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**ORGANIZATIONS REVISITED:
HUMAN AND TECHNOLOGICAL AGENCY IN NETWORKS WITHIN
ORGANIZATIONAL THEORY**

POSTGRADUATE PAPER

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ABSTRACT

The concern of this paper is twofold: It acknowledges the contribution of the actor-network theory (ANT) (Callon, 1986; Law, 1991; Latour, 1993; Latour, 1997; Bloomfield & Vurdubakis, 1999; Lee & Hassard, 1999; Latour, 1999; Law, 1999; Amin & Cohendet, 2003; Collins, 2004; Latour, 2005) in offsetting common opposites, such as humans and technology or structure and agency, which are applied in order to categorize organizational literature.

ANT was adopted in organizational theory (OT) due to offering a distinctive view on boundaries of organizations in developing a network approach. While networks are constituted by acting and consisting of relations of heterogeneous material, non-humans are granted an actorship as well. As a meta-level of acting is repudiated, the historicity of networks allows for an explanation of stability of organizations.

Furthermore, the paper aims at bringing the research on the role of technology in organizations and its relation to humans of the information studies (IS) to the attention of organizational theory (OT) as to overcome its stated under-theorization in OT (Barrett et al., 2006; Orlikowski, 2007); hence, bridging the gap between these two scientific fields.

CHALLENGES OF ICT FOR ORGANIZATIONS

For over two decades organizations have faced revolutionary changes in information and communications technologies (ICT) as a major challenge, which has been reflected in the increasing importance of ICT' introductions for managers, in the growing IT consulting business and last but not least in the soaring research done on ICT (Barrett et al., 2006). Technological innovations - such as mobile phones, laptops, internet and universal mobile telecommunications system (UMTS) - fundamentally transformed organizational practices and processes, thus technology became more intertwined with human agency. Furthermore, in enabling new opportunities for tele- or mobile-working and in facilitating knowledge sharing within an organization as well as outside of it (e.g. with its suppliers and customers), ICT challenge the spatiality and temporality of organizational boundaries, thus creating opportunities for network approaches.

The concern of this paper is twofold: It acknowledges the contribution of the actor-network theory (ANT) (Callon, 1986; Law, 1991; Latour, 1993; Latour, 1997; Bloomfield & Vurdubakis, 1999; Lee & Hassard, 1999; Latour, 1999; Law, 1999; Amin & Cohendet, 2003; Collins, 2004; Latour, 2005) in offsetting common opposites, such as humans and technology or structure and agency, which are applied in order to categorize organizational literature. Furthermore, the paper aims at bringing the research on the role of technology in organizations and its relation to humans of the information studies (IS) to the attention of organizational theory (OT) as to overcome its stated under-theorization in OT (Barrett et al., 2006; Orlikowski, 2007).

IMPACT OF ICT ON ORGANIZATIONAL THEORY

As ICT have a major impact on organizations and organizing, OT faces the challenge of addressing the consequences of ICT systematically, which asks for a fundamental change in the way researchers look at organizations to explain both change and stability of organizational procedures and structures (Reed, 2006).

Revolutionary time

While ICT convincingly proved to be revolutionary or have rather been portrayed as revolutions for organizations in stating the decline of hierarchies and in adopting a network approach, ICT allow for new organizational forms (Castells, 1996; Clark, 2003). In labeling bureaucratic organizations outdated and sending them back to a time of the past, the ground was prepared for the development of new organizational forms, which were separated by rupturing the time and cutting of the present from the past instead of continuing the history of organizations in building on its past. Hence, new organizations seemed to emerge ‘creatio ex nihilo’, ‘sui generis’ or from nowhen and nowhere (Latour, 1993).

Burying the bureaucratic organization

Consequently, OT hurried to announce the death of bureaucracy as the main organizational form, for the ‘old’ bureaucratic organization was considered an obstacle in the field’s aim to move on, thus bureaucracy had to be left behind. At best, the bureaucratic form was employed in contrast to the new post-bureaucratic form (Hekscher & Donnellon, 1994; Iedema, 2003) as to set its boundaries.

In reminiscence of organizations as ideal-typical bureaucratic forms, created by Weber (1947) and characterized by clear lines of authority, division of labor, functional specialization and formal rules, organizations had to protect individual rights and collective moral values (Wolin, 1961). However, over the course of time inefficiency, inflexibility and rigidity due to the hierarchical structure became its negative attributes as organizations are now being assessed by their efficiency and satisfaction of customers' needs. Hence, bureaucracies have emancipated from its original functioning as moral institutions and created a dynamic of its own (Kieser, 1997; Child & McGrath, 2001).

New classifications for organizational forms

The critique of the bureaucratic form has induced a range of scholars to develop better fitting descriptions of new organizational forms - such as "post-bureaucratic organization" (Heckscher & Donnellon, 1994; Iedema, 2003; Josserand et al, 2006), "virtual corporation" (Mowshowitz, 1986; Davidow & Malone, 1992; Mowshowitz, 1994; Mowshowitz, 2002) or "knowledge-intensive firm" (Starbuck, 1992; Kaerremann & Alvesson, 2004).

Popularity of ideal types

New organizational forms represent a continuation of theorizing in ideal types (Kieser, 1997; Child & McGrath, 2001; Courpasson & Reed, 2004), albeit this meta-theoretical nominalistic stance of organizational theorizing has been popular since the early days of OT (e.g. Weber, 1947; Minzberg, 1979). Ideal types do not describe reality, for they are ideal (archetypical) or transcendental categories and never exist in reality, thus there are

only variations of ideal types in reality. As ideal types serve the purpose of generalizing and simplifying the variety of 'real' organizations, they are adopted by researchers for practical, pragmatic or educational reasons.

In reducing the complexity of organizations to a few characteristics, ideal types help to identify and classify existing organizational forms, thus providing a lens how to perceive and examine them. Consequently, organizations are analyzed with and measured against ideal types, which may become idols over time transforming themselves into standards to be adapted to and therefore, influencing 'real' organizations and organizational practices. Due to the very definition of ideal types, hybrids - a mixture of two forms - deviating from ideal types is given birth to; hence, hybrids owe their existence to ideal types by taking ideal types as a fact and for real. As theorizing in ideal types does not acknowledge that transcendental categories are capable of creating real effects over time, it denies ideal types a dynamic of its own, which is referred to in the postmodern discourse as mediation and performative power of ideal types (Butler, 1993; Butler, 1997). In this paper a critical stance on definitions, typifications and categorizations is taken up (DeSanctis & Fulk, 1999).

Reification of organizational forms

While mainstream OT focuses on investigating characteristics of organizations as to differentiate modern forms from traditional ones, it provides a new classification for organizations, based on the supposition of forms as observable objects existing out there

as a result of an ordered, structured and stabilized set of practices, ready to be examined (Latour, 2005).

This stream of research follows the traditional functionalist paradigm in OT subscribing to a realist ontology and a positivist epistemology. The former implying an external pre-existing reality containing facts, while the latter states the observability of them, allowing for representing and gaining accurate knowledge of organizations. Therefore, organizations treated as existing objects are to be discovered by researchers and while describing their structures, which represent stable forms of hierarchies and processes, correspondence with reality is attained. Furthermore, the analysis of organizations allows for identifying regularities and causal relationships (Donnelly, 2007).

“This hugely successful approach draws upon the techniques and language of anatomy and autopsy without us recognizing that a form of butchering is going on in our work which produces theoretical and methodological frameworks in which we have de-natured (i.e. killed) that what we seek to understand” (Burrell, 2003: 528). Instead of explaining stability of organizations and treating organizations as fixed structure in time and space, Burrell (2003) argues for a processual approach (Weick, 1979) to render the practices of organizing visible. Similarly, Latour (1993) turns against reification of organizations, as this forgoes the whirlwind of the forming process.

Dichotomies in OT history

Making an effort to order OT literature by showing a pattern, predominately dichotomic categories have been applied (De Sanctis & Fulk, 1999). Albeit Burrell and Morgan's (1979) two-dimensional model - with continuums from order-change and from subjective-objective as to map individual theories - is still widespread, the narrative approach recently gained more influence. Narratives, which are characterized again by dichotomic categories, such as micro or macro, agency or structure, order or disorder and internalities or externalities, are another way of telling the history of OT (Reed, 2006).

While a micro approach deals with interactions of individual organizational members on an interpersonal level, a macro approach explores the relationship between organizations on an abstract, decontextualized and depersonalized level. Focusing either on agency, accounting for change in organization, or on structure of organizations as to emphasize its stability, whereas lately fluidity is more trendy than stability (Mol & Law, 1994; Castells, 1996). In setting a boundary between inside and outside of an organization an interaction of e.g. suppliers, competitors, customers and the organization becomes less important for researchers (Reed, 2006).

HUMAN AND TECHNOLOGICAL AGENCY

Due to the massive adoption of ICT in organizations and everyday life, the following chapter in this paper deals with relations between humans and technology, referred to as one dichotomy in OT history. Attention is drawn to the role of technology and its social impact on organizations (Amin, 1994), as technology has become less visible and less

distinguishable from human agency. Therefore, the boundary of humans and technology is questioned and perceived as permeable. Albeit ITC become part of daily routines of organizational members, OT suffers from an under-theoretization on this issue (Barrett et al, 2006). As IS literature offers more sophisticated approaches of the role of technology in organizations and its relation to humans, this paper brings the research of IS to the attention of OT as to overcome the limitation of OT on this matter (Orlikowski, 2007).

Dichotomy of humans and nature in Philosophy

To start off a short digression on the dichotomy of humans and nature in Philosophy is given. While traditionally human beings have been separated and contrasted against nature in order to establish a human identity, nature was substituted by technology and a shift occurred from mastery of nature to adaptation and submission to technology in the 20th century (Anders, 1956; Habermas, 1971). While Habermas (1971) pictures technology and lifeworld as two ontological separated spheres in which technology colonizes lifeworld, technology dominates human and nature in according to Anders (1956). Both tend towards a techno-centric perspective.

Social and technological determinism

Defining the relationship of humans and technology in IS and OT, implies reifying both and treating them as independent vantage points for research. Consequently, humans and technology are indicated as separate entities, which exist prior to relations. Infiltrating causality of influencing each other, leads to a dichotomic relationship between humans and technology (Monteiro & Hanseth, 1996). Either technology is described as force to

which humans adapt to - e.g. in cases of technology change - or humans are emphasized as designers of technology, shaping its content and its use. The former is referred to as social determinism, while the latter is stated as technological determinism. The third option is to address this relationship in an interdependent and a reciprocal way, which results in a socio-technological product, whereas choices made by humans are restricted by technology already adopted. Hence, technology allows for shaping further decisions taken (Wajcman, 2002).

Relationship between humans and technology in IS research

With the rising importance of ICT in organizations IS research soared, predominately investigating the implementation of new ICT and the difficulties it encountered. Technology is described as material cause for social world and a technological deterministic stance is taken up (e.g. Orlikowski, 1992). In this perspective technology represents an external, autonomous force exerting influence on society, furthermore implying a reification of technology in its inception (Barrett et al., 2006).

In response to critical inputs from social sciences IS literature shifted to investigate technology as a product of social context (Williams & Edge, 1996), focusing on the social construction of technology through interactions among organizational members. Either humans possess and control technology as its inventors, or human users are enabled to radically alter the meanings and deployment of technologies, which depend on its socially acceptance and integration into organizational life. Furthermore, social,

intersubjective decision-making is necessary for which kind of technology e.g. software programs are introduced to the organization (MacKenzie & Wajcman, 1999).

Lately, one stream of IS literature explores technology and humans in a relational matter, revealing the interplay between “research that embraces the importance of simultaneously understanding the role of human agency as embedded in institutional contexts as well as the constraints and affordances of technologies as material systems” (Orlikowski & Barley, 2001: 158). This approach acknowledges technology not as material or social essence, but defines technology and humans as socio-material assemblages (Orlikowski & Barley, 2001; Orlikowski, 2007; Suchman, 2007). Technology and society becoming bound together into networks through acting, instead of residing in separate ontological spheres.

Relationship between humans and technology in OT research

While in the early days of OT under-socialization e.g. in Taylor’s engineering approach has dominated (Kieser, 1994), recently a social turn was taken, linking OT stronger to social sciences (Pettigrew et al., 2001; Scott Poole & Van de Ven, 2004). Orlikowski (2007) claims that OT emphasizes either a functional techno-centric view, wherein technology is reified and predictable, thus it ignores the cultural and historicity, or a human-centric view, wherein fluid human interactions with technology are addressed and different social meanings assigned to it.

In OT, generally speaking, three ways of addressing technology are prevailing. Ignoring and excluding the role of technology in organizations as an absence of theorizing of artefacts and as a concentration on humans is the first possibility. Including technology in taking it for granted and placing humans in a position of exerting control over technology represents the second way, leading to the third option of treating technology special, referring to it exclusively on special occasions, e.g. when introducing new ITC in organizations (Orlikowski, 2007).

Orlikowski (2007) states the lack of technological approaches in OT under ordinary organizational circumstances and argues for a constitutive entanglement of the social and the material in relational matters, while Barrett et al. (2006) dispraises the reduction of technology to material determinant of work, for sight of the material nature of technology is lost.

ACTOR-NETWORK THEORY (ANT)

ANT can be described as a processual and constructivist theory and method, albeit amending a historical perspective to acting - e.g. organizing accounts for the fixed state of organizations as well – and albeit objecting to a construction inhered by human or non-human actors. With ANT's focus on acting it is, furthermore, contributing to the dynamic and flexible network approach declared as the youngest narrative in OT history (Castells, 1996; Clark, 2003; Reed, 2006).

ANT has been adopted in OT due to offering a distinctive view on boundaries of organizations in developing a network approach. While networks are constituted by acting and consisted of relations of heterogeneous material, non-humans are granted an actorship as well. As a meta-level of acting is repudiated, the historicity of networks allows for an explanation of stability of organizations.

In forming networks for supporting the actors' interests, they embroil in practices of purification and translation in their daily construction of organizations (Latour, 1987). According to ANT an organization can be described as a struggle of several actor-networks, competing for establishing organizational standards in reinforcing their coalitions. The stabilization of standards and routines in organizations entails the escape from all references to the process of its construction (Latour & Woolgar, 1979).

While ANT addresses the difficulty of the invisibility of agency in revealing the process of routinization over time, it is set in opposition to traditional institutional theory in OT (e.g. Meyer & Rowan, 1977) which masks the ongoing dynamic in organizations and deprives itself of the opportunity to unveil the development of standards and norms (Lawrence & Suddaby, 2006).

Translation, purification and hybridization

ANT evolves around the practice of purification and translation. While purification is described as the analytic process of separating, ordering, classifying, defining, juxtaposing and putting 'things into boxes', translation is the opposite practice of

throwing ‘things together’. Furthermore, Latour (1993) injects a causal relationship into purification and translation, allowing for the proliferation of hybrids in process of translation caused by purification.

While the term of purification is developed by Latour (1993) to refer to the dichotomic divide between nature and society, which are traditionally established as entities in two distinct ontological zones, translation as the opposite constitutive work derives from the very soul process of relating or forming hybrids (networks). Furthermore, translation can also be characterized as the transformation of objects as they are enrolled into the network and mobilized as actants of the network (Law, 1999).

As in science traditionally a strong emphasis on purification has dominated, Latour highlights the process of translation, though he insists that both processes are equally important and constituent of our world. The work of purification can be easily applied to every definition and dichotomic classification in scientific research, of which ANT is critical, especially when the work of translation of the categories is denied (Latour, 1993).

While examining organizational forms in OT research is considered a practice of purification, it simultaneously allows for heterogeneous networks, which develop around conflicting definitions and interpretations of organizational standards as a practice of translation. Furthermore, ANT observes the actants coming up with the pure form of

organizations and emphasizes that the researcher should not do the work of purification (Law, 1991).

Human and technological agency

As ANT explicitly deals with humans and non-humans, such as technological devices, it refuses to distinguish, instead treats them the same way, neither preferring humans nor non-humans (e.g. technology) as topos of explanation for ordering and changing processes in organizations (Bloomfield & Vurdubakis, 1999), thus, ANT gives voice to mute artefacts. As the conception of acting is neither restricted to humans nor to individuals, the term of actant is applied by Latour (1993) in distinction to traditional acting approaches. In canceling out the separation between acting subjects and instrumentally used objects, ANT transforms entities into the dynamic of acting.

Furthermore, ANT argues for liberation and not mastery or colonization of technology on the one hand, while powerful actors (e.g. managers), forming a network to fulfill their interests is denied on the other hand. In behalf of letting agency occur in relations, the fluid, uncontrollable state of networks and the idea of human agents as pre-existing, empowered subjects enabled to act, is deconstructed. It is an unreflective adoption of ANT to attribute agency to humans or materials, as Latour establishes acting without actors (Latour, 1997; Latour, 1999).

Forming of organizations

In treating organizations as ready made entities, which are out there, the chance is forgone to make the dynamical factors of forming - the creating and establishing of organizational routines and procedures - visible. ANT aims at examining organizations in the making, showing the messiness and whirlwind of the making (Latour, 1987; Latour, 1993).

The stream of research in OT dedicated to unveil organizational forms is based on the transcendent idea of forms and entities surpassing (individual and collective) agency. Latour (1987), however, argues for following the actor forming networks as an empirical approach to study organizations. Instead of discovering organizational forms and structures, Latour (2005) focuses on the acting of networks.

When scholars define and classify organizational forms, they do “the work of purification” (Latour, 1993) and with purification at work there will also be mediation and translation in progress. In postmodern terminology every classification and as well as every organizational structure has the performative power (Butler, 1993; Butler, 1997) to change the subject of research through the process of researching. In other words, an organizational form is not a description - neutral representation in correspondence with reality - but simultaneously a prescription for actual organization (Lee & Hassard, 1999).

In criticizing organizational research of institutional forms Lee and Hassard (1999) state that while the life of organizations is choked out of organizations, ANT brings back the

messy life to organizations in showing its acting as it happens. Instead of taking organizational forms as vantage points for organizational examination, ANT investigates the relation between localized practices and contextualized accounts of them.

Surpassing a social and technological determinism

In referring to ANT's characterization as constructivist approach, society and nature (technology) are constantly constructed in networks, which engage in a struggle for setting standards, structure and norms in organizations (Ritzer, 2004). Furthermore, human control is erased in denying the importance of causal relations of humans as origins or inventor of technological and material artifacts.

While technology is embedded in society, it unfolds a dynamic of its own, thus society is constantly intertwined with technology. According to Latour (1993) the paradoxical situation of being exposed to the Social or the Natural (Material, Technological), which infinitely surpasses every single existence (transcendence) on the one hand, and simultaneously creating and constructing them (immanence) on the other hand, stems from a separation of the Social and the Material.

As social or technological determinism is based on the divide of a totalized and reified Technology and Society, ANT offsets the dichotomic positions in denying a meta-level of acting.

Meta-theoretical stance: Anti-essentialism and relational materiality

To counter the reification and divide of technology and society, ANT responds by focusing on the actual everyday practices of organizations and its getting bound together through acting. According to ANT humans and technology do not pre-exist as entities, for there are no entities prior to acting, hence, there is no existing without acting, consequently the acting constitutes essences or in their acting humans and materials come into being. In Latour's (1993) words, ANT indicates a move from essences to events. Instead of searching for interrelations of causally connected events, ANT concentrates on the materially relational performance (Latour, 1993). This stance can be described as anti-essentialism, which implies a reluctance to deal with essences or entities (Ritzer, 2004).

Humans as well as non-humans emerge in the forming of relations, building heterogeneous networks and indicating a shift from entities per se to relations, whereby a material status is attained. ANT's relational materiality (Collins, 2004; Ritzer, 2004) states that relations form socio-material (Mol, 2002; Suchman, 2007) assemblages (Deleuze & Guattari, 1987; Latour, 2005; Suchman, 2007). In other words, ANT avoids the trap of reifying technology or humans in the relational materialism, hence, overcoming the dichotomic divide between them.

Or to phrase it with Law (1999: 4): "I simply want to note that actor-network theory may be understood as a semiotics of materiality. It takes the semiotic insight, that of the relationality of entities, the notion that they are produced in relations, and applies this

ruthlessly to all materials - and not simply to those that are linguistic." and "...For the semiotic approach tells us that entities achieve their form as a consequence of the relations in which they are located. But this means that it also tells us that they are performed in, by, and through those relations."

Relational materiality as well as anti-essentialism is a meta-theoretical issue, which is discussed in the category of ontology, traditionally separated into realism and nominalism. While the former entails an objective world existing independently of subjects, the latter indicates that terms, concepts and models do not correspond with reality, but serve the purpose of structuring it. Consequently, conducting research of organizations in ideal types means taking up a nominalistic stance. Furthermore, the term ontology itself implies a being or an essence. Through emphasizing on becoming or acting, the ontological category is offset (Heidegger, 1962). Thus, ANT cancels out the ontological dualism of realism and nominalism by the dynamic network approach, surpassing every sense of ontological being in relations. Therefore, I consider describing ANT as subscribing to a relativistic ontology (Lee & Hassard, 1999) as a misleading term.

It is all about acting in networks

Networks or the constantly ongoing forming of networks substitute the concept of entities, e.g. organizing replaces organizations. The focus on networking and its hazardous and fluid 'state' is opposed to fixed entities. In the struggle for gaining power in order to establish stability for organizations, power is expressed in the ability of setting

standards and defining structure and norms. In order to be constituted as networks, authority to speak in behalf of others has to be granted to a spokesperson (Bloomfield & Vurdubakis, 1999).

While in his earlier works Latour (1987) adopts the term collective of human and non-human association, he later prefers to speak of networks (Latour, 1993; Latour, 2005). Latour's network is referring to Deleuze's and Guattari's (1987) rhizome as a criss-crossing network of roots without a taproot or a unifying structure. As contributing to the network narrative, ANT combines the advantages of higher flexibility than a systems, stronger historicity than a structural, more intense empiricism than a complexity approach. While being simultaneously real, narrated and collective, a network configuration surpasses the resistance of individual actors and limitation of humans or non-humans (Latour, 1993; Latour, 2005). Furthermore, networks generate a dynamic of its own and free themselves from the control of actors.

Stability of organizations and history of networks

In demystification of pre-existing entities, surmounting the actual acting in organizations and explaining its stability, the question emerges how the fluid state of networks allows for accounting of change as well as order in organizations. ANT responds by reinserting history and referring to the historicity of networks. Organizational standards and norms are set through networks and over the course of time solidity is attributed. Instead of drawing on entities explaining stability of organizations, an inversion of acting

constituting entities is performed. In other words, the history of networks is the cause of the solid state of organizations (Latour & Woolgar, 1979).

In emphasizing the forming of organizations, ANT is rather concerned with the dynamic and processual than with the stable and structural side of organizations. But in referring to the history of networks, ANT explains stability as well. Interactions of humans and non-humans account for situational practices and equally for constitutive structure, for actants have to evoke routines taken for granted in their everyday acting. In other words, the existence of organizations is dependent on the everyday reproducing and repeating of practices. Hence, the continual creation of order and the routine production of realities through everyday practices by participants of organizations are to be investigated by OT research (Reed, 2006).

ANT challenges organizational boundaries

ICT challenge the spatiality and temporality of organizational boundaries. As ANT follows the forming of networks, it overcomes the border of inside and outside of an organization, as well as a micro and macro approach. Latour writes (1999: 19): "... the social is a certain type of circulation that can travel endlessly *without* ever encountering either micro level – there is never an interaction that is not framed – or the macro level - there are only local summing up which produce either local totalities or total localities."

Critical account of ANT

As reaction to the black-boxed adoption of ANT - e.g. referring to networks, which lie in the hands of powerful actors and work in their interests (Ritzer, 2004), Latour notes in critical self-reflection about ANT: “Abandoning what is wrong with ANT, that is ‘actor’, ‘network’, ‘theory’ without forgetting the hyphen” (Latour, 1999: 24). According to Latour ANT denies the concept of empowered actors forming networks, as no actors exist prior acting. The conception of human agency as well as the reification of networks is dismissed. While ANT objects to be classified as a theory - as that tends to reify and surpass the acting of networks - it rather prefers conducting empirical research and being applied to actual organizations. In other words, there exists no theory of ANT, but the application of it, which is in accordance to a postmodern deconstructivistic approach (Derrida, 1976). Furthermore, the hyphen is problematic, as it suggests that networks consists of actors prior to acting. (Latour, 1997; Latour, 1999).

CONCLUSION

This paper shows that actor-network theory (ANT) is capable of overcoming existing dichotomies such as humans and technology, agency and structure, micro and macro, order and change or internalities and externalities in organizational theorizing (Reed, 2006). While ANT reveals the shortcomings of these opposites imagined as two sides of a coin, it rejects the magic border pretended between them (Bloomfield & Vurdubakis, 1999). As the categories derive from an analytic work of purification, over time they free themselves from their conception as continuums and attain essence, which is referred to as the work of translation and mediation (Latour, 1997).

In bringing the IS research on the role of technology and humans in organizations to the attention OT, the boundaries of both scientific fields are challenged in order to achieve knowledge sharing between them. As IS denies to draw on entities as topos of explanation, technology and humans are described as socio-material (Mol, 2002; Suchman, 2007) assemblages (Deleuze & Guattari, 1987; Latour, 2005; Suchman, 2007) which are attained by their forming of relations (networks). Furthermore, this paper asks OT to address technology and humans in organizations in a more systematic way (Barrett et al., 2006; Orlikowski, 2007).

By inserting time or a historical perspective into organizational theorizing ANT reveals the interplay of stabilization and change of organizational routines; hence ANT accounts for order as well as change (Lawrence & Suddaby, 2006). While the dichotomy of agency and structure is overcome through the history of networks, ANT's emphasis on networks renders the boundaries of organizations less visible and states a permeable boundary between both (Latour, 1997; Latour, 1999).

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