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Original Article

# A critique of new materialism: ethics and ontology

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**Abstract** This article seeks to offer a critical assessment of the conception of ethics underlying the growing constellation of 'new materialist' social theories. It argues that such theories offer little if any purchase in understanding the contemporary transformations of relations between mind and body or human and non-human natures. Taking as exemplary the work of Jane Bennett, Rosi Braidotti, and Karen Barad, this article asserts that a continuity between ethics and ontology is central to recent theories of 'materiality'. These theories assert the primacy of matter by calling upon a spiritual or ascetic self-transformation so that one might be 'attuned to' or 'register' materiality and, conversely, portray critique as hubristic, conceited, or resentful, blinded by its anthropocentrism. It is argued that framing the grounds for ontological speculation in these ethical terms licences the omission of analysis of social forces mediating thought's access to the world and so grants the theorist leave to sidestep any questions over the conditions of thought. In particular, the essay points to ongoing processes of the so-called primitive accumulation as constituting the relationship between mind and body, human and non-human natures.

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To say, therefore, that an object is material is still to say nothing. Materiality as such does not specify, it is rather a generic attribute, a property common to all things.

Lucio Colletti, From Rousseau to Lenin

It has become veritable doxa in certain circles of the humanities and social sciences today to invoke an appeal to humanity's 'entanglement' with a vast non-human world as the basis for a posthumanist ethics and politics.<sup>1</sup>



Emerging out of a wider so-called ‘speculative turn’ in philosophy and social theory, an increasing array of theories take the view of a once-dominant social constructivism as a cognitive straightjacket that reduces the material work to its mediations by language, culture, power, and so on. This recent predilection for speculative philosophising has included an assortment of theoretical strategies for thinking beyond the limits of social constructions, including novel re-interpretations of German idealism, philosophical combinations of Alfred North Whitehead and Martin Heidegger, or articulations of cosmic contingency drawn from number theory.<sup>2</sup> But what specifically characterises the ‘new materialist’ strand of speculative ontologies I treat here is the way in which these theories draw upon a certain understanding of ethics in order to mobilise philosophies of matter. It is this deployment of ethics as a means of asserting the ontological primacy of matter that I seek to criticise.

Ethical demands to ‘attunement’, ‘registration’, or ‘responsibility’ to materiality, living or otherwise but in excess of the human, function as the basis for an array of recent new materialist ontologies.<sup>3</sup> This is a fairly idiosyncratic conception of ethics, one that is partly reminiscent of Martin Heidegger’s ‘Letter on Humanism’. In that by now canonical text, Heidegger (1993) famously equates *ethos* not to some norms or rules of behaviour, but to a self-transformative contemplation of the disclosedness of Being as such, beyond the powers of representation. Yet, the new materialist understanding of ethical attunement to a world beyond the finite subject under consideration here, while echoing Heidegger’s association of ontology with an inner spiritual experience, also seek to move beyond him in some sense since his existential philosophy ultimately maintains the priority of the human in its ontology and so implies the sort of constructivist anthropocentrism new materialist theorists call upon us to overcome. Indeed, critique, or any reflection on the finitude of thought, is rejected through a directly antonymic set of ethical metaphors, as ‘reductive’, ‘resentment’, ‘distancing’, ‘conceit’, or ‘hubris’ found to maintain the priority of the human in some way.<sup>4</sup> In maintaining the priority of the human in some way, the new materialist argument goes, theory fails to ‘register’ the world in itself, while the concordant circumscription of agential capacity to a property of the human subject excludes an indefinite proliferation of non-human beings which act in the universe. This idealism, evidenced by twentieth-century theory’s bracketing of ‘nature’ by cultural mediations, is said to harbour a substantially older malaise: the Cartesian division of reason and intuition from a world of discrete objects so that what exists, exists for thought. In short, new materialist theories tend to frame the political by an ethical binary of attunement or resentment to the world.

This essay offers a critical assessment of this growing constellation of ‘new materialist’ theories of ethics and politics. In Part I, taking as exemplary the work of Jane Bennett, Rosi Braidotti, and Karen Barad, I argue that in collapsing ontology and ethics new materialist theories thus seem to



acknowledge no material constraints to access to non-human nature. In Part II, I seek to counter this lacuna by drawing on historical accounts of the separation of the mental and material. The modern separation of mental, material, and reproductive labours, I claim, is best understood through the social antagonisms and upheavals that took place at the dawn of the industrial age. In Part III, I assert that in the contemporary period relations between the mental and the material are undergoing a reconfiguration, particularly in light of technological transformations and in response to ecological and economic crises. In particular, I look to the changing relations of mental and material labour in the fields of environmental management, digital, and biotechnological production in order to demonstrate that despite these technological transformations, the frame of an acquisitive modern subject persists and, indeed, continues to dominate social relations. Finally, in Part IV I show that in their own engagements with the changing technological conditions of human existence new materialist theorists and Bennett, Braidotti, and Barad, in particular, obscure the complex logics at work by reducing them to the ethical binary of attunement to or resentment to materiality upon which their work is grounded. Given that the expansion and intensification of processes of enclosure and privatisation continues apace across geographical and microbial scales, the invocation of ‘entanglement’ risks appearing as an idealising gesture empty of content. At stake in the question of the relation of the mental and the material is thus our ability to understand the political terrain upon which we act in the midst of massive and rapid technological, ecological, and social change.

### **An Epistemic Blackmail**

Characteristic of the new materialist theories I am interested in here is a particular postulation of continuity between ontology and ethics. That is, on the one hand, the assertion of the ontological primacy of matter is grounded upon the call for a spiritual or ascetic transformation so that one might be ‘attuned to’ or ‘register’ materiality. This claim is often grounded in a particular understanding of twentyfirst-century technological developments. As I will discuss in Part IV, technological advances are said to undermine any stable conception of the human being and, in doing so, break the power of the modern myth of an abstract, rational, and autonomous subject holding command over the world. On the other hand, any critical interlocutor and, indeed, critique itself – broadly conceived – is portrayed as hubristic, conceited, or resentful, blinded by its anthropocentrism.<sup>5</sup> Framing the grounds for ontological speculation in these binary ethical terms licences the eschewal of analysis of social relations and forces mediating thought’s access to the world, and so grants the theorist leave to sidestep any epistemic questions over the conditions of thought.



The terms of this theoretical conversion away from investigation of the conditions of thought's finitude to an ethical relation to matter are categorical in Bennett's recent work. Here, the call to dissipate the binaries of life and matter, human and animal, organic and inorganic is made in the name of a demand to think the 'vitality' and agency of matter (Bennett, 2010, p. viii). Despite her acknowledgement of the formal impasse that the attempt to conceive a thought not situated in human subjectivity implies, Bennett nonetheless insists upon bracketing epistemological questions of finitude in order to acknowledge the absence of any ontological primacy of human being. In doing so, she claims, one can enact a 'strategic anthropomorphism' which, as she puts it, 'can catalogue a sensibility that finds a world filled with ontologically distinct categories of beings' (Bennett, 2010, p. 3, 11, 99). Bennett's theoretical wager it seems, is not to 'think' the absolute since any formulation of cognitive access would merely reproduce the anthropocentric terms of the subject-object relation. Instead, she wants to evoke a non-representational sense of that which exceeds the powers of thought.

But given these cognitive constraints, to feel what one cannot think as it were, Bennett's 'vital materialist' ontology thus ultimately hinges upon the affective force of her ethical appeal. That is, her claims hang upon her framing of anthropocentrism as destructive in character and as opposed to the 'perceptual openness' and 'enchantment' with the 'intangible and imponderable recalcitrance of things' of her own strategic anthropomorphism (Bennett, 2010, p. 15, 3, 2001). The whole theoretical edifice here stands upon a starkly drawn binary between the 'resentment', 'demystification', 'suspicion', or 'politics of moral condemnation' of critique, and the 'enchantment' of 'affective openness to material vitality' or the 'cultivated discernment of the web of agentic capacities', on the other hand (Bennett, 2001, 2010, p. x, 3, 15, 38). Thought is freed by the mobilisation of metaphor from the constraints implied by its own finite conditions.

Braidotti (2002, 2006, 2013) employs an analogous ethical binary to frame thought's access to materiality. But rather than follow Bennett's relatively circuitous engagement with finitude, Braidotti approaches the possibility of thought's immersion in a pre-critical experience more directly by contending that given current ecological crises, technological transformations, and, in particular, the massive expansions of automation and advances of 'technoscientific capitalism', post-anthropocentrism is effectively *fait accompli* (Braidotti, 2013, pp. 67–77, 81–89). Here therefore, negotiation with the question of finitude of knowledge seems premised upon posthumanism as periodisation; if an autonomous, bounded, thinking subject no longer exists, he need not be taken too seriously as an interlocutor. Grounding the primacy of matter upon history implies that the function of theory is also transformed. That is, given that she takes the conditions for new materialist posthumanism as present,



Braidotti understands the demand upon theory as the articulation of a new ethical position accurately attuned to that condition.

The parallels to Bennett's project are relatively clear. The demand placed upon theory, embodied in Braidotti's (2013) call for 'adequate representations' of and responses to our current historical condition implies dislocating the function of critique by drawing a direct continuity between the ethical and ontological. What matters is not merely how we conceive, or if we can even grasp, our present but rather, how we respond to it affectively. Theories which maintain the priority of the human in some way are characterised by what Braidotti calls a 'negative' or 'reactive' bond of humans with the non-human world. Such a 'reactive' relationality, she argues, arises from a collective angst, panic and vulnerability to planetary destruction or capitalism (Braidotti, 2013, pp. 50; 64, 79, 96, 2002, p. 35). By contrast, her 'affirmative theory' of 'vital materialism' purports to cultivate a sense of connection and attachment to a global 'bond' between human, non-human, or even planetary others, cultivated through practices of 'defamiliarisation' from the human frame of reference (Braidotti, 2013, pp. 5, 35, 49, 164–8, 193, 35). If we are already posthuman, then the central claims amount to the subject's cultivation of the right affects. Here, as for Bennett, an ethical binary of affirmation and reaction is leveraged against purported humanist interlocutors as a means of grounding an ontological account of the 'becomings' of vital matter.

Where Bennett and Braidotti seem to dissolve epistemological questions into ethical ones, a similar move is explicitly affirmed as the basis of Barad's deflation of the division of the human and non-human. Barad's central theoretical move lies with her ontologisation of Niels Bohr's quantum mechanical principle of indeterminacy, entailing epistemological inseparability of phenomena and measuring agencies. While for Bohr indeterminacy is the property of particular physical experimentations, in Barad's expansive reading it functions as a basic principle of existence as such. Any claim to objectivity is the result, she maintains, of resolutions of an anterior ontological indeterminacy – an operation she calls an 'agential cut' – such that any determination of a given object is necessarily contingent.

For Barad, this account of ontological indeterminacy implies a hyperbolic conception of epistemic violence and so is directly ethical. The contingency of any determinacy is taken as definitive of existence and so an irreducible ethical responsibility necessarily follows. Since every 'agential cut' or temporary resolution of indeterminacy is both contingent and exclusive, drawing in part on Michel Foucault and Judith Butler, Barad takes every given ordering of the world as soliciting an ethical demand for 'attentiveness', 'accountability', and 'responsibility', especially to 'fine details' (Barad, 2007, pp. 65–6, 90, 132, 145). Given that knowledge is immanent to or 'entangled' with an indeterminate 'world of becoming', ethical responsibility is directly tied to ontological speculation, not to mention that it seems to confine thought to ceaseless reflection upon exclusions it necessarily posits.



All three cases are thus emblematic of a tendency for assertions for the primacy of matter to ground speculation upon an ethical practice whereby the very act of speculation is legitimated on the basis that it cultivates certain affects and excludes others. In doing so, it enacts a sort of epistemic blackmail, amputating critical interrogation of thought's conditions by posing this reflexive move as an ethical failure. Whether the philosophy entails 'strategic' deflation of human sovereignty as in Bennett posits posthumanism as empirical fact to be affirmed as in Braidotti, or relates ontology to ethical responsibility as in Barad, once ethical sensibility is posed as the means by which materiality is articulated, thought's relation to the world effectively becomes a personal, inner experience that we as individuals ought to cultivate.<sup>6</sup>

Critical engagement with these sorts of new materialist theories has in the main focused upon the refusal of substantive engagement with the formal conditions of thought's access to the world which, the argument goes, amount to a naïve empiricism, trivially injecting subjective characteristics directly into being.<sup>7</sup> While I take these criticisms as definitive, new materialist theorising has been strikingly resilient in the face of them. This vexing imperviousness to critique largely seems to stem from the way theories of material 'entanglements' have ceded the terrain of epistemology altogether. As I have shown, the philosopher who interrogates the position of ontological contemplation is easily brushed aside as 'resentful' and 'hubristic', still too attached to modern dualisms and concepts. Critique, it follows, is merely an affective error and need not be engaged on its own terms.

Rather than reproduce the impasse that results from the new materialist's situating of polemic upon the terrain of an ethical binary, in what follows I seek instead to transport the debate to another terrain – politics – as a means both of situating the division of the mental and material in a specifically capitalist organisation of social relations and, thus, putting into question the turn to ethics that new materialist theorising frequently makes. In what follows therefore, I seek to sketch what I take to be the context for the modern epistemological position of contemplation in the emergence of capitalism in Europe. This will serve, in a further argument, to ask how these conditions might persist in the present and thus, in a final section, to outline the limited purchase that new materialist theorising has upon some of the central social and political processes definitive of the relations of human and non-human natures in the present.

### **From *res extensa* to *res nullius***

In a late essay, Raymond Williams (1980, p. 83) argues that the modern abstraction or symbolic distinction between nature and culture is a 'function of an increasing real interaction'. That is, the objectification and abstraction of



'nature' are read as a reflection of real transformations of relations between intellect and world, ones wrought, he goes on, by the forcible separation of direct producers from their means of production. Williams thus poses capitalism, and the processes of the 'so-called primitive accumulation' which condition its emergence – whereby dispossession, enclosure, and colonialism set labour 'free' to seek its survival through a wage – as central to any understanding of the relation between the mental and the material.<sup>8</sup>

Taking this point further, only once our relation to nature is differentially mediated by the wage, can nature appear, in the words of Alfred Schmidt (1971, p. 82), as an 'abstract-in-itself', a lifeless, mechanical object external to humanity, and endlessly available for conscious intervention. This claim can be further refined by turning to feminist scholarship. A number of feminist theorists have sought, in different registers, to locate women's experience in parallel to processes of 'primitive accumulation' through women's confinement to practices associated with the reproduction of labour (Mies, 1998; Federici, 2004; Davis, 1982). As nature is progressively constituted as an object for the modern acquisitive subject, so too, through the expropriation of traditional knowledges, the terror of the witch hunt, and the professionalisation of medicine, women are objectified as 'natural' producers of labour, and such that control over the means of production went hand in hand with, as Mies (1998, p. 46) puts it, 'a control of the womb'.

Two philosophers in particular figure this development of a thought which increasingly takes itself as autonomous from nature and so takes the latter as object: René Descartes and John Locke. In a still fecund analysis, Michel Foucault (2013, pp. 45–73) famously related Descartes' a priori exclusion of madness in the process of thought to the 17th century confinement in asylums of the homeless and unemployed as a means of regulating unemployment and labour costs. While Foucault's account continues to be the object of ontological debates among various strands of post-Heideggerian philosophy, less attention has been paid in recent years to the history of capitalism to which his reading of Descartes speaks (Rekret, 2012). In a similar line of thought, Silvia Federici (2004) has suggested the Cartesian institution of an ontological division between the purely mental and purely physical domains and the mechanical vision of the body it implies should be construed in terms of the suppression of feudal social relations. From this perspective, the central accomplishment of the age of reason entailed posing the body as intelligible and, thus, as an object that could be subordinated to uniform and predictable forms of behaviour. This is not dissimilar to an intuition found in Alfred Sohn-Rethel's (1978) critique of epistemology, one which deepens Foucault and Federici's insights, wherein the Cartesian representation of the world as *res extensa* is correlated to the limitations of capitalist control over pre-industrial production. Sohn-Rethel's contention is that the epistemic project of modern science and philosophy is inseparable from the capitalist need to posit a mental labour autonomous from



manual labour since it permits the imposition of abstract knowledge over labour and, thus, of control over automation over artisanry (Sohn-Rethel, 1978, pp. 113, 122, 141, 179–80). In these expansive readings, the dualisms inaugurated by Descartes and later presented by Kant as a transcendental necessity, reflect a dualism inherent in a society wherein social control is grounded upon a knowledge of nature based in intuition and whose sources are non-sensuous.<sup>9</sup>

While Descartes heralds the emergence of a consciousness independent of body and world, George Caffentzis (1989, 2008) has proposed reading Locke as marking the extension of the Cartesian *cogito* into the legal and political sphere. To borrow Caffentzis' (2008) formulation, Locke transforms the Cartesian deduction of the self into a deduction for the creation of private property. This notion of an intersection of subjectivity and private property as the missing link between Locke's philosophy and political theory or between subjectivity and property has also recently been fruitfully explored by Etienne Balibar (2006; 2013). Locke's transformation of the Cartesian philosophy of certitude into a philosophy of consciousness – grounded in an identity that persists across time – is mobilised, Balibar argues, by installing thought within an 'anthropological doublet' between 'being' and 'having', between the 'self' and the 'own'. Here, the constitution of identity is taken as an act of self-appropriation thus implying the notion of self-ownership reflected in Locke's famous claim to 'property in the person' that grounds the contractual social order in *The Second Treatise on Government*. In the latter text, Locke asserts that given money's capacity to store value, the subject is morally 'free' to limitless appropriation of that with which he mixes his labour or, implicitly, 'free' to sell his labour for a wage.

Returning to Caffentzis' formulation, we might say that the projection of the 'privateness' of the person upon the Earth that Locke's political theory introduces enacts a shift beyond the Cartesian conception of *res extensa* to a view of the world as *res nullius* and so open to enclosure. The implications of this view become clearer when we look to a further dual moral economy central to Locke's political theory. On the one hand, man's chief moral obligation for Locke is 'the preservation of God's creation' such that the central purpose of labour and the appropriation it engenders in Locke's is to improve [the Earth] for the benefit of life' (Locke, 1993, p. 5.32). On the other hand, Locke (1993, p. 5.42) says 'land that hath no improvement of Pasturage, Tillage, or Planting, is called, as indeed it is, wast'. Only given its enclosure, through social relations founded upon money as a mechanism of exchange of things that would otherwise perish and be wasted, is land improved.<sup>10</sup> The claim poses, as Goldstein (2013) notes, a dual injunction against those not working for a wage and against land not being worked by wage labour.

What insights can these accounts of the relationship between violent processes conditional of early capitalism and emerging conceptions of an





autonomous subject bring to discussions around the relation between human and non-human natures or thought and matter today? At the very least, they suggest that any reconciliation of the mental and material would have to come to terms with the way these relations intersect with, or are mediated by, processes of capitalist accumulation. Moreover, I would suggest that they demand that we contend with the possibility today of continuities with the self-possessive subject and the conception of property it engenders when thinking through the possible ‘entanglement’ of human and non-human natures. This conception of the subject is indeed an abstraction that belies, as Brenna Bhandar (2014) has argued, mutating notions of property as a means to preserve wealth and the associated league of unfreedoms to which the ‘free’ subject of labour is compelled. Yet this is, *pace* Bhandar, an incredibly powerful abstraction, one we can detect in contemporary social processes and, as such, starkly puts into question new materialist calls for its overcoming. It is to tracking what Ince (2011, p. 46) has termed the ‘acquisitive gaze’ of Locke’s progressive imaginary, one which takes the world itself as a reservoir of potential value to be extracted and accumulated, to which we now turn.

## We have never been Posthuman

One of the central claims underlying new materialist calls for an ethical perspective attuned to the entanglement of human and non-human lies with a periodising move that reads in the contemporary condition an undermining of modern dualisms of mind and body or nature and culture. This assertion, originating with Donna Haraway (1991) and Bruno Latour (1993), is particularly prominent in Braidotti’s work, but is also asserted across a range of recent attempts to reconcile thought and ‘materiality’. Here the theorist reads ecological crises, technological developments in digital production, and the commercialised life sciences in particular, as putting in question the boundaries, integrity, and ontological primacy of the human. I do not want to deny this claim *in toto* since it would be absurd to refute that non-human natures and technologies have entered into social relations in new ways in recent decades. Rather, I want to suggest that contemporary reconfigurations of human/non-human relations are effected according to logics of abstraction, commensuration, and enclosure that betray the ongoing objectification and production of nature as a commodity both extensively and intensively (Katz, 1998; Smith, 2007) through the commodification of what Larry Lohman (2009) calls the ‘hidden aspects of the infrastructure of existence’ so that, as I will argue in the following section, the possibility of reconciliation of human and nature, or thought and world, cannot be articulated in terms of ethical experience.

Take the contemporary regime of environmental resource management as exemplary of the ways in which nature is increasingly today treated as a series



of quantifiable, discrete, and separable components (McAfee, 2003). While it is widely held that international regimes such as the World Trade Organisation's various intellectual property agreements subordinate social and environmental concerns to the overriding objects of economic growth, the logics of enclosure governing contemporary relations to non-human nature are more pervasive still. For instance, the widely celebrated 1992 Convention on Biological Diversity (CBD) pledges signatories to share the 'benefits of biodiversity', while in practice the concept of biodiversity has functioned as a means of obtaining a raw material for the commercialised life sciences (Parry, 2004; Helmreich, 2009; Brand and Görg, 2008). By framing raw genetic and other resources as *res nullius*, the CBD merely leaves them free to appropriation by patents produced by the labour of scientists.

Similarly, growing awareness of the crisis in the global ecosystem's self-reproduction has become the basis for a market in the right to emit carbon that, through a series of quantifications, treats the Earth's capacity to regulate its climate as a property that can be moved across time (it can be banked) and space (it can be traded) (Lohmann, 2009; Böhm and Dabhi, 2009; Bachram, 2004). Contemporary ecological crises have led as much to the creation of new forms of property as they have to a growing awareness of a shared fate with the non-human world.

But the continuity with early modern conditions for the autonomy of thought is clearer still in the technological realm of digital labour and data production. Recent discourses around the so-called 'big data' for instance generate entrepreneurial zeal, yet these belie longstanding divisions of labour in digital economies which, in treating digital information as a natural resource, obscure the means by which digital information enters into economic processes (Jessop, 2005). The digital content of data commodities is typically generated by what Tiziana Terranova (2004) calls 'free labour', outsourced to users of internet interfaces. Moreover, exponentially increasing use of websites within proprietary zones of the internet to communicate, develop social networks, do research, and so on generates data to be enclosed and analysed by internet companies, in turn producing increased flows of social communication within its borders and more sophisticated surveillance of user cognition in an *ad nauseum* feedback loop (Fuchs, 2007; Brown, 2014; Schiller, 2000, 2007).

Given the intensifying commodification of knowledge, intensified proletarianisation of knowledge production, and the blurring of the time of work and non-work that characterise the enclosure of the digital knowledge commons, these processes are taken to have reconfigured the relation of mental and material labour (Lazzarato, 1996; Virno, 2003; Jessop, 2005). Yet underlying these transformations in the valorisation, appropriation, and control of intellectual labour lie continuities in the global division of labour across for instance, start-ups in San Francisco, microchip manufacturing plants in global export processing zones, coltan mines in the Congo, or in the embodiment of



the externalities of these processes through the bioaccumulation of industrial chemicals in food chains, atmospheres, and waterways (Murphy, 2008; Dyer-Witherford, 2015).

While these myriad processes in contemporary capitalism problematise any claim to have reconciled human and non-human natures, such a claim is perhaps most lucidly called into question by the logics of an emerging commercialised life science industry. Developments in biotechnology have been particularly rich terrain for contemporary theorists seeking to undermine essentialist notions of nature and, as I will suggest below, figure prominently in Bennett, Braidotti, and Barad's work. Driven in part by advancements in computer science that permit the handling of exponentially larger datasets in clinical work, biological materials become increasingly available as discrete entities at the level of molecular fragments in turn enabling the inducement of living processes to increase or change their productivity along specified lines or intensify their self-reproducing and self-maintaining capacities (Waldby, 2002; Thacker, 2005). If hackneyed metaphors of 'life remixed' are at all appropriate in this context, it is insofar as the contemporary commercialised life sciences are not reducible to the Baconian conception of the deduction of natural laws nor to the mere management of biotic things but instead involve life's construction and engineering at the molecular level of life itself, thus problematising any distinction between the natural and the cultural.

However, these conceptual and technological transformations of life have their correlates in material practices involving the separation and abstraction of biological materials from their macro-anatomical sources through mechanisms of dispossession. The promise of post-industrial, 'sustainable' growth driving the contemporary biotechnology industry is conditional upon the expansion of property rights to living organisms and the integration of capital and research, signalled by two key events. First, a 1980 U.S. Supreme Court ruling in *Diamond v Chakraborty* made possible the enforcement of monopoly claims on life forms and gene sequences and thus made scientific insights the potential objects of systematic privatisations. Second, the passing in that same year of the Bay-Dohle Act, permitting American universities and their employees to retain rights to patented inventions developed with federal funds along with the right to licence and sell those patents, created a context in which publicly funded research is easily captured by private enterprise (Helmreich, 2009; Mirowski, 2011). This intellectual property regime was subsequently exported from the USA through trade agreements along with a life science sector increasingly directed and framed, down to the very questions scientists pose, by capitalist logics.

These technical, regulatory, and institutional transformations in the life sciences have implied a substantive transformation of the scale of the division of the mental and material definitive of capitalist social relations. The landmark 1990 case of *Moore v Regents of the University of California* is revelatory of the



logic at work here.<sup>11</sup> University researchers, having acquired Moore's diseased spleen in the process of his treatment for leukaemia, converted his spleen cells into a unique and valuable cell line which they patented. The California Supreme Court denied Moore property rights to his cell line since it was deemed to be the scientists' 'invention'. Critical assessments of the case have taken it to underscore the suspension of the liberal contractual principle of informed consent at the level of biological dispossession (Boyle, 2008; Dickenson, 2009). When consenting to their removal, the Court – in a feat of Lockean reasoning – ruled that Moore had 'abandoned' his cells so that, in a feat of Lockean reasoning, title only arrives to biological materials once mixed with the intellectual labour of the scientist prior to which they are treated as a naturally occurring resource and, thus, as *res nullius* (Dickenson, 2009; Waldby and Mitchell, 2006).<sup>12</sup>

Yet, the Moore case further reveals the contemporary prevalence of an imaginary rooted in Locke's 'acquisitive gaze'. The dissociation of Moore from his spleen cells was further justified by the court on the grounds that otherwise – again discernibly echoing Locke – these would remain as 'waste' if not mined for value by researchers. Commodification, the rationale implies, is necessary if waste is to be averted and improvements in the form of therapeutic treatments are to be created (Waldby and Mitchell, 2006; Rajan, 2006).

While the Moore case highlights the extent to which logics of dispossession have been presupposed by developments in biotechnology, a remarkable recent study by Melinda Cooper and Catherine Waldby (2014) has portrayed the alienation of what they call 'clinical labour' as crucial to the biotech industry's appropriation of biological processes. Looking to developments in Assisted Reproductive Technologies (ARTs) in particular, they argue that the technological constitution of reproductive biology, as a discrete series of moments, has permitted the medicalisation, technologisation, standardisation, and appropriation of reproductive labour. Reflecting broader global feminised circuits of migration and labour, processes such as oocyte vending, gestational surrogacy, or pluripotent stem cell 'donation' mark the expanding deregulation and privatisation of a global economy of reproductive labour. Enforced by forms of bodily lease contracts in surrogacy practices, or by ideologies of consent, donation, or 'compensated gifting', these forms of de-standardised labour outsourcing to poorer women give new meaning to Mies' conception of the loss of 'control of the womb'.

Cooper and Waldby's study adds to a burgeoning literature on the growing global clinical research trial industry wherein exclusion from access to labour markets and healthcare, especially in rapidly de-industrialising cities, is creating a large pool of bodies cheaply available as clinical research subjects in exchange for access to wages or 'care' they would not otherwise receive (Bharadwaj, 2008; Rajan, 2012, 2006; Prasad, 2009). These bodies are drawn from what Mike Davis (2007), following Marx (1993, pp. 398–999), calls a 'surplus population';



those who have no social destiny except premature death are construed as waste or as natural resource and so work in clinical trials in exchange for wages or medicine they would otherwise not receive.

This suggests the extent to which modern dualisms grounded in logics of possessive individualism are continuous with technological developments usually drawn upon to signal the obsolescence of the modern subject. Divisions of thought and world, mind and body, man and nature persist, even if dispersed across space and time. The enduring hold of the possessive individual is not merely the product therefore of its affective hold on the psyche but of 'real interactions'. We remain deeply bound to modern conceptions of subjectivity in practice, if not necessarily in theory.

### Ethics, Ontology, and Politics

In light of these accounts, it would seem that invocations of matter or materiality obscure, and at times even risk naturalising the logics by which non-human nature enters into social relations. This is most evident in Bennett's (2010) extensive discussion of the post-millennial debate in the USA over the federal funding of research on stem cells sourced from human embryos. Looking to American Christian evangelical 'culture of life' politics, Bennett frames the issue in terms of the ethical binary of attunement and resentment of materiality. In doing so, she contrasts her conception of an agnostic, a-subjective vitalism of matter from what she argues is an anthropocentric 'soul vitalism', defined by a category separation of life from matter, lying at the core of George W. Bush's 'pro-life', anti-abortion politics. The New Right's 'pro-life' grounds for rejecting research on pluripotent stem cells sourced from human embryos, Bennett argues, issues from the regime's 'soul vitalism' which only considers certain forms of embodied human matter as both living and valuable and so takes research on human embryos as destructive of human life.

Yet, this dualism of metaphysical versus materialist vitalism obscures the complex struggles and exclusions inherent to the American stem cell science industry in a number of ways. First, it omits the historical context of the New Right reaction to New Left victories and to *Roe v Wade* in particular. 'Pro-life' politics are not merely reactionary responses to scientific advancements, but more broadly, to all collectively won controls over reproductive labour. Second, Bush's decision to cease federal funding for stem cell research was always a partial move. Given extensive lobbying from large biotech companies, Bush maintained funding for research on sixty embryonic stem cell lines already available, in turn creating a captive market for a handful of companies holding those patents. As Melinda Cooper (2007) argues, if there is a conception of life underlying New Right discourses on embryonic stem cell research, it is a contradictory one which, in equating life with the future of the nation, brings the unborn under the



protection of the state yet simultaneously abandons biomedical research to instrumentalised capitalist logics. Third, Bennett neglects and risks valorising the means by which the stem cell research industry procures its biological materials. Sourced primarily in ART clinics through the diversion of materials associated with female reproductive biology, the stem cell research industry mobilises appeals to maternal notions of responsible custody for the vital status of prenatal life and the promise to reanimate what otherwise would be wasted life (in the form of ‘spare’ embryos, aborted foetuses) in order to exhort donations from women (Cooper and Waldy, 2014; Dickenson, 2009; Thompson, 2005). As such, a gendered version of the sort of ‘soul vitalism’ for which Bennett castigates opponents of stem cell research is used by the biomedical research industry she defends, as a means of sourcing its materials without incurring prohibitive costs. At best, Bennett’s analysis obscures the logics at work here.

While Bennett (2001, pp. 114–121, 2010, p. xv, 29, 62) explicitly renounces a critique of capitalism in defence of ethically attuned forms of consumption, by contrast, Braidotti situates contemporary ‘technoscientific’ capitalism and the commodification of biological processes in particular, as a definitive challenge for contemporary ethical theory (Braidotti, 1994, 2002, 2006, 2013). Yet, even if Braidotti views the commodification of biological processes with urgency, her analysis of capitalism is limited to that of a logic which takes over existing processes to manage, calculate, and make circulate but not necessarily as that which revolutionises these processes (Braidotti, 1994, p. 43, 2013, p. 59). This leads Braidotti to leave capital to be exempt from critique once it has assumed the form of technology and thus maintain her self-professed ‘techno-philia’ (2013, p. 58). Critics (Pels, 1999; Felski, 2000; Hemmings, 2010) have noted the opacity of the concepts with which Braidotti has sought to articulate an emancipatory subjectivity (‘nomadism’, ‘defamiliarisation’, ‘affirmative engagement’, ‘non-profit experimentation’), and one could add that these seem to follow directly from the equivocality of the ethical binary at work in her oeuvre.

Yet, among the clearest indications of the limits of Braidotti’s affirmationist ethics is an engagement extending across her past three books, with what she calls the ‘politics of life’ of the HGP. While Braidotti celebrates the HGP’s race to code the human genome for a public commons ahead of entrepreneur Craig Venter’s contention to patent it, she is explicitly wary of analyses which would celebrate the HGP as heralding a new form of ‘panhumanity’ (Franklin *et al*, 2000 in Braidotti, 2006, p. 35, 2013, p. 40). Given her affirmationist ethics, Braidotti views supportive conceptions of the HGP as dangerously grounded in a ‘negative universality’ insofar as they are constituted through an all-too ‘reactive’ response to the risk of the HGP’s privatisation (Braidotti, 2013, p. 45). Despite equivocations, Braidotti nonetheless ultimately affirms the HGP as a potential basis for a ‘global sense of interconnectedness between the human and the non-human environment’ and, thus, potentially as a ‘positive source of resistance’ (Braidotti, 2006, p. 35).



But the ethico-political binary traced by Braidotti's conceptual architecture between a patented human genome and a 'non-profit' experimental post-genomic vision of humanity obscures some of the central issues at play here. The HGP was a state-sponsored commercial enterprise whose *raison d'être* was to save the US and the UK pharmaceuticals from licencing costs in the event of genome patenting (Rajan, 2006; Rose and Rose, 2014; Amani and Coombe, 2005; Dickenson, 2009). As such, the creation of the HGP as a 'biocommons' invokes the sort of Lockean logics of property discussed above, grounded as it is upon a model of collectively generated knowledge, underpinned by public expenditure that, once posited as common, becomes the object of an intellectual property regime that excludes the public from the knowledge and information produced (Brand and Görg, 2008; Zeller, 2008). The biocommons as constituted here is not the grounds for an attuned relation to life, but the condition of life's appropriation.

In her lengthy engagement with the logics of the contemporary biotech industry, Barad seeks to delineate her ethical theory of attunement to matter upon developments in foetal imaging technology by conceiving ultrasound technology as a series of contingent 'intra-actions' of subject and object. Developments in resolution, magnification, and real-time image production are said to function as 'agential cuts' attributing agency to the foetus while objectifying the pregnant mother (Barad, 2007, pp. 203–4, 216–17). But Barad's central claim is that attending to the differential inclusions and exclusions enacted by a given apparatus induces 'accountability' and 'contestability', and so opens reality to what she calls 'subversive resignifications' (Barad, 2007, p. 205, 219). While the analysis affirms the contingency of any given subject–object relation, no evidence is provided that this assertion of contingency entails that the apparatus is any more amenable to contestation.<sup>13</sup>

In her own extensive discussion of the objectification of women by obstetric technologies, Barad's only reference to subversive practice is of the future possibility of gynogenetic embryo production, an idea she draws from a cyber-feminist text by Elizabeth Sourbut (1997). Yet, Barad extracts Sourbut's reference to gynogenesis from its Shulamith Firestone-influenced cyber-feminism so that rather than seek to put in question the privatisation of reproduction in the family (hetero or otherwise) as Firestone and Sourbut do, Barad reads gynogenesis as one technocratically determined possibility among others which thus reveals the contingency of the ultrasound apparatus. Instead of interrogating the continued privatisation of reproductive labour despite technological advancements which make collectivisation eminently possible, Barad issues a hyperbolic inflation of ethical accountability to ever-proliferating objects of accountability (from the objectified mother to the provision of healthcare, to the distribution of wealth, and so on) without any account of how, or if, these might be related or contested. If one's materialist ontology affirms the epistemic violence of all objectifications, one risks obscuring the





logics by which these apparent power asymmetries are produced. In short, Barad, like Braidotti and Bennett, expands ethical accountability or attunement to encompass the social as such and so purchases an ethical affirmation of social change at the cost of logically informed analysis of the conditions of objectification, and thus, of their contestation.

The new materialist ethical invocation of matter is inherently disposed to neglect of the material constraints differentially mediating relations between human and non-human natures. When we define the division of the mental and the material in ethical terms, by implication, we presume the innocence of thought and so reproduce the very Cartesian binary we claim to have overcome. Moreover, this is a binary which, in the 'real interactions' of nature and culture, continues to submit social existence to its logics. The ethical mobilisation of ontological speculation widespread in recent invocations of materiality thus reassures thought and action of its autonomy by disavowing its objective constraints. In doing so, it also disavows the terrain upon which these constraints might be contested. Recent calls on the left for adopting new materialist speculations as a means of articulating an ontological 'resistance' to capitalism in nature would thus seem to be misguided insofar as they ask us to disavow the historicity of our own speculations and categories.

The philosophies of materiality considered here thus amount to what Theodor Adorno (2003) once called, in reference to Heidegger's ethics, a 'jargon'. They amount to a language that makes its object appear present only by an idealisation. Adorno's concern was with the way existentialist ethics, in enlisting a personal inner experience that individuals ought to cultivate as a means of relating to being itself, failed to think actual social relations or processes in the historical development of consciousness. Similarly, in the case of much recent theorising of materiality, there is a disavowal of the genesis of our objectification of the natural world such that our social existence is fetishised by a philosophy that is not incompatible with contemporary capitalism. The theories of matter considered here are only able to produce their insights through a disavowal that the subject is formed and deformed by the objective configurations of social logics and institutions. We may no longer be Cartesian or Lockean in theory, but in many important ways, we continue to be in practice.

### About the Author

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## Notes

- 1 I would like to thank Danielle Sands, Eva Aldea, two anonymous reviewers, and the editors for their comments on various versions of this article.
- 2 For a good introduction see Bryant *et al* (2011). I treat some of the wider debates among recent speculative ontologies in Rekret (forthcoming).
- 3 See for instance, collections by Coole and Frost (2010), Dolphijn and van der Tuin (2012), and Grusin (2015).
- 4 For instance, see Thrift (2008), Connolly (2013), Law (2004), Frost (2011), and Whatmore (2002). One might also note the influence of poststructuralist feminist theories of embodiment for this ethical appeal to think beyond the boundaries of a rational and autonomous subject.
- 5 Besides the thinkers considered here, one can find this theoretical edifice at work in a host of new materialist and related thinkers. Noys (2011, 2012) and White (2013) have outlined how a similar strategy is central to Bruno Latour's theoretical edifice, Toscano (2008) has traced it in Alfred North Whitehead, while Hemmings (2005) and Leys (2011) trace this in theories of 'affect'.
- 6 New materialist theorists might deny that their work amounts to a personal or inner conversion since they might challenge the very notions of 'personal' or 'inner' as anthropocentric. Yet, the sort of ethical demand that calls upon readers' affective attunement to non-human actors, as I've outlined here, is by definition a demand for self-transformation or self-conversion addressed to the human subject. I am grateful to an anonymous reviewer for asking me to clarify this claim.
- 7 See for instance, Brassier (2011), Johnston (2012), and Meillassoux (2012a, b). For a more detailed overview of these claims, see Rekret (forthcoming).
- 8 This claim, of course, originates with Marx (1976, pp. 548–9, 874–5, 1993, p. 489).
- 9 On Sohn-Rethel's reading of Descartes, see Rekret (forthcoming) and Rekret and Choat (2015).
- 10 I draw here on a series of studies of the relationship between accumulation and the concept of waste in Locke. See in particular Neocleous (2011), Goldstein (2013), Ince (2011), and Wood (2002).
- 11 For a deeper overview assessment, see Boyle (2008), Dickenson (2009), Waldby and Mitchell (2006), and Rajan (2006).
- 12 Historians of intellectual property usually locate the regime's origins with the romantic conception of authorship as genius, since this permits the analytical separation of idea and its expression (Boyle, 2008, Rose, 1993). Yet, as Caffentzis (2008) notes, Locke's argument against innate ideas lays the ground for this notion since it individualises thought and deems its products to be the property of the individual.
- 13 I draw here on an argument in Brown (2008).

## References

- Adorno, T. (2003) *The Jargon of Authenticity*. London: Routledge.
- Amani, B. and Coombe, R.J. (2005) The Human Genome Diversity Project: The politics of patents at the intersection of race, religion, and research ethics. *Law and Policy* 27(1): 152–188.
- Bachram, H. (2004) Climate fraud and carbon colonialism: The new trade in greenhouse gases. *Capitalism Nature Socialism* 15(4): 5–20.
- Balibar, E. (2006) My self and my own: One and the same?. In: B. Maurer and G. Schwab (eds.) *Accelerating Possession: Global Futures of Property and Personhood*. New York: Columbia University Press.
- Balibar, E. (2013) *Identity and Difference: John Locke and the Invention of Consciousness*. London: Verso.



- Barad, K. (2007) *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke University Press.
- Bhandar, B. (2014) Critical legal studies and the politics of property. *Property Law Review* 3: 186–194.
- Bharadwaj, A. (2008) Biosociality and biocrossings: Encounters with assisted conception and embryonic stem cells in India. In: S. Gibbon and C. Novas (eds.) *Biosocialities, Genetics and the Social Sciences*. London: Routledge.
- Bennett, J. (2001) *The Enchantment of Modern Life: Attachments, Crossings, and Ethics*. Princeton: Princeton University Press.
- Bennett, J. (2010) *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press.
- Böhm, S. and Dabhi, S. (2009) *Upsetting the Offset: The Political Economy of Carbon Markets*. London: MayFly Books.
- Boyle, J. (2008) *The Public Domain: Enclosing the Knowledge Commons*. New Haven and London: Yale University Press.
- Braidotti, R. (1994) *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. Cambridge: Columbia University Press.
- Braidotti, R. (2002) *Metamorphoses: Towards a Materialist Theory of Becoming*. Oxford: Blackwell.
- Braidotti, R. (2006) *Transpositions: On Nomadic Ethics*. Cambridge: Polity Press.
- Braidotti, R. (2013) *The Posthuman*. Cambridge: Polity Press.
- Brassier, R. (2011) Concept and objects. In: G. Harman, L. Bryant, N. Srnicek (eds.) *The Speculative Turn*. Melbourne: Re-Press.
- Brand, U. and Gorg, C. (2008) Post-fordist governance of nature: The internationalisation of the state and the case of genetic resources. *Review of International Political Economy* 15(4): 567–589.
- Brown, B. (2014) The biopolitics of unwaged digital labor. *Triple C* 12(2): 464–467.
- Brown, W. (2008) Sovereignty and the return of the repressed. In: D. Campbell and M. Schoolman (eds.) *The New Pluralism: William Connolly and the Contemporary Global Condition*. Durham, NC: Duke University Press.
- Bryant, L., Harman, G. and Srnicek, N. (eds.) (2011) *The Speculative Turn*. Melbourne: Re-Press.
- Caffentzis, G. (1989) *Clipped Coins, Abused Words, and Civil Government: John Locke's Philosophy of Money*. New York: Autonomedia.
- Caffentzis, G. (2008) *John Locke: The Philosopher of Primitive Accumulation*. Bristol: Bristol Radical History Group.
- Colletti, L. (1972) *From Rousseau to Lenin: Studies in Ideology and Society*. London: Monthly Review Press.
- Coole, D. and Frost, S. (2010) *New Materialisms: Ontology, Agency, and Politics*. Durham and London: Duke University Press.
- Connolly, W. (2013) *The Fragility of Things: Self-Organizing Processes, Neoliberal Fantasies, and Democratic Activism*. Durham and London: Duke University Press.
- Cooper, M. (2007) *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era*. Seattle and London: University of Washington Press.
- Cooper, M. and Waldby, C. (2014) *Clinical Labour: Tissue Donors and Research Subjects in the Global Bioeconomy*. Durham and London: Duke University Press.



- Davis, A. (1982) *Women, Race, and Class*. Women's Press: London.
- Davis, M. (2007) *Planet of Slums*. London: Verso.
- Dickenson, D. (2009) *Body Shopping: The Economy Fuelled by Flesh and Blood*. Oxford: Oneworld Publications.
- Dolphijn, R. and I. van der Tuin (eds.) (2012) *New Materialism: Interviews and Cartographies*. Ann Arbor: Open Humanities Press.
- Dyer-Witherford, N (2015) *Cyber-Proletariat*. London: Pluto Press.
- Federici, S. (2004) *Caliban and the Witch: The Body and Primitive Accumulation*. New York: Autonomedia.
- Felski, R. (2000) *Doing Time: Feminist Theory and Postmodern Culture*. New York: NYU Press.
- Foucault, M. (2013) *History of Madness*. London: Routledge.
- Franklin, S., Lury, C. and Stacey, J. (2000) *Global Nature, Global Culture*. London: Sage.
- Frost, S. (2011) The implications of the new materialisms for feminist epistemology In: H. Grasswick (ed.) *Feminist Epistemology and Philosophy of Science: Power in Knowledge*. Dordrecht: Springer, pp. 69–83.
- Fuchs, C. (2007) *Internet and Society: Social Theory in the Information Age*. New York: Routledge.
- Goldstein, J. (2013) Terra Economica: Waste and the production of nature. *Antipode* 45(2): 357–375.
- Grusin, R. (ed.) (2015) *The Non-Human Turn*. Minneapolis: University of Minnesota Press.
- Haraway, D. (1991) *Simians, Cyborgs and Women: The Reinvention of Nature*. London: Routledge.
- Heidegger, M. (1993) *Basic Writings*. London and New York: Routledge.
- Helmreich, S (2009) *Alien Ocean: Anthropological Voyages in Microbial Seas*. London: University of California Press.
- Hemmings, C. (2005) Invoking affect: Cultural theory and the ontological turn. *Cultural Studies* 19(5): 548–567.
- Hemmings, C. (2010) On reading “Transpositions”: A response to Rosi Braidotti's. *Transpositions: on Nomadic Ethics. Subjectivity* 3.2: 136–140.
- Ince, O.U. (2011) ‘Enclosing in God's name, accumulation for mankind: Money, morality, and accumulation in John Locke's theory of property. *Review of Politics* 73: 29–54.
- Jessop, B. (2005) Cultural political economy, the knowledge-based economy, and the state. In: A. Barry and D. Slater (eds.) *The Technological Economy*. London: Routledge, pp. 144–166.
- Johnston, A. (2012) Thinking Big: Toward Grand Neuropolitics - or, Why I am not an Imminent Naturalist or Vital Materialist. In: F Vander Valk (ed.) *Essays on Neuroscience and Political Theory*. New York: Routledge, pp. 156–177.
- Katz, C. (1998) Whose nature, whose culture? Private productions of space and the preservation of nature. In: B. Braun and N. Castree (eds.) *Remaking Reality: Nature at the Millennium*. New York: Routledge.
- Latour, B. (1993) *We Have Never Been Modern*, trans. C. Porter. London and New York: Harvester Wheatsheaf.
- Law, J. (2004) *After Method: Mess in Social Science Research*. London: Routledge.



- Lazzarato, M. (1996) Immaterial labour. In: P. Virno and M. Hardt (eds.) *Radical Thought in Italy: A Potential Politics*. Minneapolis: University of Minnesota Press, pp. 133–147.
- Leys, R. (2011) The turn to affect: A critique. *Critical Inquiry* 37(3): 434–472.
- Locke, J. (1993) *Locke: Political Writings*. D. Wootton (ed.), Chicago: Hackett.
- Lohmann, L. (2009) Neoliberalism and the calculable world: The rise of carbon trading. In: *Upsetting the Offset: The Political Economy of Carbon Markets*. London: Mayfly books, pp. 25–40.
- Marx, K. (1976) *Capital: A Critique of Political Economy*, Vol. 1, trans. by Ben Fowkes. London: Penguin.
- Marx, K. (1993) *Grundrisse: Foundations of the Critique of Political Economy*, trans. by Martin Nicolaus. London: Penguin.
- McAfee, K. (2003) Neoliberalism on the molecular scale: Economic reductionism in biotechnology battles. *Geoforum* 34: 203–219.
- Meillassoux, Q. (2012a) There is contingent being independent of us, and this contingent being has no reason to be a subject nature. In: Rick Dolphijn and Iris van der Tuin, *New Materialism: Interviews and Cartographies*. Ann Arbor: Open Humanities Press.
- Meillassoux, Q. (2012b) Iteration, reiteration, repetition: A speculative analysis of the meaningless sign. Paper delivered to the Freie Universitat Berlin, April 2012 [available at <http://oursecretblog.com/txt/QMpaperApr12.pdf>]. Accessed 08/09/2014.
- Mies, M. (1998) *Patriarchy and Accumulation on a World Scale: Women and the International Division of Labour*. London: Zed Books.
- Mirowski, P. (2011) *Science-Mart: Privatizing American Science*. Cambridge: Harvard University Press.
- Murphy, M. (2008) Chemical regimes of life. *Journal of Environmental History* 13(4): 695–703.
- Neocleous, M. (2011) War on waste: Law, Original accumulation and the violence of capital. *Science and Society* 75(4): 506–528.
- Noys, B. (2011) The Discrete Charm of Bruno Latour, or the Critique of “Anti-Critique”. Paper presented to the Centre for Critical Theory, University of Nottingham, December 8, 2011. [[https://www.academia.edu/1477950/The\\_Discreet\\_Charm\\_of\\_Bruno\\_Latour\\_or\\_the\\_critique\\_of\\_anti-critique\\_](https://www.academia.edu/1477950/The_Discreet_Charm_of_Bruno_Latour_or_the_critique_of_anti-critique_)] Accessed 31/10/2015.
- Noys, B. (2012) *The Persistence of the Negative: A Critique of Contemporary Continental Theory*. Edinburgh: Edinburgh University Press.
- Parry, B. (2004) *Trading the Genome*. New York: Columbia University Press.
- Pels, D. (1999) On the strangeness of intellectuals and the intellectuality of strangers. *Theory, Culture and Society* 16(1): 63–86.
- Prasad, A. (2009) ‘Capitalizing disease: Biopolitics of drug trials in India’. *Theory, Culture & Society* 26(5): 1–29.
- Rajan, K.S. (2006) *Biocapital: The Constitution of Post-Genomic Life*. London and Durham: Duke University Press.
- Rajan, K.S. (2012) Pharmaceutical crises and questions of value: Terrains and logics of global therapeutic politics. *South Atlantic Quarterly* 111(2): 321–346.
- Rekret, P. (forthcoming) New materialisms and the politics of knowledge. *Theory, Culture and Society* in press.
- Rekret, P. and Choat, S. (2015) From political topographies to political logics: Post-marxism and historicity. *Constellations: A Journal of Critical and Democratic Theory*, advance publication 4 December, 2015, doi: [10.1111/1467-8675.12199](https://doi.org/10.1111/1467-8675.12199).



- Rekret, P. (2012) The impasse of post-metaphysical political theory: On Derrida and Foucault. *Telos* 161: 79–98.
- Rose, M. (1993) *Authors and Owners: The Invention of Copyright*. Cambridge: Harvard University Press.
- Rose, H and Rose, S. (2014) *Genes, Cells and Brains: The Promethean Promises of the New Biotechnology*. London: Verso.
- Schiller, D. (2000) *Digital Capitalism: Networking the Global Market System*. Cambridge, MA: MIT press.
- Schiller, D. (2007) *How to Think About Information*. Urbana and Chicago: University of Chicago press.
- Schmidt, A. (1971) *The Concept of Nature in Marx*. (Ben Fowkes, Trans.). London: New Left Books.
- Smith, N. (2007) Nature as accumulation strategy. *Socialist Register*. 43: 16–36.
- Sohn-Rethel, A. (1978) *Intellectual and Manual Labor: A Critique of Epistemology*. London: MacMillan Press.
- Sourbut, E. (1997) Reproductive technologies and lesbian parents: An unnatural alliance. In: M. Maynard (ed.) *Science and the Construction of Women* London: University College Press.
- Terranova, T. (2004) *Network Culture: Politics for the Information Age* (Vol. 23, p. 25). London: Pluto Press.
- Thompson, C. (2005) *Making Parents: The Ontological Choreography of Reproductive Technologies*. Cambridge & London: MIT Press.
- Thrift, N. (2008) *Non-Representational Theory: Space, Politics, Affect*. London: Routledge.
- Toscano, A. (2008) The culture of abstraction. *Theory, Culture and Society* 25(4): 57–75.
- Thacker E (2005) *The Global Genome: Biotechnology, Politics and Culture*. London: MIT Press.
- Virno, P. (2003) *A Grammar of the Multitude*. Los Angeles, CA: Semiotext (e).
- Waldby, C. (2002) Stem cells, tissue cultures and the production of biovalue. *Health: An Interdisciplinary Journal* 6(3): 305–323.
- Waldby, C. and Mitchell, T. (2006) *Tissue Economies: Blood, Organs and Cell Lines in Late Capitalism*. London and Durham: Duke University Press.
- Whatmore, S. (2002) *Hybrid Geographies: Natures, Cultures, Spaces*. London: Sage.
- White, H. (2013) Materiality, form, and context: Marx contra Latour. *Victorian Studies* 55(4): 667–682.
- Williams, R. (1980) *'Ideas of Nature', Problems in Materialism and Culture*. London: Verso.
- Wood, E.M. (2002), *The Origins of Capitalism: A Longer View*. London: Verso.
- Zeller, C. (2008) From the gene to the globe: extracting rents based on intellectual property monopolies. *Review of International Political Economy* 15(1): 86–115.