

New Ontologies? Reflections on Some Recent ‘Turns’ in STS, Anthropology and Philosophy

Casper Bruun Jensen

This paper discusses the recent emergence of ontological approaches in science and technology studies (STS), anthropology, and philosophy. Although it is common to hear of a turn, or *the* turn, to ontology, more than one line of intellectual development is at stake. In reality, we are witness to a plural set of partly overlapping, partly divergent, turns. Accordingly, the significant differences between current ontological turns are as important as their, also relevant, similarities.

In each of these areas, the notion of ontology signals a distance, and difference, from a range of other approaches and, especially, from any epistemological starting point. Epistemology concerns with the conditions of knowledge, and knowing. It poses the question of what we can know and how we can know it. On the side of the analyst, any adequate epistemology must deal with the question of reflexivity.

Among other things, this requires careful attention to how one’s position influences what one is capable of perceiving and understanding. Thus, a Danish, white male middle-class academic invariably has a different vantage point for interpreting the world than a Chinese merchant, an Amazonian shaman or a black American feminist. Since any account of the world is structured by such differences, it is incumbent to examine how worldviews are made, what they are, and what they do. This, of course, is an anthropological common place. In anthropology, as elsewhere, it led to a general interest in discursive constructions and the relations between forms of knowledge and forms of power.

But around the early 90s, some scholars in STS began to develop alternatives to these forms of analysis. The word that best captures these alternatives is ontology.

New Ontologies?

In considering contemporary proposals for new ontologies a relevant question obviously concerns their novelty.

On the one hand, explicitly ontological approaches were developed in science and technology studies since the early 90s or even earlier. In fact, the sociologist of science Andrew Pickering organized a workshop with the precise name *New Ontologies* at the University of Illinois, Urbana Champaign as early as 2002, featuring presentations by himself, the actor-network theory inspired cognitive philosopher Adrian Cussins, the literary theorist Barbara Herrnstein Smith, the maverick Deleuzian Manuel de Landa, and others. To this day, Pickering is among the foremost inspirations for ontological thinking in STS, and de Landa is an important, if somewhat peripheral, figure within the ontological turn in philosophy. In one sense, therefore, there is nothing wholly *new* about the discussions now taking place. They have been with us for close to two decades.

On the other hand, the question of the new relates to the content of these proposals relative to more conventional or dominant understandings up to the present. Here there are more particular stakes, since different approaches define ontology, and so also its newness vis-à-vis other positions, differently. As I discuss below, the actual novelty, and corresponding interest, of the different ontological approaches is quite variable. To understand these differences requires closer scrutiny of the different approaches.

Ontologies in STS

In philosophy, ontology conventionally deals with the “nature of being”, what the world is and consists of (cf. Palecek and Risjord 2012). The Kantian revolution in philosophy revolved around the impossibility of knowing the world, or being, as such. Since human understanding invariably emerges through our own categories, the question arises how those categories structure our ability to understand the world. Even so, the world *as such* remains out of reach. This is common sense to interpretive and critical social science, and foundational for approaches that center on social and discursive construction, which thus remain profoundly Kantian. So

what provided the impetus for beginning to speak of ontologies? Moreover, why did this happen specifically in STS?

The turn to ontology in STS was directly related to the fact that this field studies science. The connection is that, in our times, it no longer philosophy, but precisely science, which has the right to speak of what the world consists of: things like DNA and atoms. Since STS, among other things, studies how scientists come to know that the world does indeed consist of such things, it is involved in studying the making of knowledge about the ontological constitution of the modern world.

Certainly this is not how the sociology of knowledge was originally conceived. As defined by Robert Merton (1973), this endeavor concentrated on understanding the institutional structures and ideologies of science. Taking scientific objectivity for granted, it raised questions such as: why did modern science, uniquely among all human practices, develop the capacity to be objective? Through which kinds of mechanisms did it manage to systematically distinguish truthful from biased, subjective, or ideologically motivated explanations? This approach created a specific division of labor between scientists and sociologists. Whereas scientists would uncover the ontological constitution of the world, sociologists would examine the support social and institutional structure that allowed scientists to do so.

However, once the sociology of knowledge turned into the social construction of science this interest changed. These radical, and radically provocative, new approaches insisted that all forms of knowledge, scientific knowledge included, were social at their core. They were socially constructed (Bloor 1976).

In the world of social construction, scientists did not have any privileged access to the world, because in fact such access is not within the powers of human reach. Instead, the whole game of science becomes social, discursive and epistemological. In many ways, the social construction of science was a fruitful research agenda that opened up new ways of thinking about the intimate connections between science and society. Unsurprisingly, however, it was also hugely provocative to scientists, who did not take kindly to the idea that knowledge

about minerals, protozoa or quarks were determined by interests and social identities rather than by the characteristics of those entities.

Eventually, social construction also came to be seen as unsatisfying to some upcoming STS scholars. Querying the conceptual basis for re-describing science as a set of social constructions, Michel Callon and Bruno Latour (1992), in particular, identified a central problem. Obvious in a sense, the problem was that the explanatory ground of social constructivism is indeed sociological. But then, what makes social scientists think that their social explanations are somehow better grounded in reality than the natural explanations of the scientists they study? After all, if physics is a constructed and contingent knowledge form, then surely sociology is so too. But in that case, why think that the latter can offer a fixed and firm explanation of the former? Is there any good reason to think social knowledge more stable than natural knowledge? Indeed, is there any reason to think society is more stable than nature? These kinds of arguments have often been seen as exemplifying forms of radical relativism that renders all knowledge equal, and destabilizes all knowledge claims. Yet, this is just where 'ontology' entered the discussion in a surprising manner.

Rather than studying scientific theories and concepts, STS laboratory studies took an interest in the material practices of science (Latour and Woolgar 1987, Pickering 1992, Knorr Cetina 1999). Laboratories are filled with many things: chemicals, organic materials, and technical equipment. Scientists do not simply sit and think about the world. They cut, blend, extract, heat and cool, and they observe and measure. If one studies science as material practice, therefore, one encounters an assemblage: a mixture of all kinds of things. Somehow a quantity called 'knowledge' is extracted out of this confusion.

Within this network, as Latour would call it, many different entities play different roles. Of course people are acting – laboratory scientists, modelers, research assistants, or cleaners – but so are a wild profusion of nonhuman agents. Describing nonhumans like microbes and technologies as agents, Latour and Callon emphasized that they were far from passive objects simply manipulated by scientists. They exploded, or were indifferent, or died, or did all kinds of things, in

response to scientific set-ups. In turn, scientists responded to the nonhuman responses. They changed theories, built new equipment, tried different kinds of manipulations. Over time, some became rich and famous and others went insane, while most carried on, working out empirical and theoretical puzzles (Kuhn 1962). This is an image of a constantly changing network of relations between a vast multiplicity of entities. Ian Hacking (1983) characterized it as an image of science as *intervening* rather than representing.

Bruno Latour (1988) insisted on the reciprocity of these interventions. On the one hand, microbes are certainly changed by scientists: they are boiled, cooled, stirred, and so they behave in ways they have never behaved 'naturally.' Yet, on the other hand, scientists are also changed by microbes: they build new things, think different things, make plans, search for money or fame, and much else. Because of this reciprocity and mutual entanglement, humans and nonhumans were said to be hybrid. Further, because of the in-principle impossibility of making sense of one without the other, they were said to be mutually constituted, or co-constructed.

Finally, and crucially for the present discussion, because these processes transform what the entities *are*, not just what they *think* (probably microbes do not think too much), what is at issue are changes in the actual composition of the world. Thus, the laboratory is a site of *ontological transformation*. Andrew Pickering (1995, 2008) who organized the *New Ontologies* workshop spoke of ontological change as a "dance of agency," a de-centered process, or a flow of becoming, that constantly modifies the world.

Certainly, not all work in STS was ontological. Moreover, most of the work that I have summarized above was not described *as* ontological. Yet, for many years, distinctly ontological preoccupations operated as a kind of undercurrent in STS. Very early on, for example, both the ethnomethodologist Michael Lynch and the symbolic interactionist Joan Fujimura recognized that actor-network theory was something more and different than another *social* theory. While Fujimura approvingly referred to ANT as defining a new ontology as early as 1991, Lynch (as cited by Latour (1999a: 19) proposed, somewhat mockingly, to rename ANT as

ARO—actant-rhizome-ontology—with reference to the Deleuzian inspiration he discerned behind Latour’s formulations.

In spite of its minority position, this body of work prepared the grounds for an ontological extension beyond science. It enabled others to ask whether ontological transformations take place *only* in laboratories. Soon, it was realized that the sciences were hardly the world’s only zones of ontological experimentation. Having already argued that his “mangle of practice” provided a general theory of ontological becoming, Andrew Pickering began studying large-scale changes between science and industry. In the mid-nineties, Charis Cussins’ (1998) [now Thompson] analyzed infertility treatment as a process of ontological choreography. In *The Body Multiple*, Annemarie Mol (2002) argued for an ontological rethinking of the body. Rather than contrasting patients’ subjective perspectives with their objective conditions (as known by doctors), she examined how different material settings produced differently real, and really different, bodies.

Meanwhile, out of an American lineage, Donna Haraway’s (1991) studies of cyborgs, which focused on the fundamental entanglements of bodies, machines, and forms of narration, could also be seen as having an ontological impetus. To be sure Haraway did not speak of ontologies (her analogue would be ‘material-semiotic’) but she inspired the ex-physicist Karen Barad (2007) to develop an explicitly ontological approach, agential realism, centering on what she calls ‘intra-actions’, drawing on the philosophy and scientific practice of Niels Bohr.

Finally, it is worth mentioning Helen Verran, whose work is interesting in its own right, and further relevant because it provides a kind of bridge to the ontological turn in anthropology. Originally trained as a biochemist, Verran ended up teaching mathematics in Nigeria. In the process of doing so, she came to realize that Yoruba math functioned differently from how it was supposed according to the Western ontology of numbers. Eventually she wrote a book about these ontological differences, and about how to allow them to co-exist as a material pedagogy (Verran 2001). Later, she would examine efforts by Australian ecologists to collaborate with Aboriginals across ontological difference (Verran 2002). Even though these groups of people were barely able to understand each other’s knowledges, Verran argued, it

was possible to them to come together in material-practical microworlds that allowed temporary ontological convergence around particular projects.

In my own work, I refer to the *aggregate* of these positions as the study of practical ontologies (e.g. Jensen 2004, Jensen 2012, Gad, Jensen and Winthereik 2014). This does not mean that such ontologies relate only to “practical issues.” Instead, it means that they are about how worlds are *concretely* made, conjoined or transformed by the co-evolving relations of multiple agents; people, technologies, materials, spirits, ideas—or *what have you*.

I now turn to consider how these developments relate to the anthropological turn to ontology.

The Anthropological Turn to Ontology

The anthropological turn to ontology comes via a route quite different from that of STS, though there are also significant points of convergence. The three primary inspirations are Marilyn Strathern, Eduardo Viveiros de Castro and Roy Wagner, though only Viveiros de Castro uses the word ontology.¹

Since the post-colonial critiques of the 1970s and 80s, anthropology has been concerned with its own entanglements with colonial history. Critiques such as the ones offered by Talal Asad (1973) made clear that Western anthropologists could not claim an innocent position as ‘representatives of the other.’ This is why Viveiros de Castro (2004) has referred to anthropology as the ‘most Kantian of disciplines’ – constantly questioning its own grounds of knowledge.

In one sense, the proto-ontological work of Roy Wagner exemplifies this situation. At the same time, however, similar to how actor-network theory both learned from and bypassed social construction, refuses to stay within the limits of the epistemological and self-reflexive discourse. Rather than aiming for a self-

¹ Irwing Hallowell (1960) wrote on Ojibwa ontology, and other anthropological ancestors including Evans-Pritchard (1976) to Godfrey Lienhardt (1961) are sometimes said to be *de facto* ontologists (usually as part of the argument that the ontological turn offers nothing new under the sun). However, the specific intellectual genealogy of the turn centers on the above-mentioned triad of figures.

reflexive gaze, he intensified the interest in how others make their worlds. *The Invention of Culture* (Wagner 1975) offers the best example.

Of course anthropologists are interested in culture (or society), which forms a kind of baseline for inquiry. Anthropologists are *specialists* in knowing culture, but obviously the cultures they aim to know are different – that’s why there is an interest in knowing them. So how does one come to know the cultures of others? First, one conducts long-term fieldwork and gathers a copious amount of ethnographic materials. This set of materials is then organized and analyzed. Crucially, this is almost invariably done with reference to specific *theories of culture*. Conventionally, it may lead to diverse forms of contextualizing analyses organized around such topics as social or political organization, gender roles, or lived worlds. Yet, the problem remains that analytical notions, including gender, culture, and context, are our own rather than those of our informants. In other words, in the effort to elucidate the cultures of others, we impose on them our own cultural categories. Even in the highly reflexive *Writing Culture* (Clifford and Marcus 1986) this problem persists; it is visible in the book’s very title.

This is where the distinctiveness of Roy Wagner’s approach makes itself felt. For what Wagner explored was how the Daribi of Papua New Guinea invent their own version of what we call culture. In other words, he did not describe the activities of the people he studied as a particular *example* – as one culture among many. Rather, he tried to figure out what worked for the Daribi in a way *analogous* to how culture works for Westerners. The resulting analyses are quite unsettling because Wagner deprived himself of the ability to explain his ethnography with conventional cultural notions. Both the terms and the *shape* of analysis are different, and have become increasingly different over time, because they are based on the concepts of people who do not have, or live in, culture -- in any familiar sense of the word.

Marilyn Strathern’s Melanesian studies operated in a similar manner, and indeed Wagner and Strathern were important mutual sources of inspiration. Thus, in *The Gender of the Gift*, Strathern (1988) criticized then regnant perspectives on gender and exchange relations in Papua New Guinea for imposing Marxist

categories on people for whom they did not make any sense. To repeat the point: Marxists could speak on behalf of “repressed” Melanesian women only by assuming that they were repressed in a way that corresponded to their own theories of repression. It is not, of course, that Melanesian women necessarily had a wonderful time. Yet Strathern insisted, as Wagner did, that an identification of these problems would have to start from within universe of these women, not from the extant perspective of Western social theory. Again, the first step would be to grasp potentially very different conceptions of bodies, people, and, centrally, partial and relationally defined identities.

Among the Araweté in the Amazon, Viveiros de Castro drew much the same conclusion. His now famous explication of Amerindian perspectivism (Viveiros de Castro 1998) is the outcome of this effort. Amerindians, as Viveiros de Castro argues, not only have a different society and a different politics, they have different bodies, and, indeed, live in a world in which these bodies relate in a manner fundamentally different from that of Westerners. Their ontology is different, Viveiros de Castro stated; and he went on to insist that anthropology is a discipline in support of the right to ontological self-determination of the worlds’ peoples (2011).

The explicit argument for an ontological turn in anthropology was made in the edited volume *Thinking Through Things* from 2007. The editors, Amiria Henare (now Salmond), Sari Wastell and Martin Holbraad were Cambridge students, heavily influenced by the triad of figures mentioned above, and mentored by Strathern who taught there, and Viveiros de Castro who often visited. In this context, we also find one of the central overlaps between STS and anthropological ontology, because Bruno Latour was an important reference point for both Strathern and Viveiros de Castro.

The relation to Latour was complicated. While in some ways sympathetic, Strathern worried about his guiding image of an extendable network. For one thing, this image seemed distinctly Western. After all, most people in the world do not view the world as infinitely extendable and transformable. In fact, some objected, the figure of the network seemed a mirror image of Western colonial and imperial

efforts. And, Strathern (1995) asked, what about the many situations in which the delimitation of relations, 'cutting' them, is far more important than prolonging them? Moreover, a range of anthropological critiques of actor-network theory, the introduction to *Thinking Through Things* included, depicts the position as a meta-theory that makes the whole world look the same: wherever one looks there are heterogeneous actors building networks.² How is it possible to connect this (projected) image of sameness with an anthropological project such as Viveiros de Castro's support for ontological self-determination?

At the same time, many ideas were rather more resonant. For example, the actor-network theory notion that we do not know in advance what the actors will be (they can be much more than human) or what they will do, fits neatly with the anthropological effort to make all kinds of strange agencies – spirits, magical powder, shamanic cloaks – active ingredients in ethnography driven ontological analysis. Like for Latour, the point of activating things is to ensure that they are not taken as simple representations of pre-given social or political ideologies but are instead allowed to operate on different, so far unknown, principles. Indeed, this covert alignment with actor-network theory is visible in the very title of *Thinking Through Things*, which simultaneously invites the anthropologist to recognize how other people think through things, and suggests that anthropology itself ought to do so.

Thinking Through Things offered a provocative call for a generalized redefinition of the anthropological enterprise. According to this image, ethnography would function as a method for dealing with *alterity*, understood as the many

² There is a significant tendency among anthropologists (and philosophers, as we shall see below) to focus on Latour's philosophical writings rather than on his more empirically grounded work. This emphasis lends a misleading plausibility to the idea that actor-network theory defines a general metaphysics rather than offering a method for tracing practical ontologies. The problem is exacerbated by a typical conflation whereby Latour's philosophical positions come to stand for case studies inspired by actor-network theory and eventually for the field of science and technology studies as a whole. In reality, the latter is comprised by a heterogeneous set of approaches, and generally characterized by empirical studies rather than philosophical debate (but see Jensen 2014).

sources of profound otherness encountered while doing fieldwork, which should not be explained away, or otherwise tamed, by pre-defined Western categories. Instead, alterity should be the starting point for a rethinking of those categories themselves.

Martin Holbraad has outlined this program in several articles, as well as in his monograph *Truth in Motion* (2012), a study of Cuban Ifá divination. The *alter* in this case is the whole complicated material set-up of divination *and* the pattern of thought that goes with it. What holds Holbraad's special attention is the fact that the divine pronouncements that emerge from the rituals are *unquestionably true*, and that this remains the case even if their predictions seem obviously false. Instead of explaining this situation with reference to Western ideas of cognition, self-affirmation, or even paradox and aporia, Holbraad proposes that this 'alter' concept of truth requires a reformulation of *our* notion of what truth is. Hence, his title: *Truth in Motion*. But this is only one example, for according to the proposed ontological method it is not only truth that will have to be set in motion. Instead, different kinds of encountered alterity will require anthropologists to put in motion all kinds of concepts.

So what exactly is the location of the ontological within this body of ideas? The emphasis on alterity follows directly from the Strathern-Wagner-Viveiros de Castro injunction to start with indigenous conceptualizations. In this sense, the ontological takes the form of an extraction of cosmologies, which long held anthropological interest, but which has also been heavily criticized as essentializing the other.

Indeed, the anthropological turn to ontology has received what seems a quite amount of disproportionate critique, whether measured by quantity or in terms of heated rhetoric. Even more unfortunately, much of this rapidly growing critical corpus spends energy rebutting straw arguments, held by no one in particular, rather than dealing seriously with the actual set of diverse concerns, motivations, problems, and analytical responses that generated the ontological turn to begin.

The critique of essentialization exemplifies this point, for in fact an adequate *representation* of alterity is hardly the point. While all the ontological pre-cursors *begin* with forms of encountered alterity, they do not *end* with them. Thus,

Strathern (1988: 3) writes in the introduction to *The Gender of the Gift* that anthropological concepts should not be justified “by appealing to indigenous counterparts,” since we “cannot really expect to find others solving the metaphysical problems of Western thought.” Later, she would go on to compare Melanesian ideas of selfhood with British one (Strathern 1992). As noted, Wagner compares different analogues of culture, and Viveiros de Castro constantly works with contrasts between the West and the Amerindian. Later again, Holbraad would work towards a redefinition of Western truth. Each, then, has been involved in a complex conceptual effort that bears little resemblance to the naive extraction of indigenous knowledge to which critics so vocally object.

In fact, the situation is very different. As a more than cursory reading of the ontological corpus quickly demonstrates, the starting point is the recognized impossibility of unmediated access to the world of others, which generates recursive loops between “our” forms of knowledge and “theirs.” It is therefore peculiar to observe the repeated critique of the ontological turn for instantiating a pre-reflexive essentialism. In any case, the turn to ontology names an inherently methodological and conceptual operation, the outcome of which is a synthetic product (Viveiros de Castro’s (2004b) writes of “controlled equivocation”) of their thoughts and actions parsed through our categories.

Here, we encounter a second line of critique. After all, in his depiction of Amerindian perspectivism, Viveiros de Castros often refers to Deleuze. Yet, most Amerindians have not read French philosophy. Accordingly, the real problem with the ontological turn is not that it essentializes the other but rather than it does philosophy on top of the other. In this way, ontologists are guilty of the same conceptual imposition, and ultimately violence, to which they claimed to respond in first instance (Heywood 2012, Laidlaw 2012). Somewhat ironically, this critique takes exactly the same form as the one the anthropological ontologists make of Bruno Latour and actor-network theory. Ultimately, the objection goes, what is on offer is a philosophical meta-ontology.

For obvious reasons, this is connected to political critique. It is one, however, that takes two quite distinct versions. In the first version, exemplified by Lucas

Bessire and David Bond (2014: 449n4), the missing politics of the ontological turn is evinced by the fact that these studies do not make use of the standard critical categories of class, gender or race.³ As should be obvious, this simply misses the point, which is to find concepts and modes of description that, by starting from non-Western thought, is not confined to explain everything in the world using our own limited categories. Just as Wagner showed 'culture' to be an anthropological pre-occupation rather than a found object, 'politics' is a distinctly Western invention.

A related yet different kind of critique has emerged from anthropologists that are themselves indigenous (e.g. Todd 2016). Depicting the ontological turn as an updated form of colonialism, Zoe Todd notes the irony that at just the time when indigenous people are finally beginning to have voices in the realm of professional anthropology, they are drowned out by ontologists that claim to speak on their behalf.⁴

Given Viveiros de Castro's insistence that anthropology should be in support of the ontological auto-determination of the worlds' peoples, this critique is potentially powerful. Yet, it moves rather too quickly. For one thing, there are significantly different takes on politics *within* the ontological turn. Whereas Martin Holbraad's focus on alterity as a method for putting concepts in motion represents the most strenuous 'a-political' tendency, Viveiros de Castro has long been involved with Amerindian political leaders, and he has been consistently supportive of their struggles against the Brazilian state. Moreover, even if his arguments for 'perspectivism' do not often cite indigenous intellectuals (one of Todd's points of critique), it is obviously not the case the perspectivism is simply his own colonialist invention. To lay this idea to rest, all that is needed is to compare Viveiros de Castro's theoretical discussions with the cosmological narrative of

³ David Graeber (2015: 32n46), similarly, offers a list of terms the absence of which is taken to indicate the lack of political commitment of Holbraad, Pedersen, and Viveiros de Castro's (2014): "serf, slave, caste, race, class, patriarchy, war, army, prison, police, government, poverty, hunger, inequality."

⁴ Yet is worth noticing that, centring on an analysis of institutional colonialism, Todd's own critique is firmly based in Western critical theory rather any kind of indigenous thought.

the shaman and political leader Davi Kopenawa (2013). Meanwhile, Marisol de la Cadena (2015) and Mario Blaser (2010) work explicitly on political ontology, and they often *do* cite indigenous thinkers. Though there are certainly conceptual, methodological and political discussions to be had (see Jensen 2012; Gad, Jensen and Winthereik 2015), a wholesale condemnation of the ontological turn for entailing a colonial disposition is misguided.

Contrary to what is often imputed, proponents of the anthropological turn do not think that ontologies can be read straight off of ethnographic materials. Rather than naively believing in their unique capacity to truly represent the other, they take for granted that anthropological accounts are necessarily the outcome of processes of filtering and re-description. The success criterion of this operation is that something 'alter' remains, and that it is allowed to trouble anthropological thought rather than simply reaffirm hoary categories. This is the implicitly political premise even of Holbraad's apolitical efforts.

Object-Oriented Ontologies

Unfolding at the fringes of philosophy, recent years have seen the emergence of yet another ontological turn. Referred to, variably, as speculative realism, object-oriented ontology and object-oriented philosophy these discussions have had very limited overlap with the ontological turn(s) in anthropology. They have, however, evolved through a partly sympathetic and partly critical discussion with the more philosophical parts of Bruno Latour's work.

This relation is most manifest in the prolific writings of Graham Harman. While Harman's central inspiration is phenomenological (e.g. 2002), he has striven to give this philosophical corpus a new interpretation by insisting that it holds the seeds for engaging with the power of things as they are, rather than as they are known by humans. Unsurprisingly, therefore, his fascination with Latour, whose work he discussed in *Prince of Networks* (2009), has to do with the shared interest in nonhuman agency. Beyond this shared concern, however, there are also crucial differences.

The term speculative realism was coined by Harman, Quentin Meillassoux, Ray Brassier and Levi Bryant, as a title for a 2007 conference held at Goldsmiths College in London. Since then, the usage has proliferated and transformed, not least due to an intensive use of blogs and various non-academic forms of publishing. On the one hand, this has facilitated speedy dissemination of a number of core ideas. On the other hand, the rapid uptake has also come with the occasional cost of a loss of nuance, not least with respect to the positions speculative realists and object-oriented ontologies claim to supersede. Yet, works like Meillassoux's (2008) *After Finitude* undoubtedly offer serious, though controversial, philosophical arguments.

As long as it lasted, the term speculative realism held together an extremely varied set of ideas. As noted, Harman began from a certain interpretation of 'carnal phenomenology,' a term taken from the maverick philosopher Alphonso Lingis. Levi-Bryant is inspired by German nature philosophies. Ray Brassier, who is also affiliated with the so-called 'accelerationist' school emerging from Warwick University in the 1990s, promotes a nihilist reading of the enlightenment. And Meillassoux examines classical philosophers like Kant and Hume, in order to diagnose a shared problem of 'correlation' – the idea that people can only know the world through their own interpretive schemes.

Meanwhile, process philosophy in the tradition of Alfred North Whitehead lurks behind some of the discussions, as does the philosophy of Gilles Deleuze and of later interpreters and critics such as Alain Badiou and Slavoj Žižek. Finally, although he is not directly affiliated with the 'movement', Manuel de Landa, who offers a realist and materialist interpretation of Deleuze, is also a relevant interlocutor. Harman has noted that whereas everyone agreed – at least for a while – that speculative realism was a suitable term for the effort to go beyond the predominant linguistic-discursive preoccupations of philosophy, few of the originators were actually particularly 'object-oriented'.

In some sense, we find among the speculative realists an overlap with STS, since both groups insist on the importance of moving beyond anthropocentrism in order to grapple with the liveliness of entities other than humans. In practice, this 'move beyond' takes widely varying forms. One example is offered by de Landa's *A*

Thousand Years of Non-Linear History (1998), which examined history from the point of view of the morphogenetic capacities of matter and energy.

In *After Finitude*, Meillassoux made the general argument that since Kant philosophy has internalized everything *into* the human. Thus, we have lost the ability of engaging with the “great outdoors.” Meillassoux therefore searches for an alternative to “correlation”: “the idea according to which we only ever have access to the correlation between thinking and being” (2008: 5), so that everything becomes “relative to us” (7).

Whereas, de Landa finds resources in the “sciences of matter,” Meillassoux turns to astrophysics and ultimately to mathematics to deal with the loss of the outdoors. Astrophysics, Meillassoux suggests, is capable of putting us in touch with an ‘ancestral reality’ “anterior to the emergence of the human species” (10). The existence of such an ancestral reality is indicated, for example, by the “luminous emission of a star that informs us as to the date of its formation” (10). The existence of such emissions, Meillassoux argues, forces a collapse upon correlational thinking, since it brings us face-to-face with events that took place “prior to the emergence of conscious time” (21) and therefore before the existence of a mind that could establish the correlation. Thus, he concludes that: “science reveals a time that not only does not need conscious time but that allows the latter to arise at a determinate point in its own flux” (22). This example establishes the possibility of conceiving an outside radically detached from both mind and culture. Like his mentor Badiou, Meillassoux eventually gives this outside a mathematical specification.

Speculative audacity aside, from the point of view of STS these routes of argumentation have significant problems. De Landa begins with a very specific understanding of Gilles Deleuze, which authorizes a history that centers on emergent patterns of ‘matter,’ as interpreted by certain kinds of physics and biology. Meillassoux also begins from a strictly philosophical position that, in his case too, leads to the prioritization of very particular claims from physics and mathematics. Thus, both analyses take for granted a conventional epistemological hierarchy, according to which objective science provides the foundation for the building of authoritative philosophy. Particular scientific claims are simply ad-libbed and, in de

Landa's claim, transposed as unproblematic explanations of human history. Neither the social sciences nor the humanities are anywhere in sight. Basically, we are in the realm of scientism.

This route to ontology is particularly grating to STS scholars since they specialize in analyzing how scientific facts are made, how they come to circulate, and how they are stabilized *as* facts. This empirically grounded literature has not made a dent in the interpretations de Landa, Meillassoux or other object-oriented ontologies and speculative realists, who proceed as if objective facts fall from the sky. By ignoring that knowledge about matter is itself created and made to endure through material networks of science, these philosophers can avoid dealing with the troublesome fact that scientific statements, too, are correlational through and through. Not only do these 'correlations' take the form of theoretical propositions and models, they are built into the very technologies that allow scientists to detect and measure objects in the first place (Galison 1997).

Writing about an 'ecology of practices', Isabelle Stengers, Latour's long time intellectual sparring partner, offers the following formulation which can be read as a response to Meillassoux (it isn't, it was written long before *After Finitude*):

What other definition can we give to the reality of America, than that of having the power to hold together a disparate multiplicity of practices, each and every one of which bears witness, in a different mode, to the existence of what they group together. Human practices, but also "biological practices": whoever doubts the existence of the sun would have stacked against him or her not only the witness of astronomers and our everyday experience, but also the witness of our retinas, invented to detect light, and the chlorophyll of plants, invented to capture its energy. By contrast, it is perfectly possible to doubt the existence of the "big bang," for what bears witness to it are only certain indices that have meaning only for a very particular and homogenous class of scientific specialists (Stengers 2000: 98)

As is clear from Stengers' insistence on the importance of the sun and the chlorophyll of plants, the point is not to encourage a return to a form of social construction that makes it feasible to describe the knowledge of biology or physics as a matter of interests and power. It is, rather, that neither physics nor biology holds any ultimate privilege in dictating what ontology is, because what ontology *will be* depends on everything and everyone capable of 'bearing witness' within a 'disparate multiplicity of practices.'

That we are dealing with a foundational hierarchy becomes even more evident, once we note that in these approaches, the usage of 'reality' or 'ontology' is always singular. For de Landa, ontology is a matter of unfolding morphogenetic patterns. For Meillassoux, it is given by certain forms of mathematics. For Karen Barad (2007), it is explicable via the theories and the technical apparatus of the physicist Niels Bohr. I mention Barad at this point, though she is not a speculative realist but an ex-physicist turned feminist STS scholar, because her text is peppered with assertions that *her* ('my') agential realist ontology is preferable to available alternatives (e.g. Barad 2007: 33-36, 69, 205, 333), thus making explicit that a central ambition is the conventional one of formulating the one ontology to rule them all.⁵ As should be clear, there is here a qualitative difference from the concrete, empirically based elucidation and comparison of many variable ontologies which, in different forms, and for different reasons, hold the interest of STS researchers and anthropologists.

In contrast to de Landa and Meillassoux, Graham Harman cannot be accused of scientism. Superficially more aligned with STS and anthropological modes of ontological thinking, Harman insists instead on the 'equal' reality of objects as diverse as sunsets, cars, and ancestor spirits. However this similarity quickly gives way to another set of differences. Thus, Harman expresses dissatisfaction with Latour's insistence on *relations*, which he sees as illustrative of 'correlations', and

⁵ Certainly, this is also the case for Andrew Pickering's (1995) "mangle of practice," which he characterizes as a "theory of everything." The difference, to my mind, is that Pickering activates and tests his "mangle" in relation to a wide range of empirical materials, such as the history of cybernetics (2010), rather than leaving it at the level of philosophical argumentation.

thus as taking us away from the power of things as such.

Drawing on Heidegger, Harman has repeatedly emphasized that objects are not defined by their relations, but rather has an inexhaustible essence that is *withdrawn* from all relation:

The science of geology does not exhaust the being of rocks, which always have a surplus of reality deeper than our most complete knowledge of rocks - but our practical use of rocks at construction sites and in street brawls also does not exhaust them. Yet this is not the result of some sad limitation on human or animal consciousness. Instead, rocks themselves are not fully deployed or exhausted by any of their actions or relations (2013: 32)

Against process thinkers like Gilles Deleuze, Harman objects that they ‘undermine’ objects. By this he means that they deprive objects of reality by locating the ‘ultimately real’ as an underlying flow of becoming. Reversely, he criticizes relational approaches like Latour’s for ‘overmining’ objects, since they are seen as only surface effect of network relations.⁶ In Harman’s view, therefore, both fail to deal with objects as withdrawn entities in their own rights.

Though Harman’s approach is significantly different from the reductions of Meillassoux, they share the ambition to shed objects of necessary correlations (or relations) with people. This program can be questioned in terms of its premises and its coherence. Above, I noted that speculative realists and object-oriented ontologists never question the specific ‘correlations’ on which scientists depend when making the factual statements that these philosophers depend on when making their own critiques of correlation. In the case of Harman, who relies neither on scientific claims nor on other forms of empirical evidence, the problem is more to do with unbridled speculation.

⁶ For a quite different interpretation of the relation between “underlying flow” and “surface effects”, parsed through Deleuze and Guattari’s (1987: 20-21) “formula” PLURALISM=MONISM, see Jensen and Rödje (2010: 26).

These alternating tendencies to scientism or speculation create daunting problems for anthropologists and STS researchers fascinated by the promises of speculative realism and object-oriented ontology. Combined with the ambition *to get away from how people act and think*, these problems become more or less insurmountable. Since, as social scientists, anthropologists and STS researchers are *per definition* interested in just that topic, object-oriented ontology seems practically unworkable.

A counter-factual can make this point. Had Martin Holbraad, in his study of Ifá divination, taken inspiration from de Landa or Meillassoux, he would have had to conclude *not* that Ifá diviners had a radically different conception of truth, but simply that they got it wrong. Perhaps the ontology of divination might be re-described in terms of emergent morphogenetic patterns or certain mathematical truths. Yet, not only would this run directly counter to Holbraad's actual ontological approach, it would be unrecognizable as anthropology. It is similarly unclear how Harman's speculations on behalf of withdrawn objects might be squared with the concrete ethnographic encounters that motivated Holbraad to put truth in motion. In combination, the removal of people and their relations, and the epistemic privilege given to philosophy (and science) disables the possibility of any encounter with alterity.

To account for the difference between object-oriented and STS ontologies, there is no need to rely on a counter-factual, since discussions are already unfolding. Themes such as climate change and the anthropocene are particularly important testing grounds for object-oriented ontology, since they so clearly illustrate the power of nonhuman forces outside of human control. Timothy Morton (2013), for example, has written about climate as a hyperobject that 'withdraws' from relations and is indifferent to human interventions. Likewise, Nigel Clark (2011) has written about natural catastrophes, and taken Latour to task for failing to account for their self-contained existence.

These two examples evince a similar structure of problems. Thus, while Morton's characterization of climate change as a hyper-object abounds in vivid metaphors and images, it contains no detailed investigation of any particular setting,

and no examination of any group of people, their problems, actions, or thoughts in relation to the phenomenon. As in Harman, the image remains fundamentally speculative, and it is the philosopher-theorist that does all the speculation.

Moreover, though it may be philosophically pertinent to identify the untouched essence of climate change or tsunamis, it is quite hard to identify the social scientific purchase or relevance of the effort. After all, far from being completely 'withdrawn,' these phenomena form an enormous amount of heterogeneous relations with all the people, who are affected by them, hurt or worried, or who imagine their consequences and take according action.

Aside from the idea that it would be *possible* to do anthropology by focusing exclusively on what is 'withdrawn' from any relation, questionable for the reasons just given, almost everything the STS scholar or anthropologist *would* typically want to say *concerns these relations*. Ironically, this is exemplified by Nigel Clark's (2011) *Inhuman Nature*, which spends considerable energy skewering Latour for his residual anthropocentrism, yet ends up centering his own analysis on Emmanuel Levinas' deeply relational and human-centered question of how to respond to the 'other'.

Reception and Interrelations

In this paper, I have discussed three quite different 'turns' to ontology: in STS, anthropology, and philosophy. These three turns each have complicated histories of emergence and reception. In STS, ontology has long functioned as a minor position, or undercurrent, but the word as such has only recently been subject to specific scrutiny. This belated attention was largely due to a conference dedicated to the question "A Turn to Ontology in STS?" organized by Steve Woolgar at Oxford University in 2008, and the subsequent publication of a 2013 special issue of *Social Studies of Science* (e.g. Woolgar and Lezaun 2013, Law and Lien 2013).

Unfortunately, however, that special issue offers quite a limited engagement with the richer history of ontology in the field. Moreover, the previous editor of the journal, Mike Lynch (2013), took the special issue as an occasion to offer a dismissive and largely straw critique of ontology, which he read as little more than a

return to metaphysics at the cost of empirical studies.⁷ It remains to be seen whether STS will take ontology to heart or whether, more probably, it will persist as a fertile but somewhat overlooked current in the field.

In his critique of ontology in STS, Mike Lynch proposed 'ontography' as an alternative term. In contrast to ontology, which he relegates to an outdated location in the metaphysical clouds, ontography would be resolutely centered on empirical investigation.⁸

In a footnote, Lynch (2013: 459-60, n6) mentions that he thought the term 'ontography' was his invention, but found that it had already been used for the very kinds of 'metaphysics', he aimed to avoid. He doesn't make any references but it is striking that Martin Holbraad (2009) uses exactly the same term, and it is tempting to think that Lynch had accidentally come across Holbraad's work. In any case, by referring to ontology as nothing but a pretentious 'philosophy in the sky', Lynch unwittingly repeats critiques of the ontological turn occurring in anthropology (Bessire and Bond 2014, Graeber 2015).

Contrary to STS, ontology in anthropology has been violently debated, especially since 2012, where Eduardo Viveiros de Castro, Martin Holbraad and Morten Pedersen convened a discussion at the AAA conference. Given the breadth, if not depth, of subsequent debates, I have only been able to briefly address some central points of contention, relating to the ontological turn's supposed lack of political analysis, its essentialism and colonial impetus, and to the argument that ontology is simply speculative philosophy dressed up as anthropology. In anthropology, the fronts are thus drawn up much more sharply than in STS. Many

⁷ Bessire and Bond (2014: 451n12) tendentiously refer to Lynch's (2013) post-script as proof that "scholars working in STS have greeted the claims by ontologists to novelty with a similar skepticism." This is especially curious since Lynch says nothing about the *anthropological* variant of ontology that are at the centre of their critique, but focuses rather on the STS version towards which they show considerable more sympathy.

⁸ Ironically, ontography would thus closely resemble the *actual* meaning given to practical ontologies, except for a limiting commitment to the ethnomethodological vocabulary of mundane practice and locally, situated action.

anthropologists, particularly, but by no means exclusively North American, have been in a great hurry to distance themselves from the turn, if not more actively calling for its quick demise. Yet ontological modes of anthropological analysis continue unabated.

As I have emphasized, this work is itself heterogeneous. For example, there are various differences, small and large, between the Cambridge-trained scholars involved with *Thinking Through Things*, and the research cluster on alter-modernities in the North and South America, initiated by Arturo Escobar at the University of North Carolina, Chapel Hill and presently continued and re-invented by Marisol de la Cadena at University of California, Davis, and Mario Blaser at Memorial University in Newfoundland, Canada. Also important is the emerging multispecies tradition (e.g. Kirksey 2014), which is significantly inspired by Donna Haraway and Anna Tsing, and in various ways cross-fertilizes STS and anthropology.

Finally, note must be made of the magisterial ontological typology of Philippe Descola (e.g. 2013), which is generally seen as a sober anthropological enterprise, though with a penchant for abstraction and a certain rigidity. In some sense, his systematic efforts can be likened to the efforts of philosophers to specify ontology in general, rather than to reinvent it as a tool with which to generate new ethnographically informed concepts.

The difference between the sobriety of Descola's ontological discussion and the provocation of Viveiros de Castro's is neatly captured in Bruno Latour's (2009) comparison, which asks whether "perspectivism" should be seen as 'type or bomb'. For Descola, perspectivism is one type of cosmology among others, and it is the role of the anthropologist to describe and categorize such types. For Viveiros de Castro, quite differently, perspectivism is a 'bomb' because it demands a radical rethinking of the anthropological enterprise. It is not surprising that the latter argument has proven far more controversial. In Latour's generally balanced review of the two positions, he nevertheless comes out in favor of the perspectivist bomb. In fact, he has also taken over Viveiros de Castro's notion of multinaturalism, the idea that people have, and live in, different kinds of natures rather than cultures.

While this argument aligns with the anthropological turn, it simultaneously signals Latour's distance from object-oriented ontology and speculative realism. Despite significant internal variations, this 'tradition' basically aims to specify the 'right' ontology. The difference from both Viveiros de Castro's and Latour's versions of multinaturalism is manifest, because one obviously cannot be simultaneously committed to multiple natures that have different forms -- to be specified through empirical work -- and to the notion of a general ontology, specifiable through philosophical analysis, or via particular scientific concepts.

As I have suggested, the emphasis on objects "withdrawn" from all relations combined with the "one ontology" commitment makes speculative realism, and its variants and offshoots, practically unworkable for ontologists working in the STS and anthropological traditions. Thus, it is hardly surprising that speculative realism and object-oriented ontology has been most welcomed in areas within the humanities with a primary commitment to theory, such as certain forms of media and art studies. Whether these ideas will succeed in making inroads into more conventional philosophical departments remain to be seen, but there are good reasons to be skeptical (Zahavi 2016).

Since Bruno Latour is the only figure that appears in all three ontological approaches, it seems fitting to end by drawing attention to some tendencies in his most recent work. As noted, Latour came out on the side of Viveiros de Castro's ontological pluralism rather than Descola's typological endeavor. Latour's own work, however, has shown some significant permutation over the last years. Indeed, as suggested by its name, his *Modes of Existence* (2013) aims to specify a general ontological system. Certainly, there are multiple modes, and they are meant to be able flexibly account for all possible variation. Yet, at the end of the day, this is discernably *Latour's* system.

As Latour redefines himself as a philosopher, therefore, he is also exhibiting an increasing alignment with the most problematic tendencies of speculative realism. The unfortunate consequence is that the usefulness *Modes of Existence* for empirically minded social scientists is very limited. In terms of *inspiration* for

experimenting with the articulation of practical ontologies, the interested reader is much better off consulting the older *Irreductions* (1988).

Such experimentation can be further enhanced by drawing on the rich palette of resources developed in STS and anthropology over the last several years. But, as these bodies of work continuously insist, there can be no new ontological articulations unless such resources are continuously put in conjunction with, and are allowed to be transformed by, the weird realities of the many things we study.

References

- Asad, Talal. 1973. *Anthropology and the Colonial Encounter*. New York: Humanity Books,
- Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press, 2007.
- Bessire, Lucas and David Bond. 2014. "Ontological Anthropology and the Deferral of Critique," *American Ethnologist* 41(3): 440-56.
- Blaser, Mario. 2010. *Storytelling Globalization from the Chaco and Beyond*. Durham, NC and London: Duke University Press.
- Bloor, David. 1976. *Knowledge and Social Imagery*. Chicago: University of Chicago Press.
- Callon, Michel & Bruno Latour. 1992. "Don't Throw the Baby out with the Bath School! A Reply to Collins and Yearley," in *Science as Practice and Culture*, Andrew Pickering, ed. Chicago: University of Chicago Press, pp. 343-69.
- Clark, Nigel. 2011. *Inhuman Nature: Sociable Life on a Dynamic Planet*. Los Angeles, London, New Delhi, Singapore & Washington D.C.: Sage.
- Clifford, James, and George E. Marcus, eds. 1986. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley, Los Angeles & London: University of California Press.
- Cussins, Charis. 1998. "Ontological Choreography: Agency for Women Patients in an Infertility Clinic," in *Differences in Medicine: Unraveling Practices, Techniques, and Bodies*, Marc Berg and Annemarie Mol, eds. Durham, NC: Duke University Press, pp. 166-202.
- de la Cadena, Marisol. 2015. *Earthbeings: Ecologies of Practice across Andean Worlds*. Durham, NC & London: Duke University Press.
- de Landa, Manuel. 1998. *A Thousand Years of Nonlinear History*. New York: Zone Books.

- Deleuze, Gilles and Felix Guattari. 1987. *A thousand plateaus: Capitalism and schizophrenia*. Minneapolis, MN & London: University of Minnesota Press
- Descola, Philippe. 2013. *Beyond Nature and Culture*. Chicago: University of Chicago Press.
- Evans-Pritchard, E. E. 1976 [1937]. *Witchcraft, Oracles, and Magic among the Azande*. Oxford: Clarendon.
- Fujimura, Joan. 1991. "On Methods, Ontologies and Representation in the Sociology of Science: Where Do We Stand?" in *Social Organization and Social Process: Essays in Honor of Anselm Strauss*, David Maines, ed. New York: De Gruyter, pp. 207-49.
- Gad, Christopher, Casper Bruun Jensen and Brit Ross Winthereik. 2014. "Practical Ontology: Worlds in STS and Anthropology," *NatureCulture* 3: 67-86
- Galison, Peter. 1997. *Image and Logic: A Material Culture of Microphysics*. Chicago: University of Chicago Press.
- Graeber, David. 2015. "Radical Alterity Is Just Another Way of Saying "Reality": A Reply to Eduardo Viveiros De Castro," *Hau: Journal of Ethnographic Theory* 5(2): 1-41.
- Hallowell, A. Irving. 1960. "Ojibwa Ontology, Behavior, and World-view." In *Culture in History: Essays in Honor of Paul Radin*, Stanley Diamond, ed. New York: Columbia University Press, pp. 49-82.
- Haraway, Donna. 1991. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge.
- Harman, Graham 2002. *Tool-being: Heidegger and the metaphysics of objects*. Peru, IL: Open Court.
- Harman, Graham. 2009. *Prince of Networks: Bruno Latour and Metaphysics*. Re-press: Victoria, Australia.
- Harman, Graham. 2014. *Bells and Whistles: More Speculative Realism*. Winchester, UK & Washington, US: Zero Books
- Henare, Amiria, Sari Wastell, and Martin Holbraad (eds.) 2007. *Thinking Through Things: Theorising Artefacts Ethnographically*. New York: Routledge.
- Heywood, Paolo. 2012. "Anthropology and What There Is: Reflections on 'Ontology'," *Cambridge Anthropology* 30(1): 143-51.

- Holbraad, Martin. 2009. "Ontography and Alterity: Defining Anthropological Truth," *Social Analysis* 53(2): 80-93.
- Holbraad, Martin. 2012. *Truth in Motion: The Recursive Anthropology of Cuban Divination*. Chicago, IL: University of Chicago Press.
- Holbraad, Martin, Morten Axel Pedersen, and Eduardo Viveiros de Castro. 2014. "The politics of ontology: Anthropological positions." *Cultural Anthropology*, <http://www.culanth.org/fieldsights/462-the-politics-of-ontology-anthropological-positions>.
- Jensen, Casper Bruun. 2004. "A Nonhumanist Disposition: On Performativity, Practical Ontology and Intervention," *Configurations* 12(2): 229-261.
- Jensen, Casper Bruun. 2012. "Anthropology as a Following Science: Humanity and Sociality in Continuous Variation". *NatureCultures* 1(1): 1-24.
- Jensen, Casper Bruun. 2014. "Continuous Variations: The Conceptual and the Empirical in STS, *Science, Technology, and Human Values* 39(2): 192-213.
- Jensen, Casper Bruun and Kjetil Rødje. 2010. "Introduction" in *Deleuzian Intersections: Science, Technology, Anthropology*, Casper Bruun Jensen and Kjetil Rodje, eds. Oxford & New York: Berghahn, pp. 1-37.
- Kirksey, Eben, ed, 2014. *The Multispecies Salon*. Durham, NC & London: Duke University Press.
- Knorr Cetina, Karin. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge & London: Harvard University Press.
- Kopenawa, Davi. 2013. *The Falling Sky: Words of a Yanonami Shaman*. Cambridge, MA & London: Harvard University Press.
- Kuhn, Thomas. 1970 [1962]. *The Structure of Scientific Revolutions*. London: The University of Chicago Press.
- Laidlaw, James. 2012. "Ontologically Challenged," *Anthropology of the Century* 4.
- Latour, Bruno and Steve Woolgar. 1986. *Laboratory Life: The Construction of Scientific Facts*. Princeton, NJ: Princeton University Press, 1986.
- Latour, Bruno. 1988. *The Pasteurization of France*. Cambridge: Cambridge University Press.
- Latour, Bruno. 1999. "On Recalling ANT," in *Actor-Network Theory and After*, John Law and John Hassard, eds. Oxford: Blackwell Publishers, pp. 15-25.

- Latour, Bruno. 2009. "Perspectivism: 'Type' or 'bomb'?" *Anthropology Today* 25(2): 1-2.
- Latour, Bruno. 2013. *An Inquiry into Modes of Existence: An Anthropology of the Moderns*. Cambridge & London: Harvard University Press.
- Law, John and Marianne Lien. 2013. "Slippery: Field Notes in Empirical Ontology," *Social Studies of Science* 43(3): 363-378.
- Lienhardt, Godfrey. 1961. *Divinity and Experience: The Religion of the Dinka*. Oxford: Clarendon.
- Meillassoux, Quentin. 2008. *After Finitude: An Essay on the Necessity of Contingency*. New York: Continuum.
- Merton, Robert K. 1973. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago, IL & London: University of Chicago Press.
- Mol, Annemarie. 2002. *The Body Multiple: Ontology in Medical Practice*. Durham, NC: Duke University Press.
- Morton, Timothy. 2013. *Hyperobjects: Philosophy and Ecology after the End of the World*. Minneapolis, MN & London: University of Minnesota Press.
- Palecek, Martin and Mark Risjord. 2013. "Relativism and the Ontological Turn within Anthropology," *Philosophy of the Social Sciences* 23(1): 3-23.
- Pickering, Andrew, ed. 1992. *Science as Practice and Culture*. Chicago, IL: University of Chicago Press.
- Pickering, Andrew. 1995. *The Mangle of Practice: Time, Agency and Science*. Chicago, IL & London: University of Chicago Press.
- Pickering, Andrew. 2008. "New Ontologies," in *The Mangle in Practice: Science, Society, and Becoming*, Andrew Pickering and Keith Guzik, eds. Durham, NC & London: Duke University Press, pp. 1-17.
- Pickering, Andrew. 2010. *The Cybernetic Brain: Sketches for Another Future*. Chicago, IL & London: University of Chicago Press.
- Stengers, Isabelle. 2000. *The Invention of Modern Science*. Minneapolis & London: University of Minnesota Press.
- Strathern, Marilyn. 1988. *The Gender of the Gift: Problems with Women and Problems with Society in Melanesia*. Berkeley, Los Angeles and London: University of California Press.

- Strathern, Marilyn. 1992. *After Nature: English Kinship in the Late Twentieth Century*. Cambridge: Cambridge University Press.
- Strathern, Marilyn. 1995. "Cutting the Network," *Journal of the Royal Anthropological Institute* 2: 517-35.
- Todd, Zoe. 2016. "An Indigenous Feminist's Take on the Ontological Turn: 'Ontology' Is Just Another Word for Colonialism," *Journal of Historical Sociology* 29(1): 4-22.
- Verran, Helen. 2001. *Science and an African Logic*. Chicago, IL & London: University of Chicago Press.
- Verran, Helen. 2002. "A Postcolonial Moment in Science Studies: Alternative Firing Regimes of Environmental Scientists and Aboriginal Landowners," *Social Studies of Science* 32(5/6): 729-62.
- Viveiros de Castro, Eduardo. 1998. "Cosmological Deixis and Amerindian Perspectivism," *Journal of the Royal Anthropological Institute* 4(3): 469-88.
- Viveiros de Castro, Eduardo. 2004. "Exchanging Perspectives: The Transformation of Objects Into Subjects in Amerindian Ontologies," *Common Knowledge* 10(3): 463-84.
- Viveiros de Castro, Eduardo. 2004b. "Perspectival Anthropology and the Method of Controlled Equivocation," *Tipiti* 2 (1): 3-22.
- Viveiros de Castro, Eduardo. 2011. "Zeno's Wake: Of Lies, Beliefs, Paradoxes and Other Truths," *Common Knowledge* 17(1): 128-45.
- Wagner, Roy. 1975. *The Invention of Culture*. Englewood Cliffs, NJ: Prentice-Hall.
- Woolgar, Steve and Jazier Lezaun. 2013. "The Wrong Bin Bag: A Turn to Ontology in Science and Technology Studies," *Social Studies of Science* 43(3): 321-340.
- Zahavi, Dan. 2016. "The End of What? Phenomenology Vs. Speculative Realism," *International Journal of Philosophical Studies* 24(3): 289-309.