Review Essay

Actor-Network Theory and Critical Sociology*

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Complexities: Social Studies of Knowledge Practices, edited by John Law and Annemarie Mol, Durham, NC: Duke University Press, 2002.

Aircraft Stories: Decentering the Object in Technoscience, by John Law, Durham, NC: Duke University Press, 2002.

The Body Multiple: Ontology in Medical Practice, by Annemarie Mol, Durham, NC: Duke University Press, 2002.

One of the more interesting developments in 1990s sociology has been that of so-called actor-network theory (ANT). Given that ANT has provided some genuinely innovative ideas on long-standing questions in social theory, it is curious to note that it has had such scant impact on North American sociology. This article starts out from the conviction that any social theorist would do well to engage with the suggestions for conceptualising the social that ANT has on offer. This is not to say, however, that ANT has to be accepted uncritically. Rather, the debates and methodologies that it has opened up seem to me adequately important as to require contribution and evaluation from a diversity of backgrounds – including North American sociology. I will focus on the three new books listed above, but situate them in the broader context of ANT in order to reach an assessment of its relevance for critical sociology. ANT is not a

* The main books under consideration in this review essay are the following: *Aircraft Stories: Decentering the Object in Technoscience*, by John Law (Durham, NC: Duce University Press, 2002); *Complexities: Social Studies of Knowledge Practices*, edited by John Law and Annemarie Mol (Durham, NC: Duke University Press, 2002); and, *The Body Multiple: Ontology in Medical Practice*, by Annemarie Mol (Durham, NC: Duke University Press, 2002).

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unified 'field' as such, as its own practitioners are the first to point out (e.g. Law 1999).

The theory of the conditions, constraints and modifications of agency within networks is more like an instance of a wider sensibility in the contemporary human sciences for the intertwining of 'the human,' 'culture,' 'language,' 'mind' or 'society,' with 'the nonhuman,' 'nature,' the physical world of bodies, things, artifacts and technology. There is an explicit struggle to reach beyond the impasse, witnessed across academia, between social constructionism and postmodernism on the one hand, and realism and scientific objectivism on the other. During the late 1980s and early 1990s this impasse was made acute, perhaps, by the rapid spread of the sort of cultural studies inspired by semiotics and Foucault. In its strong, relativist version, this doctrine states that no knowledge of the physical world is possible; as everything is 'constructed' through language and all signs are 'arbitrary' there is no possibility of distinguishing one way of knowing from another. This is a tendency to be found not only in cultural studies, but goes back to humanistic sociology of knowledge (Berger and Luckman 1967) and the cultural-relativist school in U.S. anthropology around Franz Boas and Margaret Mead.

Realism, by contrast, ultimately believes that the physical and even social world itself discloses what it is, and can be fully explained if only scientists look hard enough (a tradition upheld by most scientists, e.g. Wilson 1998, but see also Prigogine and Nicolis 1989; and, Nadeau and Kafatos 1999). Unhappy with this dichotomous state of affairs, ANT has been one of the most vocal if not influential of recent theoretical developments in addressing the deadlock between constructionism and realism. ANT continues Foucault's inquiries into the historical conditions of European modernity (see esp. Foucault 1961 and 1975), but more than Foucault, wishes to probe into one founding aspect of modernity, namely the conceptual segregation of the 'nonhuman' from the 'human' (Latour 1993). In a way it turned an epistomological question – how can we get to truth? – to an ontological one – how does knowledge come about? This movement, from a hermeneutical preoccupation with ideas, signs and metaphor, towards an ethnographical treatment of knowledge as a physical, circulating and conflictual process, was paralleled by a philosophical movement from idealism to materialism.

The range of what could be called, after the 'linguistic turn,' the 'material turn,' is considerable. ANT arose primarily out of poststructuralism-influenced science studies (Latour and Woolgar 1979; Latour 1987; see also Latour 1999), the history of technology (Law 1986; MacKenzie and Wacjman 1985; Shapin and Schaffer 1985) and the sociology of medicine (Latour 1988; Berg and Mol 1998). Even then, it has found affini-

ties with anthropology (Strathern 1991), market economics (Callon 1998), feminist 'technoscience' studies (Haraway 1997), human geography (Thrift 1996), organizational sociology (Chia 1998; Clegg 1989), social psychology (Michael 1996), cultural studies (Kendall and Wickham 2001), media studies (Couldry 2000), performance studies (Höpfl 1997), political theory (Barry 2001), sociology of globalization (Urry 2000), sociology of tourism (Saldanha 2002), and the philosophy of science (Pickering 1995; Stengers 1997 and 2000). The sheer range of interconnections between ANT and other emerging materialisms makes the name 'actor-network theory' seem more and more inexact and obsolete (Law and Hassard 1999). I will nevertheless keep it as a handy nomer for those theorists that have associated themselves with its development.

In brief, like all these other materialisms, ANT proposes an anti-essentialist, open-ended and resolutely relational way of understanding the world. This is what it inherits from the poststructuralist 'canon' (Foucault, Derrida, Lyotard, Lacan). But Michel Serres and Bruno Latour, two of the main sources of inspiration for ANT, have always been vehemently opposed to the dominant *literary* interpretation of post-structuralism, especially prevalent in the United States. Serres and Latour did away with Derrida's poorly understood 'there is nothing outside the text' cliché and extended relational thinking to materiality (cf. Serres 1982; Latour 1992). This means that entities such as laboratories, measuring devices, viruses, journals, medical authority, political institutions, transport technologies, blood, lungs and customs, just like texts, only come to be effective by virtue of their interactions with other things. All these are heterogeneous *actors* that connect to form a particular *network* – the above list pertaining to the SARS epidemic – which both enables and constrains any constituent's agency (see Callon's 1986a classic).

Latour became popular in British sociology of science and technology in the mid-1980s, when the term actor-network theory was suggested (Callon 1986b). Some 17 years on, there are still few books 'on' ANT available. The recent publication of John Law's and Annemarie Mol's books is therefore in itself important. Apart from that, their monographs and their edited collection signal either the maturity of ANT or the morphing of ANT into something else (cf. Law and Hassard 1999). This transformation has been going on for some time, not in the least because 'ANT' was from the beginning only a catch-phrase for a loose collection of authors and theoretical tendencies. So while it might be imprecise to continue using the term ANT, it is convenient for invoking a set of trajectories, linkages and discussions chiefly inspired by Latour and Serres.

Law's *Aircraft Stories* is long awaited. His first book *Organizing Modernity* (1994) was, except for Latour's books, for long the only book-length

ethnography in 'actor-network theory,' and was soon out of print. As in Law's previous ethnography, *Aircraft Stories* is poststructuralist materialism executed in 'ordinary language.' This is what Mol calls 'empirical philosophy': creating new concepts to study the social by way of easily understood examples, somewhat in the tradition of Goffman and Garfinkel. Law tells of a particular example of 'technoscience,' the attempt in the 1980s and early 1960s of the British military to build the TSR2 battle aeroplane. Through presenting ethnographical material (mainly internal documents), different aspects of a materialist ontology are highlighted. It is an old methodological trick of ANT: talk about the nitty-gritty details of a study, then uninhibitedly theorize about such grand sociological themes as subjectivity, culture, decision-making, aesthetics, narrative and politics – all of which receive systematic attention in Law's book.

The central aim is to 'decenter the object.' While the decentering of the human subject after structuralism and post-structuralism is generally acknowledged in critical human science (e.g. Hall 1992; Pile and Thrift 1995), it seems to Law that in this critique the physical world is left to stand in its full glory of timeless essences and absolute boundaries. If subjects are split, heterogeneous and multiple, so are objects. If subjects depend on webs of relations for their existence, so do objects; and these webs always consist of both humans and nonhumans. Subjects and objects are for Law "precarious achievements," or in the terminology he introduces in his new book, "fractional coherences."

So there are multiplicities. There are multiple distributions of subjects and multiple distributions of objects. And these distributions overlap. Sometimes the overlaps work to make patterns of light, somewhat singular narratives. Sometimes they consolidate themselves to make coherences, simplicities. And sometimes they do not – and then we find that we are left in the dark places, turned into a fragmented set of subject positions confronted by an equally uncoordinated set of object positions.

> No doubt this is uncomfortable. But, if we can work it right, perhaps in those dark moments it is easiest to learn about the making of objects and the making of subjects because in those moments it is easiest to attend to the work of distribution and coordination. (Law 2002:65)

Law is therefore able to move beyond the debilitating skepticism of postmodernism, without losing all of postmodernism's critical potential. Neither are objects totally knowable, nor is it the case that in our description of the world, 'anything goes.' What strategies of 'distribution' and 'coordination' need to be performed for an object (like a military aircraft project) to hold together, to be 'more than one but less than many' (ibid.: 3)? When does the object crumble apart because there's too much

controversy or dispute pulling at it? What is it about the ways the object has been enrolled in a network that precludes certain knowledges of it? What we then get is a 'mapping' of all sorts of technical and discursive practices that together constitute – and often, split – the TSR2 aircraft project. The great advantage of thinking in terms of fractional coherence is that it becomes possible to talk about any socio-material entity (a project, school, zoo, sport, food scare, war, nation-state, class, etc.) without implying any essence or necessity. One meticulously follows the *work*, done by humans, things and symbols, that goes into tying the entity more-or-less together.

But isn't the researcher then also producing, in a real sense, one facet of the entity under scrutiny? ANT is highly self-reflexive, and part of its rather distinctive writing style is a near obsession with how the researcher is always-already implicated in the researched: 'The hands of the storyteller are never clean' (ibid.: 11). It is telling that Law's chapter on 'Subjects' is almost entirely autobiographical; the subjectivities of defense analysts, engineers, secretaries, pilots or peace activists are hardly mentioned in the book. However, and conspicuously in an era of self-criticism in anthropology, he categorically shies away from making any statements about his own social and political position. After all, he says, his ethnography is a 'pinboard,' a mapping of heterogenous elements and conflicting perspectives, not a linear narrative with its own perspective and recommendations. In the last two chapters Law seems to argue that any explicitly critical intervention is 'arborescent,' in the language of Deleuze and Guattari (1980), i.e. not open to the multiplicity of the world, like Law is. If any description is also a material interference with the world, simply describing fractional coherence absolves Law from the criticism of quietude.

But is it sufficient to show incongruity in military power to contest it? ANT has been specifically and consistently targeted for being apolitical (Star 1991), 'managerialist' or 'centrist' (Singleton and Michael 1993; see Law 1994), too anti-humanist (Amsterdamska 1990), relativist (Collins and Yearly 1992), not geographical enough (Murdoch 1997) and too local (see Law and Hetherington 1999). Implicitly addressing some of these criticisms, Law, who I see as the willy-nilly main advocate of ANT, ends his book by briefly arguing that he does have a sense of responsibility (a word I've hardly come across in ANT literature). For, Law argues, maybe power structures are obdurate and versatile *because of* their internal incongruities, *because* the different 'narratives' and 'practices' don't always add up. That means that an emphatically local, anti-arborescent and non-normative 'pinboard' of incongruities such as Law's, actually becomes 'political.' In fact, 'Every time we act or tell, we also, at least putatively, make a

difference. We *always* act politically. The only question is how do we do it?' (ibid.: 7).

Yes, how? To act politically, for Law, is to analyse fractional coherence. Saying that the great structures of human society are reproduced in piecemeal fashion is hardly new; what is new about ANT is that it includes nonhumans, and this can certainly be worthwhile for analysing how inequality and domination hold together and spread (Law 1991). But where in this analysis do we then find reasons to *contest* power relations? What sort of difference does Law want to make to military power? We simply don't know, as he refuses to be 'critical.' So the question that he asks above, remains open. Rather gleefully, ANT in general leaves it up to the reader to criticise society. From its side, ANT just provides pinboards, which make a difference, of course (they're published and reviewed), but ultimately offer no justification for battling the status quo.

Like Law's new book, Mol's *The Body Multiple* seeks the multiplicity inherent in every thing, the focus this time being atherosclerosis, a disease involving the gradual obstruction of the arteries. Building on an ethnography of the treatment of atherosclerosis in a Dutch hospital, Mol's central thesis runs like this:

> If practices are foregrounded there is no longer a single passive object in the middle, waiting to be seen from the point of view of seemingly endless series of perspectives. Instead, objects come into being – and disappear – with the practices in which they are manipulated. And since the object of manipulatoin tends to differ from one practice to another, reality multiplies. The body, the patient, the disease, the doctor, the technician, the technology: all of these are more than one. More than singular. This begs the question of how they are related. For even if objects differ from one practice to another, there are relations between these practices. Thus, far from necessarily falling into fragments, multiple objects tend to hang together somehow. Attending to the multiplicity of reality opens up the possibility of studying this remarkable achievement. (Mol 2002:5)

It is clear from this quote that Mol wants to steer between social constructionism (which she calls 'perspectival tales') and objectivism or biological determinism. Disease is 'socially constructed,' if you want, but only if 'construction' means the interplay of cells, organs, language, technology, hospital wards, insurance, health policy, bioethics, etc. In other words, any 'construction' will have to include the material connectivity of the object/body itself.

> In talk about meaning and interpretation the physical body stays *untouched*. All interpretations, whatever their number, are interpretations *of*. Of what? Of some matter that is projected somewhere. Of some nature that allows culture

> to attribute all these shapes to it. This is built into the very metaphor of 'perspective' itself. (ibid.: 12)

In its insistence on materiality, ANT mostly prefers artefacts to humans, so a book-length ANT study of the human body is very timely. Mol is adamant that she is working on a theory of *practice*, what she calls a 'praxiology,' in which human action is treated as always-already entangled with its physical surroundings. Since these entanglements are necessarily heterogenous and constantly shifting, she argues that the human body itself is 'multiple.' Mol says an object such as atherosclerosis is 'enacted' – not constructed, signified or performed – by multiple practices. 'It is one of the great miracles of hospital life: there are different atherosclerosis in the hospital but despite the differences between them they are connected. Atherosclerosis enacted is more than one – but less than many. *The body multiple* is not fragmented. Even if it is multiple, it also hangs together' (ibid.: 55).

In a way, what we see emerging after ANT is a 'more-than-human' science (Whatmore 2003). Though we might still speak of institutions, social relations, rules, roles and situations, these aren't processes populated only by humans. This means, in principle, that to describe something like atherosclerosis, we shouldn't exclude biochemistry and physiology. In drawing on some science in her *study of* science, Mol then joins ranks with Isabelle Stengers, Gilles Deleuze and Serres, the materialist philosophers that inspired ANT, in trying to bridge the gap between the 'human' and the 'natural' sciences. Still, Mol's praxiology privileges the human side of things. Biology is only relevant for her insofar as it is intercepted by, or has an effect on, 'practice.' Saying that practice 'encompasses molecules and money, cells and worries, bodies, knives, and smiles, and talks about all of these in a single breath' (ibid.: 157) is fine, but still doesn't suggest how the gap between biology and sociology can be bridged. The precise interplay between on the one hand, processes within the cell and organs, and on the other hand, interpersonal and institutional relations between human beings, remains undertheorised. Furthermore, and more seriously, by privileging practice Mol seems to imply that outside the hospital a patient's arteries are no longer blocked up, since there is no medical practice enacting atherosclerosis. This brings her back to the constructionist paradoxes she wants to depart from.

Another pitfall in Mol's ethnography is that her 'body,' though multiple, seems to a large extent unmarked, as if all bodies with atherosclerosis are the same. Though she does write about gender, how sexual specificity matters to her ontological framework isn't systematically addressed. Other corporeal specificities, such as age, race, heredited diseases, sexuality or even class, are barely mentioned. ANT is perfectly aware of the

politicisation of the body by especially feminists, but in its wariness of the 'grand narratives' of modernity stays away from engaging with the politics of identity and difference. This is ironic, given that ANT, apart from having become itself a narrative of sorts, seems happy to decenter objects and multiply bodies while largely leaving one central tenet of modernity – the privileged standpoint of the white male middle-class subject – unscrutinised.

In fact, like Law, Mol explicitly writes that she is not interested in being critical. 'If reality is multiple, it is also political. The question this study provokes is how the body multiple and its diseases might be done *well*. This question will not be answered here. Instead, I'll map out the space in which it may be posed' (ibid.: 7). It could be argued that what such a mapping finally does, for all the talk of self-reflexivity and intervention, is to put the researcher outside the field, just like in positivism (cf. Haraway 1991). I map, you decide; my map is neutral. There is a curious detachment in Mol's writing about suffering, corpses and bureaucracy. Perhaps this is in opposition to overly personal feminist and cultural studies writing. And yet, the question that this raises is what the reasons might be – if there are any – to organise medical practice in alternative ways. Like with Law, Mol's very last pages show she is aware of these criticisms and posits that 'this is not a neutral book.' But again, the 'political' contribution lies solely in showing material messiness and the nonhierarchical complexity of a phenomenon. Whether this would lead to full privatisation of hospitals, more diffusion of ayurvedic medicine, or EU-wide databases on individuals' health, does not seem to be an immediate worry.

Despite the shortcomings, I strongly recommend Mol's book not only for sociologists/anthropologists of medicine and illness, but for any social scientist interested in conceptualising social practice. Speaking as a geographer, I was also pleased about Mol's keen sense of spatiality which seems to me crucial for any materialism (see Law and Hetherington 1999; Law and Mol 2000). ANT often rather smugly assumes that the reader knows where its innovations lie; Mol has helpfully included comments on the relationship between her ontology and the more prevalent theories of sociology, which run beneath the ethnography in a different font. Law has included boxes in his text with more or less the same intention. For those unacquainted with ANT (or whatever it has mutated into now), Mol's and Law's ethnographies are both excellent starting points.

It is obvious that Law and Mol have influenced each other a lot, and they have written many insightful papers together. Now there is an edited collection too, called *Complexities*. The title should come as no surprise. After being the buzzword in biology, physics and mathematics (Nicolis and Prigogine 1989), 'complexity' comes to stir up thinking in the human sciences (e.g. DeLanda 1996; see Dillon 2000). In the physical and life

sciences, 'complexity' has come to stand for the essentially unpredictable and fluid, yet self-organising and describable materiality of the world. This way of looking at the world rhymes well with social theory after poststructuralism. However, 'complexity' is then not a *metaphor* but an accurate, technical, 'realistic' characterisation of what Law called fractional coherence and Mol called the body multiple. Although, as in Law's and Mol's ethnographies, almost all of *Complexities* remains firmly committed to explaining the world from the human point of view without entering into dialogue with the natural sciences, simply naming the collection *Complexities* at least admits that there can be overlap and conceptual exchange with intellectual developments outside human science.

According to Law and Mol's introduction, *Complexities* sets out to avoid simplification without losing bearings altogether. Attending to the variety of *orderings* within any object of study is more than just celebrating complexity; it's showing how ordering is possible, given multiplicity and heterogenity. Thus, in his chapter, which I think the most interesting of the collection, Kwa explains that the natural sciences allow for two kinds of complexity, 'romantic' and 'Baroque.' Romantic complexity comes from a more or less Platonic tradition and is *holistic*, wishing for a transcendent unity (e.g. 'system,' 'society,' 'class,' 'organism,' 'subject') which expresses itself through the multifarious beauty of concrete reality. Baroque complexity, on the other hand, goes back to Lucretius and Leibniz and is a 'bottom-up' approach to matter. Every atom or constituting element is a reality by itself; although elements do work together to form larger entities, there is no 'blue-print' prior to this formation. Kwa discusses Serres, Deleuze, Prigogine, Benjamin, Whitehead and Darwin as 'Neobaroque' thinkers. My guess is that most orthodox functionalist and Marxist sociology would squarely classify as 'romantic,' but it is a pity that no-one in the collection reads the history of the human sciences through Kwa's distinction.

Apart from Law's and Mol's own chapters, which derive from their books, I found the empirical chapters of Lee and Brown and Thompson worthy of the label 'Baroque complexity.' Lee and Brown use a case-study of a child's trauma – usually associated with psychoanalysis and clinical psychology, which have tended to simplify the social – to conceive of childhood subjectivity in similarly relational, affective and dynamic ways as Law and Mol laid down in their books. Thompson's chapter, on the regulation of Kenya's elephant population, illustrates the wide range of scientific, political, legal, economic and cultural conflicts that the elephants are caught up in. Thus, Thompson shows for me that 'complexity' in the human realm becomes synonymous with 'fraught with tensions' and therefore 'open to contestation.' Predictably, the chapter is better at presenting us a 'pinboard' of disputes than intervening for sustainable

wildlife conservation, but it does provide some helpful thoughts on the relationship between politics and science.

Barry's chapter treats the political project of the European Union as an actor-network (cf. Barry 2001) and ethnographically follows the *accounts about* complexity through the European Commission. He concludes that bureaucracy and polity should not be reduced – not to humans or to technology, not to state or market. Barry's chapter shows another common pitfall of ANT analysis, however, in that there is a tendency to isolate the 'network' from its embeddedness in and frictions with other networks (Eastern Europe, postcolonial and trans-Atlantic relationships, the world market, etc.). The chapters of Callon, Strathern and especially Thévenot, though written by prominent scholars affiliated to ANT, I find poorly structured or even confused; it is unfortunate that the editors' lucid style of writing was not demanded from all contributors.

Coming back to my main point, the complexity of the social, for the authors in *Complexities*, does not seem to necessarily include the political positionalities of the researcher him/herself. Although ANT-like studies of technical-scientific complexity often include ample comments on how fieldwork and reflection unfolded, there is suspiciously little sense we get of the material (geographic, economic, phenotypical, pathological, etc.) *specificity* of the researcher-subject 'enacting' the object of the study. Ironically, the role of the observer is more fundamental an issue in progressive physics and biology (Nadeau and Kafatos 1999). If the study of complexity does not from the start include a theorisation of the situatedness of one's own knowledge in constellations of power, it brackets the conditions of its own existence, and therefore, risks gross simplification and reductionism of the sort that positivism has been accused of (cf. Haraway 1991). Moreover, if it is left up to the reader to draw connections from an uncritical pinboard of complexities, multiplicities and fractional coherences, to the structures of patriarchy, racism, capitalism and state violence, the pressing question is whether the pinboard can in fact face up to the real complexity of an unjust world, or whether it isn't chickening out of changing it.

To conclude, there are three developments that seem to be on their way in (what used to be known as) actor-network theory. First, ANT is joining the gradual move of English-language poststructuralism towards the *physical sciences*, under influence of Deleuze, Stengers, Serres and the sciences of complexity (cf. DeLanda 1996; it needs to be noted that there have been rapprochements between the human and physical sciences before, for example in general systems theory). Though I very much welcome this, there needs to be more sustainable dialogue. Appreciating the human and nonhuman as lying on a continuum has to go beyond just

stating that both are implicated in getting to know the world. Second, it is by now very clear that ANT is part of a larger *materialist project* in philosophy and the social sciences, encompassing human geographers (Bingham 1996; Hinchliffe 1999; Murdoch 1997; Thrift 1996; Whatmore 2003), anthropologists (Taussig 1993), political economists (Busch and Juska 1997) and contemporary phenomenologists (Lingis 2000).

And third, some ANT or ex-ANT writers seem to have taken issue with previous criticisms of being *apolitical*. In their important new books, Law and Mol rebuke this criticism by arguing that every author is an activist insofar as s/he interferes with the world. By laying bare the heterogenity and fragility within military, medical, legal or moral authority, it is presumed that automatically more progressive difference is made in the world than an antagonistic, politicised, *critical* sociologist could manage. If this is not presumed it would mean that Law and Mol don't really care whether social criticism is more effective than they are in making a difference. And this then begs the question whether they want any change at all.

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