructure, etc. (cf. Joyce and Bennett, 2010, pp. 5-6). Without a flat ontology, Marxism lapses into bad transcendence: it analyses political and cultural phenomena by reference to a concept of Society; in its reference to natural laws and its critique of alienation it relies on a certain notion of Nature; and ultimately it depends on The Economy as a catch-all explanatory device. The 'material' (it has been argued) functions for Marxism only as an index of some more fundamental and determinant reality (such as the economic relations of production), in the light of which 'the specificity of material things' is obliterated (Frow, 2010, pp. 33-34).

From the perspective of new materialism, not only the critical methodology of historical materialism but also the very object of its critique is an example of bad transcendence: to speak of 'Capitalism' is to rely on a reified generality, presupposing some pre-existent totality that explains everything else (DeLanda, 2008, p. 177). For new materialism, no such presupposition can be made: Capitalism – like the State, Empires, and Classes – is at most a result or effect of myriad interactions, mediations, and networks (Latour, 1993, p. 120). In this sense, 'capitalism does not exist' (Latour, 1988, p. 173): to talk of capitalism is to obscure the relations that we should be examining and to substantialise what are in reality supple and contingent attachments and interactions that can be easily made and unmade (Latour, 2013, p. 412).

According to new materialism, then, historical materialism has at least three major faults: it is torn between two incompatible views of science, both of them outdated; it privileges human beings as rational and masterful agents; and it relies on a dualistic and hierarchical ontology that separates non-human Nature from human Society. It is for this reason that for many new materialists Marxism is at best an anachronism. Conversely, Marxist critiques of new materialism have characterised the latter as mystificatory and

obscurantist (e.g. Cotter, 2016; Rekret, 2016). Even those who have tentatively suggested that a rapprochement between the two materialisms might be possible have tended to end up taking sides: Bennett (2001, pp. 116-121; 2010, pp. 58, 129n51) carefully distances her approach from that of historical materialism, while Coole (2013, pp. 460, 463-464) dismisses some of the central claims of new materialism. Yet while the tensions and differences between new and historical materialisms are real, there are also potential compatibilities, and insights to be gained on both sides. In what follows, I shall respond to new materialist criticisms of historical materialism not by rejecting new materialism, but by insisting on the continuing value of historical materialism.

Responding to new materialism

The new materialist criticisms examined in the previous section can legitimately be applied to certain arguments or tendencies within Marxism. But there is also a more productive reading of Marxism that can be undertaken. In this section I want to defend the relevance of historical materialism, both by highlighting potential areas of agreement and convergence between the two materialisms, and by showing that new materialist analyses themselves contain certain flaws, which historical materialism can help to address. The aim of this section is not to refute new materialism or to establish the definitive superiority of historical materialism, but to counter the dismissal of the latter by the former and open the way to a more productive dialogue.

Science

The new materialist re-engagement with science in many ways marks an improvement over post-structuralism, which too often was indifferent or even hostile towards scientific thought and practice. Correctly identifying the ever-increasing importance of science and technology to our lives, new materialists have resisted the separation of science and politics by emphasising their growing entwinement. This emphasis has manifested itself in manifold ways, but perhaps the typical new materialist move has been to argue that the proliferation of 'hybrid' entities and events must entail a blurring of the boundaries between intellectual disciplines: the humanities and social sciences, it is argued, must draw on the natural sciences as a resource for philosophical speculation, in particular the new understanding of matter (as active and creative) that is revealed or enabled by contemporary advances in physics, biology, the cognitive sciences, and information technology. As Braidotti (2013, p. 158) argues, 'the Humanities must adapt to the changing structure of materialism itself,

notably the fact that it is based on a new concept of “matter” and is both affective and auto-poetic or self-organizing’.

Historical materialism has taken an alternative approach: at its inception, it distinguished itself from eighteenth-century mechanistic materialism and from its positivist contemporaries precisely by its deliberate unwillingness to ground materialism in a conception of matter (Jameson, 1993, pp. 45-46). This is not because historical materialism is indifferent to matter or denies the presence or significance of the material world. To the contrary, historical materialists have consistently asserted the existence of a real and material external world accessible by knowledge (e.g. Althusser, 2011, pp. 133). Moreover, they recognise that matter is not merely passive or inert and waiting to be moulded by active human labour, but has its own laws, forms, and properties that limit and even determine our use of and interactions with matter (Schmidt, 1971, pp. 63, 76-77). But historical materialists have argued that it is difficult to found a consistent materialist method on the scientific concept of matter, because that concept is historically variable (Newton’s ‘matter’ is not Einstein’s ‘matter’) (Althusser, 2011, pp. 187-188; Schmidt, 1971, p. 64). Given that historical variability, ‘matter as such’ can only be an abstraction, an *idea* (and so arguably an unlikely candidate for the founding of a materialism). ‘Materiality as such does not specify, it is rather a *generic* attribute, a property common to *all* things’, and hence ‘[t]o say... that an object is material is still to say nothing’ (Colletti, 1972, pp. 5-6). What interests Marxists, therefore, is not the generic materiality of all objects, but the *material conditions* under which objects are produced or used.

Hence rather than basing their materialism on a concept of matter drawn from the sciences, Marxists have defined materialism as the analysis of ‘*material production*’ (Marx, 1973, p. 83): how human life is produced and reproduced in and through nature. As Alfred Schmidt (1971, p. 40) has put it: ‘Not the abstract nature of matter, but the concrete nature of social practice is the true subject and basis of [Marxist] materialist theory’. If this is a *historical* materialism, it is because it claims that these material conditions change through history, such that the task of the historical materialist is to examine the specific forms or modes of production. This understanding of materialism is ‘anthropocentric’ only in the very limited sense that it is an attempt to explain human history. But (certain comments by Marx notwithstanding) it does not imply that humans impose their will and mastery over a passive and subjugated nature. For historical materialists, humans produce only ‘under definite material limits, presuppositions and conditions independent of their will’ (Marx and Engels, 1976, p. 36): humans are themselves part of the nature within and upon which they labour and they are themselves transformed by that labour. What distinguishes historical materialism from new materialism, then, is not that the former contrasts an active humanity with a passive nonhuman world, but that it is more attentive to the historical variability of

human-nonhuman relations and to the forms of power and ownership with which those relations are imbued.

Instead, therefore, of turning to the content and results of science – utilising its notion of matter – historical materialism has examined science in terms of production. This means thinking both about science as a force of production – its role and impact within the wider productive process – and about the production of scientific knowledge itself. Hence rather than asking science what it can teach us about matter, historical materialism asks a different set of questions, such as: Where and how does the production of science happen? Who funds it? Who owns or controls the knowledge or technology that is produced? What labour relations does it involve and what power relations might it reinforce or threaten? These questions may of course be of interest to many new materialists. But it is hard to see how they can be answered without thinking about the historically specific relations of power and ownership within which modern science is embedded – without, in other words, thinking about the relation between science and capitalism, and the ways in which, as Marx (1973, p. 704) puts it, ‘all the sciences have been pressed into the service of capital’.

Such an approach is not necessarily incompatible with new materialism. Marxism – despite the claims of some new materialists – is not a form of social constructivism: it does not simply reduce science to its social context or make it the mere ideological reflection of whatever social conditions it has emerged from. To claim that science has developed within and supported capitalist social relations is not to claim that its results and conclusions are false, for it is precisely because it is true that science is useful (Sprinker, 1992, pp. 138-9). Given this, there is no reason why the humanities and social sciences should not borrow ideas and inspiration from the natural sciences. Indeed, this is exactly what various Marxists, from Marx onwards, have done: although they have not founded their materialism on a specific concept of matter, they have drawn upon and responded to developments in the hard sciences. In this way, historical materialists as much as new materialists have sought to resist the separation of science from society and politics. The advantage of historical materialism, however, is that rather than simply exploring new affinities or alliances between the natural and social sciences, it sets out to investigate the material conditions of the separation, asking what are the divisions of intellectual and manual labour that have led to the isolation of science (e.g. Sohn-Rethel, 1978). What forms of power have benefitted from that isolation? Hence rather than basing their materialism on an interpretation of science, Marxism offers a materialist account of the development and role of modern science.

Agency

As with its reappraisal of science, new materialism’s reconceptualisation of agency marks a qualified improvement over post-structuralism. For all its valuable insights into the

construction of subjectivity, the risk of post-structuralism is that it dissolves agency altogether, effaced by the discourses, practices, and power relations that constitute the subject. This is one of the most common criticisms of post-structuralism: if the subject is always the effect of something else, then how can it have agency at all? Yet although it certainly restores the centrality of agency, new materialism does so in a way that produces problems for the understanding and practice of politics. To illuminate these problems, we can use an example from Jane Bennett, whose approach to agency is typical of new materialism.

In her book *Vibrant Matter*, Bennett (2010, pp. 24-8) examines a North American power blackout that occurred in August 2003. For Bennett, the power grid that failed was an assemblage of different actants: it involved consumers, energy companies, and regulators, but also buildings, computers, coal, electrons, and so on. As such, it is not possible to identify a simple cause of the blackout: agency is dispersed among competing actants that are all equally real and which affect each other in complex and unpredictable ways. This means, Bennett argues, that it is impossible to assign responsibility to any one actor: we may have an impulse to blame rapacious corporations, lax regulators, or industry deregulation and privatisation, but we cannot reasonably do so when so many agents were involved.

As Bennett (2010, p. 37) herself notes, this argument echoes the assertion of the FirstEnergy corporation (the privatised company who owned and operated the grid) that 'no one really is to blame.' In other words, Bennett's new materialist insistence on the dispersal of agency uncannily replicates corporate obfuscations of liability.³ Bennett (2010, p. 38) defends her position by arguing that it resists the temptations of 'moral condemnation': we cannot legitimately identify a 'guilty party' when agency is so widely distributed. But, *pace* Bennett, our choice should not be between a cathartic but empty moral condemnation or a patient attentiveness to the extensive distribution of agency. To seek causes and establish accountability is not necessarily to blame or condemn an individual agent; rather, it means trying to establish a hierarchy of causation that can identify which actants are more important than others and that can grasp the structures within which they act. The ability to ascribe responsibility in this way is arguably a defining feature of any politically useful concept of agency. For example, it is no doubt helpful to examine the many actants causing climate change (carbon dioxide, combustion engines, power stations, etc.) – but addressing the problem ultimately entails establishing who or what is responsible (cf. Coole, 2013, pp. 460-461). Moreover, the typical forms of political action – whether the aim is fighting global

³ Similarly, the Coca-Cola Company seem to demonstrate their commitment to a new materialist theory of agency when they insist that the factors contributing towards obesity are so varied and complex that no one agent can be held accountable (Coca-Cola, n.d.).

warming, winning an election, resisting corporate power, or overthrowing a tyrannical government – more often than not require exactly the kind of united and directed forms of agency which are undermined and disabled by focusing on the plural and dispersed nature of agency: the purpose of effective political action is precisely to overcome the dispersal of agency in order to pursue a common aim (Noys, 2011, pp. 12-13; Whittle and Spicer, 2008, pp. 620-621).

The new materialist approach to agency risks depoliticising situations: if we do not know which actors are more important than others then we deny ourselves the ability to intervene in the hope of altering the existing balance of forces. Indeed, more than simply leaving us without the resources to analyse and resist asymmetrical power relations, in its emphasis on relations of becoming, contingency, change, openness, and suppleness, new materialism tends to obscure the very existence of enduring or rigid structures of power and the reproduction of relations of domination and exploitation (cf. Washick and Wingrove, 2015, pp. 65-71).⁴

Moreover, new materialism presents an *ahistorical* analysis which in emphasising the equal capacity of all things to act in creative and unexpected ways tends to naturalise the properties and capacities of actants, ignoring the different contexts in which they are developed and used (cf. Whittle and Spicer, 2008, pp. 613-617). It thus risks lapsing into what Marx (1973, p. 687) calls ‘crude materialism’, wherein the properties that an object possesses as a result of its place or role within a particular set of social relations are taken as natural properties that are inherent to the object itself. In contrast, historical materialism insists on recognising the historically specific material and social conditions under which objects are produced and the uses to which they are put within social production.

To use an example from Marx: in the well-known ‘Fragment on Machines’ in the *Grundrisse*, Marx (1973: 709) argues that the development of automated machinery, rather than aiding the worker, produces an even greater submission of labour to capital, and ‘*forces the worker to work longer than the savage does*’. But this is not because of any inherent or natural property of the machines themselves: to the contrary, Marx is clear that machines have the potential to save labour and create more free time, and will thus play a vital role in any post-capitalist society. The problem lies in the use of machines *as fixed capital*, i.e. the role they play within a specific set of relations of production. At the same time, however, this

⁴ In a recent response to the perceptive criticisms of Washick and Wingrove (2015), Bennett (2015, p. 85) does suggest that in *Vibrant Matter* she ‘should have made it clearer that my alternative to the politics of blame’ includes trying to discern which parts of an assemblage ‘are currently key “operators” of an assemblage’s effects’. But, regardless of whether or not this aim is present at all in *Vibrant Matter*, it is not wholly clear whether Bennett’s framework is capable of discerning ‘key operators’, or indeed what such discernment might involve and hence whether it addresses the criticisms that I have raised here.

does not mean that the material properties of machines are irrelevant: it is precisely because automated machines possess certain properties that they are the most appropriate means of production for capital to use. In Marx's analysis, there is always a reciprocal determination between technology and relations of production – or, more broadly, between objects and the forms of social existence within which those objects act.

In other words, what Marx calls the 'social form' of a thing is important: it matters whether an object is a simple use value, a commodity, or a piece of fixed or circulating capital. To return to Bennett: the actants in her failed power grid are not merely objects with their own varied characteristics, but play particular roles within a specific production process. Granted that some unpredictable event – a falling tree, an uncontrollable fire, a computer malfunction – might disrupt that process, the consequences of that event will be determined in large part by the specific social relations within which a set of actants have been brought together. From the point of view of historical materialism, the most significant factor in the power failure is that it occurred within a power grid owned and operated by a private company whose primary aim is not to generate electricity but to generate profit and which as a consequence did not prioritise maintenance of and repairs to the grid or the employment of the expertise necessary to deal with disruptions and crises. An electricity line is different from an electricity line acting as fixed capital: the properties of an object vary as their social form varies.

Ontology

The primary purpose of new materialism's flat ontology is to combat the dualism and transcendence of traditional ontologies, especially the way in which non-human Nature is divided from human Society, with one or the other side given as the foundation for everything else. But this (welcome) attempt to break down the Nature-Society dualism is closer to the approach of historical materialism than many new materialists seem to realise.

Although Marx does refer to the 'natural laws' of society, when he does so it is either to reflect the viewpoint of exploited workers who experience certain social conditions *as if* they were natural laws that they cannot control and must blindly obey (Marx, 1976, pp. 618, 899) or to resist the mystification of social developments into supposed laws of nature (Marx, 1976, p. 771). A key aim of Marxism is to counter the naturalisation of capitalist society. At the same time, this aim does not entail annihilating the natural, material, and non-human world by dissolving it into human social structures: it is unfair to align Marxism – as does Braidotti (2013, pp. 2, 84, 106), for example – with those forms of social constructivism that posit 'a categorical distinction between the given (nature) and the constructed (culture)'. Historical materialism does not reduce 'nature' to a mere social construction, or even

prioritise social structures over natural processes. As we saw above, historical materialists assert the priority of the real over thought. The 'real' that has priority here is not simply the world of our own social or economic structures, but the physical and biological forces and agents that continue to condition and qualify our lives (Timpanaro, 1975, p. 34).

It is certainly true (and it is also true that some Marxists are reluctant to acknowledge this) that there is an instrumentalist, Promethean tendency to some of Marx's writings, wherein there is a celebration of humanity's 'mastery' over nature, whose limits are overcome through the development of the forces of production (e.g. Marx, 1973, p. 705). This is, however, only a tendency, and it is outweighed by a broader recognition within Marxism of the necessary imbrication of human society and non-human nature. Since its inception, historical materialism has insisted that human and natural history are inseparable, such that the very distinctions between 'non-human' and 'human', or 'nature' and 'society', look untenable (Marx and Engels, 1976, p. 28). On the one hand, humans are themselves part of the nature upon which they depend for their production and reproduction and are transformed by labouring on nature; on the other hand, the whole of extra-human nature is necessarily mediated and modified by human production: 'the nature that preceded human history... is nature which today no longer exists anywhere' (Marx and Engels, 1976, p. 40).

Historical materialists have developed various formulations to try and capture the relations between nature and humanity which avoids positing them as two separate and independent entities. For example: the 'mutual interpenetration of nature and society within the natural whole' (Schmidt, 1971, p. 80); the 'mutual constitution of the social forms and material content of human-nature interaction' (Burkett, 2014, p. 18); 'the metabolic interaction of nature and society' (Foster, 2000, p. 140); 'the production of nature' (Smith, 2008); and the 'co-production' of 'humanity-in-nature' and 'nature-in-humanity' within the 'web of life' (Moore, 2015). My point here is not to examine these different accounts in detail or to assess their comparative merits, but simply to demonstrate that it is implausible to claim that historical materialism falls prey to the 'Modern' tendency to divide the human from the non-human.

To the contrary, it can be said that to a great extent historical and new materialisms share a common aim: they both want to break down the ontological oppositions between Nature and Society, Object and Subject, that have dominated modern thought. An advantage of historical materialism, however, is that rather than explaining this ontological divide by tracing its philosophical lineage (such that we can attribute blame to the errors of Descartes or Kant, for example), it explores the material processes whereby nature and society were divided. Hence its question is not so much how to reunite these two poles, but how and for what reasons they could have been separated in the first place (in the same way that rather than simply reuniting the humanities and sciences, Marxism asks what is the

history and function of their separation) (Smith, 2008, pp. 48, 246). As Marx (1973, p. 489) puts it in the *Grundrisse*:

It is not the *unity* of living and active humanity with the natural, inorganic conditions of their metabolic exchange with nature, and hence their appropriation of nature, which requires explanation or is the result of a historic process, but rather the *separation* between these inorganic conditions of human existence and this active existence.

The ‘separation’ here referred to by Marx is the separation of labourers from their natural conditions of production: a historic presupposition of the capitalist mode of production effected by the processes of ‘primitive accumulation’ detailed in Part VIII of *Capital Volume One*. Whereas in pre-capitalist societies the land upon which workers laboured and the materials that they used were their own property (through direct individual ownership or through communal ownership), under capitalism the worker can only access the conditions of his labour via an exchange with the capitalist, who now owns those conditions but who does not himself labour.

For historical materialists, then, the intellectual separation of nature from humanity is rooted in a real separation – that of wage-labourers from the conditions of production. This real separation, however, is not a total separation: workers necessarily continue to labour in and on nature, and indeed both labour and nature are more and more subsumed under the capitalist mode of production (cf. Burkett, 2014, p. 67). In this sense, the ‘separation’ of nature and society is ‘a function of an increasing real interaction’ between the two: it is as our production upon, within, and of nature becomes more intensive and extensive that the concept of a Nature separate from Society can arise (Williams, 1997, p. 83).

There are two points in particular about this historical-materialist analysis that are worth emphasising. First, it helps explain both the material conditions and the enduring power of the Nature-Society divide. More than merely a philosophical or conceptual error, the divide helps to maintain existing (capitalist) distributions of wealth and power. The ‘view of Nature as external’, as Jason Moore (2015, p. 2) writes, ‘is a fundamental condition of capital accumulation’: ‘Capitalism’s governing conceit is that it may do with Nature as it pleases, that Nature is external and may be coded, quantified, and rationalized to serve economic growth’. In short, historical materialism attempts to show why the historically specific relations of power and ownership that constitute the capitalist mode of production entail the externalisation of that nature.

Second, the historical materialist analysis avoids presenting ‘humanity’ as a single, unified agent (cf. Moore, 2015, p. 6). The ‘externality’ of nature is understood and

experienced differently by different agents: as Paul Burkett (2014, p. 19) puts it, 'the borders between society and nature... look quite different depending on one's social position'. Separated from the means of production, workers relate to nature as something external and even hostile: as raw material or instrument of production, it is part of a production process which they do not control, producing a product which they do not own. On the other hand, for capital, which controls and commands the labour process but does not itself labour, nature can be conceptualised not as something to be worked upon or within but as an external object of contemplation or as a resource to be exploited (Sohn-Rethel, 1976; Smith, 2008, pp. 62-3). This reinforces the point made in the previous section about the need to understand the place of different actors within the structures and asymmetrical power relations within which they act. Hence, for example, Bennett (2010, p. 56) may be correct to claim that a woodworker is best placed to recognise the creative and vibrant materiality of wood – but this surely depends on the conditions under which their work is performed, and whether the woodworker in question is a medieval artisan, a modern factory worker, or a capitalist indulging his weekend hobby (in the same way that a piece of wood varies according to whether it is a simple use value, a commodity, or a piece of circulating capital).

Conclusions

New materialists have made thoughtful and stimulating contributions to recent scholarly and political debates, not least by highlighting and helping to counter some of the flaws or excesses of certain strands of post-structuralism, emphasising the importance and value of science, the persistence and necessity of agency, and the danger of ontologies that efface the natural in the name of the social (or vice versa). But they have often done so by using as a foil historical materialism, which is accused variously of anthropocentrism (in its understanding of agency) and positivism or social-constructivism (in its approach to science and in its ontology). This not only caricatures and traduces what is a rich and diverse alternative tradition of materialism, it also overlooks the commonalities that link new and historical materialisms. To a great extent, both are committed to overturning the persistent dualisms of modern thought: science/politics, individual/structure, nature/society. From the perspective of historical materialism, however, new materialism tends towards ahistorical analyses that ignore, or at least downplay, relations of power and ownership. Historical materialism offers a different way to think about science, agency, and ontology. Rather than borrowing scientific insights into matter, historical materialism examines the historically specific power relations and divisions of labour within which modern science arose and is embedded. Rather than extending agency to everything, historical materialism insists that we need both to understand how different agents have acquired their powers to act and to

acknowledge the asymmetric power relations within which their agency is developed and enacted. Finally, rather than opposing the ontological division of nature and society simply by pointing to their actual imbrication, historical materialism explores the historical origins and persistence of the division and the differential experience of and access to nature that is characteristic of contemporary society. These alternative approaches do not mean that new materialism is incompatible with historical materialism: to the contrary, one of the aims of this article has been to contest the new materialist tendency to see historical materialism as a rival, inferior, and incompatible tradition, and to invite new materialisms into more productive dialogue.

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