Lost in Translation?

Actor-Network Theory and Organisation Studies

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ABSTRACT

Actor network theory (ANT) has influenced other intellectual traditions in general, and more recently management and organisation studies (MOS) in particular. Few studies have explored the nature and extent of such "translation". Based on our analysis of 17 top-tier journal publications, the paper identifies four translation strategies and discusses implications for inter-domain transfer of concepts.

Keywords: actor network theory, management and organization studies, translation, inter-domain transfer

1. INTRODUCTION

Student: "But I can't imagine one single topic to which ANT would apply!"
Professor: "Beautiful, you are so right, that's exactly what I think."

(Latour, 2005: 156)

Seminal texts by science and technology scholars such as Ashmore, Bijker, Callon, Fuller, Haraway, Knorr-Cetina, Latour, Lynch, Pinch, Woolgar, are cited with increasing frequency in journals of management disciplines such as Accounting, Operations Management, Strategy, Organization Theory, Leadership and Human Resource Management. On the one hand, this development has been welcomed as indicative of the value of Science and Technology Studies (STS) to the social sciences generally. On the other hand, this adoption of STS concepts has led to some anxiety within the STS community around the question of what happens to STS when it is 'appropriated' by disciplines with arguably different epistemological commitments and agendas. Particular areas of concern identified so far include whether STS is losing its radicalism as it is 'appropriated' by management academics, whether there is a need for an explicit conversation between STS and the Management Academy and whether STS 'should' be talking to, talking for or talking with 'business' (Neyland and Woolgar, 2004). Although the scope of these discussions has been comprehensive, what is currently missing from the arguments is a substantive empirical account that explores how specific ideas have travelled or been translated in this supposed diffusion. In this paper we explore how actor-network theory (ANT – variously referred to as the 'sociology of association', or 'sociology of translation'), as an example of an 'STS idea' has been invoked, drawn upon and mobilised in organisation studies, as a branch of management studies.

We choose to focus on ANT as it is commonly assumed that ANT has influenced other intellectual traditions. Hassard and McLean, for example, note and display the broadness of such accounts within the social sciences (2004: 498-499). ANT is now to be found in multiple scholarly domains, such as Information Systems (see e.g. Avgerou et al. 2004; Bloomfield et al. 1992), accounting (e.g. Chua 1995), strategy (e.g. Neyland 2006) and, it is claimed by Law (1999: 10), cultural studies, geography, sociology, and feminist studies. Also, we would expect, using the terminology of McLean and Hassard, more scholars to be "banging on Latour's door" (2004: 499) in the future. Yet, little work has been invested in exploring the nature of these travel activities. In light of this and a more specific interest in MOS, the paper proceeds as follows. First we introduce our understanding of ANT and highlight some of the key features that have been picked up on by organisation scholars. Next, we briefly introduce our methodology before moving on to an account of four different ways in which ANT has been translated in organisation studies. This section is followed by a discussion in which we show that while the translations of ANT apparent within MOS are consistent with the interpretive flexibility one would expect from readings of ANT, we should not be blind to the baggage that has travelled with it.

2. ANT AND STS

ANT emerged from studies in the sociology of science where the focus was primarily on illustrating how scientific knowledge is partial, interested and non-objective (in any absolute sense) because of its socially constructed nature (Bloor, 1976; Collins, 1983,

1985; Ashmore, 1989; Webster, 1991; Lynch, 1993). These studies have tended to direct their analysis towards scientists themselves as producers of knowledge in addition to the discourses, representations and rhetoric they use to support their activity. However, these studies had largely avoided investigating the role of other materials and actors, in particular non-humans, in the process of knowledge production (though see Latour and Woolgar, 1979; Knorr-Cetina, 1981). These 'missing masses' (Latour, 1987) include the apparatus of science (putatively conceived) such as laboratory instruments, research institutes, experimental protocols, measurement standards, and non-science, for example; users, government funding bodies, law, ethics, 'the public'.

ANT is one approach that has been developed to accommodate the role of technology (non-humans) in the process of knowledge construction and social change. ANT itself refers to a wide range of theoretical and methodological concepts developed by numerous authors over the last decade or so, in particular Callon (1986b) and Latour (1987, 1991). It is worth mentioning at this point that the extent to which ANT is regarded as a predominant theoretical frame in science and technology studies varies considerably within the field, as there exist other approaches with similar aims, in particular social worlds/arenas theory (Strauss 1978; Becker, 1982; Clarke, 1990, 1991) and symbolic interactionism (Gieryn, 1983; Star and Griesemer, 1989; Bowker and Star 1999).

ANT attempts to show how the relative strength of scientific truth is contingent upon the capacity of the producers of that knowledge (actors) to co-ordinate and align heterogeneous elements (also actors) - scientific/non-scientific, human/non-human in

durable networks. To study how these actor-networks are composed and maintained, actor-network theorists suggest that social scientists should ethnographically follow scientists and technologists around as they go about their day-to-day work of constructing networks of heterogeneous actors, trying not to pre-judge what these networks are constituted of.

The concern with analysing how scientific knowledge is produced is addressed within ANT through three central tenets inherited from the sociology of scientific knowledge (Callon 1986b): *generalised agnosticism* - analytic impartiality as to whether actors are involved in controversy; *generalised symmetry* - the use of an abstract and neutral vocabulary to understand conflicting viewpoints of actors; and *free association* - the repudiation of *a priori* distinctions between the social and the natural or the technological (Michael 1996). Scientists and technologists then, are seen as 'multifaceted entrepreneurs' whose professional practice involves not only doing 'science' but also co-ordinating, aligning and administrating a mundane array of social, political and economic tasks and resources. By this 'heterogeneous engineering' (Law 1987), scientists extend their influence outside of the laboratory. This involves enrolling a range of diverse actors, including research funding bodies (government, industry, and charities), instrumentation and materials manufacturers, professional peers and the public

ANT theorists have developed a particular vocabulary with which to identify the participants in a network and to conceptualise the means by which these participants are manoeuvred, co-ordinated, aligned and rendered stable. As the name suggests, the

concept of actor is key to ANT. Callon (1991: 140) defines an 'actor' as "any entity able to associate texts, humans, non-humans and money." So, actors or actants need not necessarily be either human or non-human in order to be active in a network. Thus, the terms subsume otherwise analytically distinct categories like politics, science, and technology, which structure less eclectic descriptions/analyses of technoscientific practice. ANT theorists engage these terms in reference to general entities that demonstrate a capacity to associate other human/non-human entities. An actor then, is an author to whom actions and agency can be attributed. Rather than explore each of these items of analytical vocabulary in turn, in the following we focus on the central notion of translation as this is perhaps, as we shall see, the strongest point of connection with organisation studies.

The term translation refers to the means by which actors come to exercise some authority over the elements of which a network is composed. Callon accounts for this group of strategic practices by which network identities are constituted and translation effected (Callon, 1986b). Network actors attribute to 'target' entities a set of problems in which that identity is embedded and a set of possibilities in which both might be invested. So, translation points to the way others aspirations are borrowed to support the endeavours of the enrolling actor. If the enrolling actor is to be successful, this process has to reach the stage where once unrelated desires become indistinguishable from each other. The translator-spokesperson effectively speaks for the entities that it seeks to enrol. Hence, the enrolling actor attributes a specific identity to those elements in the network it seeks to establish. In short, "Translation builds an actor-world from entities. It attaches characteristics to them and establishes more or less stable relationships

between them. Translation is a definition of roles...and the delineation of a scenario. It speaks for others but in its own language" (Callon, 1986b: 24).

Translation is also instigated by means of obligatory points of passage through which entities can be persuaded to commit themselves to participation in the actor-network. By these means, entities can be identified as having no future available to them outside of the possibilities defined for the network. Obliging an entity to consent to detour may involve defining a set of problems for that entity by which it will be convinced to commit its support. Finally, physical and social displacement accounts for the means by which entities are mobilised to journey according to the dictates of the enrolling actor. For example, personnel circulate, meetings are attended, conferences organised. So, for Callon, '...to translate is to speak for, to be indispensable, and to displace.' (1986b: 28).

We have so far reviewed some of the key concepts with which ANT theorists express the means of socio-material organisation. The purpose of these practices is to align elements that are considered necessary to the realisation of the actors' goals. In doing so, the enrolled actors and their commensurate identities strengthen the network and contribute to its durability and robustness. Consequently, there are varying degrees of contingent alignment which can be understood to count as the measure of a network's success. Callon refers to this as convergence: the precarious creation of "...unified spaces linking incommensurable elements... . Convergence measures the extent to which the processes of translation and its circulation of intermediaries leads to agreement." (Callon 1991: 132-144). However, networks are always exposed to continuing acts of problematisation, whereby a processual view may lend itself to richer

analyses Following from this perspective, as Law points out, there is *ordering* but not *order (Law 1992)*, i.e. ANT tends to be a sociology of verbs rather than nouns (Law 1994: 2). This point has been echoed within organisation studies with Karl Weick's (1979) injunction to employ gerunds such as organising rather than organisation, or Whittington's (2003) strategising in contrast to strategy.

Against the backdrop of our understanding of ANT and what we have found to be key features that have been employed – or, to put it in ANT terminology: translated – by organisation scholars, we observe that few studies have examined the actual nature of such translation. Accordingly, our investigation aims at exploring in more detail how and which aspects of ANT have been employed, i.e. translated in management and organisation studies. Our intended contribution is to explore the nature and extent of such translation as to provide MOS scholars with a more fine-grained understanding of ANT use in MOS.

3.   METHOD

In order to operationalise our research focus, we proceeded as follows. First, we chose to conduct a systematic survey on the Proquest ABI Inform database employing the search term "actor network theory", limiting the search to SSCI listed, internationally accredited "top" tier journals[1] and deleting mismatches from the search results. We were able to include a total of 17 studies in our further analysis, which are listed in Table 1. Then, we applied to each of the articles the following structured analytical protocol in

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[1] The survey covered ASQ, AMR, AMJ, Org Science, Org Studies, Organization, J of Management, J of Management Studies, Human Relations, and Research Policy.

order to understand better the utility of ANT use. Thus, we examined the putative focus and/or unit of analysis (i), methodology used (ii), positioning of ANT vis-à-vis other concepts and theories (iii) as well as nature and extent of use of ANT (iv). The outcome of this analysis is summarised in Table 2 to be found at the end of section 4.

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4. FINDINGS: ANT AND MOS

Our analysis identified two distinct orientations, in addition to time, to the ways in which ANT appears to have been translated within MOS (see Figure 1). Based on these initial distinctions, we identified four strategies of translation, namely simulating, emulating, crafting and reasoning, that we will discuss in detail below.

The first of our initial distinctions refers to the overall orientation of an argument whether it is primarily concerned with applying a method or with developing theory. The distinction between these to categories is far from clear-cut, however, the ambivalence reflects a long established argument within STS questioning whether ANT is a theory or a method. For example, Callon's conception of actor-networks changed from a "method" or "certain instruments of analysis" (Callon 1986a: 33) to the more encompassing notion of an "analytical framework" (Callon 1986b: 197) within the very same year. More recently, Latour (2005) has argued that ANT is not a theory or a method but this does not seem to have discouraged people from interpreting it as one or

the other. We find the continuing oscillations between ANT as method and ANT as theory preserved within organisation and management studies.

The second dimension refers to the way a manuscript conceives of and depicts the status of ANT for its particular purpose, namely ANT as terminology vs. ANT as ontology. For instance, several studies choose to apply ANT's terminology and seem to favour practical utility. On the other hand, we found studies that have explicitly drawn on ANT as to expand their ontological and epistemological focus in order to critically reflect on current use of theory and empirical investigation.

Acknowledging the limited as well as constructive nature of these two dimensions, we consider them useful to provide an initial way of clustering the articles included in our analysis and of identifying four strategies of translation that we discuss in detail below. Figure 1 maps out the two distinct orientations and the resulting four translation strategies.

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4.1. Translation strategy I: Simulating ANT

Simulation refers to the act of representing certain key characteristics of a physical or conceptual system - typically at a smaller scale or within controlled constraints. Thus,

studies that embrace ANT primarily as a method and for the sake of its terminology seem to exemplify these aspects of simulation.

There is an enormous breadth to the new territories in which ANT finds itself immersed: A number of studies have applied ANT rather instrumentally, as a device for mapping struggles and acts of persuasion in the context of contemporary technological and organisational development. As such, these studies do not reflect any engagement with ANT's ontological assumptions, perhaps inspired primarily by Callon's writings on respectively the failing electric vehicle (1986b) and the fishermen of St. Brieux Bay (1986a). We can think of this as the 'recipe version' of ANT, where certain developments are rendered in terms of a four-phase translation strategy, i.e. processes of problematisation, interessement, enrolment, mobilisation, and sometimes betrayal. Such arguments run along the lines of demonstrating particular acts of persuasion from the actors' point of view; these problems are in your way (problematisation); this is what you want to be to tackle them (interessement); we (the actor under study) can help you become that (enrolment); grant your obedience by accepting our proposed role for you (mobilisation). A stable network, it is argued, is achieved when problematisation, interessement, enrolment, and mobilisation practices are and have all been carried out successfully. This is what Latour refers to as a "black box" that "…contains that which no longer needs to be considered, those things whose contents have become a matter of indifference" (Callon and Latour 1981: 294).

As we shall learn below, the novelty of these approaches, rather than attempting to contribute to the existing ANT vocabulary and theorising, appear as an outcome of the

travel undertaken to new domains, i.e. respectively the intellectual terrains of innovation, management, and history:

Harrisson and Laberge (2001) apply ANT in order to trace the acts of persuasion involved in the spread of innovation, as it appears in connection with the design of a new product in a microelectronics firm. The study is based on document analysis and extensive interviews with a number of work groups within the company, conducted over a period of three years. Arguing for a view on innovation as a process of negotiation, the part of ANT included in the analysis is, as pointed out above, about enrolment practices and serves as a heuristic rather than a theory (Harrisson and Laberge 2001: 517).

Dent 2003 engages in an empirical analysis of the rhetorical acts played out in an acute hospital in the UK, apparently threatened with closure. The subject of study is the controversies between doctors and managers, on the one hand, and the dispute between two hospitals, on the other. Methodologically, Dent bases his analysis on interviews, observation, informal conversation and textual analysis. ANT, more specifically the idea of relational meaning and processes of interessement, is applied alongside Foucault's concept of 'governmentality' to delineate the complex interactions within which rationales and 'truths' emerge and change in a decentralized National Health Service.

Constant II (2001) deploys ANT in order to deliver an "anti-narrative" to historical accounts of technological innovation, which, he claims, have previously relied on

determinist perspectives. Through a historical case study of the construction of the F-104 jet fighter, he attempts to illustrate how technological development is a non-linear, precarious process, involving a vast range of heterogeneous elements. In this case, the take-away from ANT is the 'network', and we might think of it as another empirical 'application'.

While the studies above adopt a rather instrumental translation perspective based on and mainly contributing to our understanding of empirical conflicts, others have mobilised a similar line of reasoning to add to slightly more conceptual debates:

Lea et al. (1995) contrast the metaphor of actor-networks with traditional structural approaches to studying communication technology, arguing that it enables analyses beyond the prevalent distinctions drawn between the social/technical and content/context. They base these claims on a four-year, 'follow the actor' study of the electronic communication within five, independent companies in the process of restructuring and eventually turning into a single, "networked organisation".

4.2. Translation strategy II: Emulating ANT

Emulation refers to the act of duplicating the functions of one system using a different system so that the second system seems to behave like the first one. Thus, studies that aim at theorizing through ANT but remain instrumental in terms of its terminology seem to exemplify the translation strategy of emulating ANT.

Mutch (2002), addressing the field of Information Systems (IS) on a theoretical level, explores the utility of ANT in contrast to social realism. He argues that the former offers a better approach to IS, but might benefit from incorporating, or rather subordinating, the ANT notions of irreversibility and inscription. In doing so, it is argued that technologies can be seen as reifying structure and calls are made for a "stratified ontology", which recognises human individuals as unique. ANT is thus only to be applied within an overall social realist framework.

Whereas Mutch (2002) puts ANT into a realist box and take it to new intellectual domains, we witness other serious efforts to align ANT with 'alien' theories, though perhaps not of a similarly contradictory nature as witnessed above.

For example, Newton (2002) positions ANT vis-à-vis the notion of 'eco-centrism' in a critical account of recent approaches to the 'greening' of organisations. In the eco-centric view, the idea of 'greening' is tied to profound and dramatic shifts in the way organisations and societies – if not human kind – think and act. In order to counter argue such 'evangelical' views, Newton offers an alternative theoretical rationale, an 'interdependency network perspective', based on ANT, namely Callon's work on techno-economic networks, and the earlier writings of Norbert Alias. By adopting such a perspective, Newton claims, we come to realise that 'greening' is about creating durable networks between a host of different actors, rather than necessarily attempting to convert all to the green cause. The strength of the 'interdependency network perspective' thus lies in the critical assessment of what is perceived to be taken-for-

granted epistemological distinctions, e.g. between nature and culture, and a view on agency as intrinsically networked.

Knights et al. (2003) complement the approach of Callon with a Foucauldian perspective on power, in particular the idea of 'normalisation', in order to account for the "wider structures of inequality which are a condition and a consequence of the reproduction of power/knowledge relations" (Knights et al. 2003: 988). They do so for the purpose of examining the utility of networking as a form of knowledge work. Empirically, the paper is based on a study of attempts to introduce an electronic trading system for a range of companies in the UK insurance sector. ANT, namely the processes of translation and the notions of irreversibility and intermediaries, developed by Callon, inform the analysis.

Finally, Munir and Jones (2004) make the case that technology dominance is not achieved as a matter of inherent properties of specific products; rather technological success/failure should be studied in terms of social dynamics. ANT is deemed particularly relevant for this task in comparison to three other perspectives: institutional theory, with its focus on outcome rather than process, is not equipped to deal with change and the role of agency in it; social movement theory, it is argued, is not adequately developed to account for the material nature of technology; finally, structuration theory is deemed problematic for assuming that technology reconstitutes itself constantly in relation to action, and thus sheds little analytical light on the materiality of artefacts. Proceeding with a discussion of the concepts of problematisation, enrolment, and obligatory passage points, Munir and Jones (2004)

formulate three propositions for researchers of technology management competitive advantage (Munir and Jones 2004).

4.3. Translation strategy III: Reasoning ANT

Reasoning refers to the process of engaging with fundamental beliefs, assumptions and resulting conclusions of a conceptual system. Studies that embrace and problematise the ontological and epistemological implications for the purpose of theorizing seem to exhibit the strategy of reasoning ANT.

A range of scholars have made use of ANT's ambiguous scope and status to offer critical reflections on organisation and the way these are theorised: As part of a broader examination of the impact of 'the post-modern turn' within the social sciences, Calas and Smircich (1999) reflect upon the potential of ANT for organisation theory. They present ANT, alongside feminist, post-colonialist and narrative approaches, as a potentially fruitful way of theorising time and space differently in the light of emerging technological configurations, e.g. as witnessed in the notions of "the Web" and "virtuality". Moreover, Calas and Smircich highlight ANT's focus on irreductionism and relationalism, in contrast to facts and essences, as "a very useful exercise to counter "theoretical tales" in organisation studies" (1999: 664).

Fox (2000) pays reference to ANT in a conceptual critique of the notions of "communities of practice" and "situated learning". He mobilises ANT, alongside a Foucauldian perspective on power, to avoid resorting to micro/macro distinctions when

studying organisational learning, e.g. to get beyond broad explanatory concepts such as organisational culture. The study is based on and contributes to theoretical debates in organisational learning. In doing so he picks up on the notions of obligatory passage points and translation.

Hardy et al. (2001) utilise ANT to contribute to ongoing discussions about reflexivity in MOS. Based on qualitative studies, i.e. interviews and document analysis, of refugee systems in three different countries, they add analytical emphasis not only on the research subject, but also the researchers (themselves, that is) and the role played by the broader research community. The role of the researcher is thus defined in the enactment of a two-fold translation strategy; one strategy to deal with the actors under study in their own words and another one for dealing with the broader research community, e.g. publishers and funding agencies. They proceed to draw a number of conclusions; first, producing 'legitimate' knowledge is carried out through a complex (actor-) network; second, recognising the constructed nature of research and its subjects allows for two insights; there is no such thing as a 'real' subject nor is there true, objective knowledge; third, a focus on the 'social' as well as the 'research' subject paves the way for more reflexive understandings of the changes research may entail. On a final note, Hardy et al. (2001) remark, we need to rethink our representational practices in a way that will make it possible to produce and disseminate reflexive knowledge.

Furthermore, Callon has paid some reference to ANT in his significant contributions to economic theory and social studies of markets and thereby adding to our understanding of ANT as a theoretical device. For example, Callon and Muniesa (2005) re-examine

and define the notion of calculation in relation to markets. They argue that economic calculation, rather than being a narrow mathematical operation, is a distributed activity among human actors and material devices, and suggest a conceptual framework with which to study such complex configurations. ANT, especially the notion of centres of calculation, is drawn upon in order to demonstrate the heterogeneous nature of markets; these are seen as collective calculative devices defined in the interplay between calculable goods, calculative agencies and calculated exchanges.

Mangematin and Callon (1995) make some use of ANT concepts, stressing the importance of the role that 'first users' play in technological development. Methodologically, they rely on an interview-based case study of two competing road guidance technologies, which is brought to bear on the idea of 'irreversibility' and how it is pursued in acts of translation. ANT is thus mobilised to question the way in which existing technological competition models, originating from economics, (fail to) account for events occurring in the design phase and their influence on the competitive phase leading to a state of irreversibility.

4.4. Translation strategy IV: Crafting ANT

Crafting refers to the application of a skill to a specific physical object, and metaphorically, to a conceptual object such as a theory or concept. Studies that acknowledge the ontological and epistemological implications of ANT while primarily applying ANT as a method seem to exhibit the translation strategy of crafting ANT.

Whereas the works above display some sort of explicit reflexive, conceptual commitment, we find a number of studies with similar concerns yet subscribing to a more practically inclined methodological agenda. However, we must recognise that the borderline between reflexive and methodological readings are overlapping if not plain inseparable. The following reviews have been ordered so that we start with the most conceptual pieces, gradually approaching the level of methods.

Based on empirical studies of a city management and utility company, Czarniawska (2004) uses a combination of ANT and new institutionalist perspectives/structuration theory to address the issues of time and organisation from a conceptual and a methodological perspective. Her paper calls for better, more sensitive ways of approaching, conceptualising and balancing 'organising' (organisations as temporary reifications) and 'organisation' (moments when 'its' effects are considered to be stable). Building upon Latour and Callon's notion of translation, she puts forth the idea of "action nets" which, as a tailored approached to organisation studies, aims to shed light on the constant interplay in which organisations and actors are continually constituted and shaped.

McLean and Hassard (2003) foreground ANT's strive to exercise 'general symmetry' in their critical assessment of how ANT researchers produce accounts of the settings under study. They outline five points of controversy, which are considered crucial to reflect upon if future scholars deploying an ANT perspective are to formulate writings that are "sophisticated yet robust enough to negate the twin charges of symmetrical absence or symmetrical absurdity" (McLean and Hassard 2003: 516). As such, based on a

comprehensive review of ANT literature, the paper represents an attempt to 'warn' management scholars of the potential pitfalls of adopting ANT methods in an MOS context.

Spender (1996) draws on ANT in order to reach an understanding of the firm as a system of knowing activity, in which the social and the material produce each other, rather than an abstract entity of applied knowledge. This leads to the formulation of a number of heuristics: first, management scholars are urged to conduct more holistic analyses appraising the multifaceted heterogeneous nature of the firm; secondly, attention should be directed at the closure mechanisms by which organisational agreements are reached and boundaries defined; lastly, researchers should recognise that firms themselves are embedded in larger systems evolving along historical and technological trajectories or what is referred to as "institutional influences". Spender (1996), pairing ANT with systems theory, identifies "the managerial problem" more specifically as a question of knowing whether particular knowledge processes produce public or private goods. This distinction, it is claimed, allows for a more manageable analysis in terms of a systemic and a componential level.

Bruni (2005) mobilises ANT, in particular the insights offered by Law (See Law 2002; Law 1992), to inform current discussions around qualitative methodology. Recognising that the longstanding distinctions between humans and non-humans are increasingly questioned, Bruni seeks to supply a way of doing ethnography that represents and accounts for the relational nature of inanimate objects in technologically dense organisations. Drawing upon fieldwork in a medical setting, he provides a range of

techniques and reflections in order to fertilise the grounds for a discussion of "ethnographic materialism".

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6. 5. DISCUSSION AND CONCLUSION

Given the huge diversity in the ways in which ANT has been taken up within MOS, which, represents only a limited subset of the social sciences, it seems almost paradoxical that ANT is sometimes considered an immutable mobile; Law (1999), for example, argues that ANT 'itself' has become black-boxed, too rigid; an immutable mobile with inadequate sensibilities towards ambiguity, heterogeneity, flexibility, partiality and discontinuity:

> [For] the act of naming suggests that its [ANT] centre has been fixed, pinned down, rendered definite. That it has been turned into a specific strategy with an obligatory point of passage, a definite intellectual place within an equally definite intellectual space (Law 1999: 2)

> The blackboxing and punctualising that we have witnessed as we have named it [ANT] have made it easily transportable (Law 1999: 8)

What I am trying to do is to attack simplicity—and a notion of theory

that says that it is or should necessarily be simple, clear, transparent

(Law 1999: 8).

In response, Law suggests to 'de-centre' the object (Law 2002) and 'de-territorialise'

the network, using more fluid topologies (Law 2002; Mol and Law 1994). What seems

to be the common thread here is an underlying aversion to the perceived rigidity of the

current status of ANT. This might account for the observation that a great deal of

contemporary ANT accounts come with a whole set of reservations, restrictions and

limitations. However, as we have endeavoured to illustrate, ANT remains fluid with

regards to what 'it' is and what 'it' does, i.e. if we recognise how it is always side-lined,

contested, subordinated, constructed in specific contexts; we can think of such new

intellectual spaces in terms of ANT's new (and not so new) theoretical/methodological

allies and 'others' within MOS, including but not limited to economic theory,

Foucauldian theory, eco-centrism, social realism, institutional theory, and social

movement theory. In short, there seems to be no indication that ANT has become

neither standardized nor transparent. So, if we were to turn the networked logic of ANT

against itself, we come to realise that, as a theory *and* a method, it is a precarious effect,

and, may we suggest, it is not a very stable one. We shall now account for some of the

tensions that lie at the core of this instability before concluding the paper.

The criticisms of ANT run along several lines. Singleton and Michael (1993), identify

two of them. The first of these is the ambiguous role of interests or de-prioritisation of

the social, and the second is its 'radical symmetrism'. The critique of the ambiguous

role of interests comes from Shapin (1988) who argues that the abandonment of interest explanations advocated by Latour (in particular) is not convincing. He suggests that it is only by conflating interests and accounts of interests that Latour is able to make his case that interests are the consequences of negotiation. The radical symmetricality of ANT - the insistence on treating humans and non-humans in the same analytical light – has not only been criticised by Mutch (2002) but also by Collins and Yearley (1992). They problematise the idea of analytic impartiality as it gives a voice to 'things', thereby hiding the fact that these voices rely upon mediation by human actors. In this view, the appropriate focus for social studies of scientific knowledge should be the study of the 'social': that which speaks for non-humans. As such, this debate raises important questions to do with agency, responsibility and accountability, which are very likely to surface in similar or other forms within MOS. Crucially, in discussions over the extent to which management studies should take the form of critical enterprise or aid managers in creating competitive advantage. This question is also of particular relevance with regard to who gets to define the actors of a network, which we shall discuss below.

Another elaboration of ANT revolves around the question of what voice should be attributed to actors who are systematically excluded from a network and network accounts (marginality). For example, by asking the explicitly political question of how it is possible to use ANT to critical ends that 'champion' those actors with whom the analyst identifies? Star (1991) argues that those who occupy the margins of a network should not be conceived of as 'outside' of the network (since what counts as the network is contingent) but instead occupy a position that is as yet 'unlabelled'. Further, Star notes that this position can often operate as a subverting influence on the network.

The above observations raise the question of how it is possible to define a network and categorise any of the entities that constitute it. For example, what is the difference between an intermediary and an actor? Callon argues that "the division between an actor and an intermediary is a purely practical matter" and goes on to state that "The answer has nothing to do with metaphysics, ontology or the rights of 'man'. Rather it is empirical" (Callon 1991: 141). Using the case of a nuclear power plant, Callon shows how 'quite minimal changes may transform intermediaries into actors, or back into intermediaries.' By way of advice, Callon goes on to say "Either you focus on the group itself, and go on further, in which case you have an actor. Or you pass through it into the networks that lie beyond, and you have a simple intermediary." (Callon 1991: 142). From this definition, it seems that the distinction is not an empirical matter *in itself* but an empirical matter *for the analyst*.

To whom or what then can we attribute authorship, agency and responsibility? According to Law (1994), this is essentially a question of who or what can 'persuade' us that they comprise such a locus of agency. However, from the above discussion of how to identify actors, we argue that establishing a locus of agency is not simply a case of who or what can persuade us that they are such, it also the job of the analyst to construct them as such.

We observe that ANT has entered new intellectual domains, not least by means prominent journals – it has travelled well, we might say. Yet, we have endeavoured to demonstrate the great diversity to be witnessed in its current manifestations in MOS,

ranging from 'recipe-ANT' use, i.e. off-the-shelf applications of its most 'operationable' parts, to theoretical contributions that exhibit profound reflexive commitments. In order to map the trajectories by which ANT has travelled, we put forth an analytical classification scheme, admittedly crude, that give us an idea of the broader patterns to be witnessed within the burgeoning enthusiasm for ANT. Rather than assessing the 'correctness' of ANT's travel(s) and use(s), it has been our intention to shed light on the practicalities of theoretical 'movement', which, we hope, will help fertilise the grounds for fruitful discussion about the past, present and future of the utility of ANT. However, more broadly, we hope that our paper will trigger some sort of constructive discussion as to how we as social scientists, MOS scholars not least, can develop better vocabularies for interdisciplinary knowledge practices and thus come to grips with the consequences of ideas and concepts crossing intellectual boundaries. Rather than adding to the belief that theories come in coherent packages, our analysis and discussion illustrated that it is up to the analyst to decide what counts as ANT; as a result, ANT has travelled well, but we should not forget that all theories and methods always come with baggage.

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TABLES

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Table 1: ANT in MOS - Database

Author/s	Putative focus/unit of analysis	Methods/ methodology	Vis-à-vis positioning	Nature of ANT use	Trans-lation strategy
Dent (2003)	Controversy and the production of 'truth' in a decentralised NHS	Interviews, observation, informal conversation and textual analysis	Foucaukt's notion of 'governmentality'	Processes of translation, namely interessement	I
Constant II (2002)	The construction of the F-104 jet fighter Antinarrative to historical accounts of technological innovation.	Historical study	Vincente's diagram of technical constraints	The network as an analytical metaphor	I
Harrisson and Lberge (2002)	Innovation practices in a micro electronics firm. Spread of innovation	Three-year case study, involving interviews, observation, document analysis	Positioned against a host of literatures on innovation and identity.	Utilised to demonstrate innovation as a process and acts of persuasion (translation).	I
Lea et al (1995)	Use of communication technology The 'networked' organisation	Four-year 'follow the actor' study within five companies in the process of restructuring	Structural approaches	Translation processes and obligatory passage points	I
Munir and Jones (2004)	Technology evolution and dominance	Conceptual/ literature review.	Institutional theory, social movement theory, structuration theory.	Strategic interest in processes of translation	II
Newton (2002)	Against 'eco-centrism' Developing an interdependency network perspective'	Conceptual/literature review on organisational greening.	The theoretical perspectives of Norbert Elias	Callon's work on economic networks to inform an 'interdependency network perspective'	II

Author/s	Putative focus/unit of analysis	Methods/ methodology	Vis-à-vis positioning	Nature of ANT use	Trans-lation strategy
Mutch (2002)	Aligning ANT notions with social realism in Information Systems research	Conceptual/literature review of Information Systems and ANT.	Social realism as propounded by Margaret Archer	Focus on The notions of inscription and irreversibility	II
Knights et al (1993)	Introduction of an electronic trading system in the insurance sector. Networking as knowledge work	Case study, methodology not specified.	Vis-à-vis MOS perspectives on knowledge and organisation	Focus on translation and Callon's notions of intermediaries and irreversibility	II
Hardy et al (2001)	Refugee systems in three different countries Reflexivity in MOS	Interviews and document analysis. Highly reflexive approach.	Social science literatures on reflexivity	Focus on translation strategies	III
Fox (2000)	Communities of practice Theoretical perspective on learning	Conceptual lit. review.	Community of practice theory Foucauldian perspective on power	The notion of translation and obligatory passage points	III
Callon and Muniesa (2005)	Re-defining markets as calculative devices	Theory building based on conceptual review	Against respectively purely ethnographic and abstract notions of market calculation	Picks up upon centres of calculation	III
Mangematin and Callon (1995)	The role of first users in technological competition/development	Interview-based, in-depth case study of two competing road guidance technologies	Vis-à-vis eeconomic theory of 'increasing returns to adoption'	'Irreversibility' and translation strategies	III

Author/s	Putative focus/unit of analysis	Methods/ methodology	Vis-à-vis positioning	Nature of ANT use	Trans-lation strategy
Calas and Smircich (1999)	The potential of postmodern thinking for organisation theory	Literature/ conceptual review	Feminist, post-colonialist and narrative approaches to organisation studies	Highlights ANT's focus on irreductionism and relationalism.	III
Bruni (2005)	Technological settings/electronic patient records Qualitative methodology.	Ethnography	Literatures on qualitative methodology	Methodological focus on how to account for inanimate objects, drawing mainly on Law.	IV
Czarniawska (2004)	Redefining 'organising' and organisational time through action-nets	Qualitative study of a city management company, e.g. 'mobile ethology'	New institutionalist perspectives and structuration theory	Translation	IV
Spender (1995)	Redefining knowledge towards a knowledge-based view of the firm.	Literature/ conceptual review	ANT is 'paired' with Systems Theory	Latour's notion of actor-networks/'quasi objects'	IV
McLean and Hassard (2003)	Identifying and discussing 'critical issues' in the production of actor-network accounts.	Comprehensive literature review of ANT	Adjacent literatures and 'after' ANT.	Specific attention to the principle of symmetry.	IV

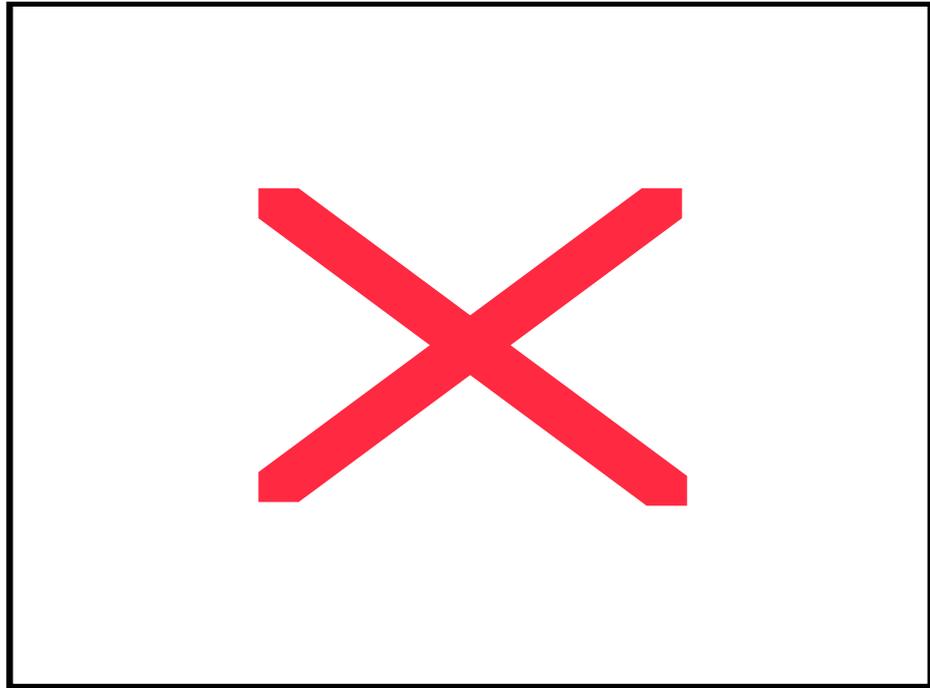Table 2: ANT in MOS – Analysis summary

FIGURES

Figure 1: ANT in MOS - Strategies of translation

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