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Alternative Paths Toward a Social Actor Concept

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ABSTRACT

Over the course of analyzing data from a series of socio-technical ICT studies, we have developed a multi-dimensional concept of a social actor to guide qualitative data collection and analysis. Three information and communication technology (ICT) studies have been used to develop and refine the concept: a mid-1990's study of online information services use, a 4-year study of intranet development and use, and a 5-year study of ICT use in collaborative networking among scientists in academia and industry. The social actor concept has been theoretically supported by institutionalist approaches. However, in our continuing effort to formalize it, we have found that alternative, and equally convincing, supporting theoretical explanations can be put forward using actor-network theory (ANT), as well as structuration theory. In this paper, we explain the social actor using ANT concepts and structuration theory concepts, and then contrast these with institutionalist concepts, emphasizing where ANT and structuration theory provide added value and suggest directions for further research and conceptual refinement.

Keywords

Social actor, institutionalism, structuration theory, actor-network theory.

INTRODUCTION

As information systems researchers, we struggle to cogently understand, accurately reflect and helpfully improve the technologies and processes that form the subject of our research. Over the past few decades we have adapted theories from related disciplines, refined adopted methodologies, and developed models to explain and predict the wide range of puzzling and exciting phenomena that accompany the design, development and use of information and communication technologies (ICTs.) We sense -- and our data confirm -- that ICTs are complicit in rapidly proliferating global transformations, and that cognitive models of ICT "users" must be augmented to fully fathom the complex environments where ICTs are used.

Complexity in ICT use is often theoretically framed as a tension between agency and structure. Individualistic socio-cognitive perspectives (e.g. TAM) and some social constructionist perspectives (e.g. SCOT), which focus on individuals' mental models or technological frames to explain ICT adoption and use, tend to emphasize individual action and agency. Meta-theoretical approaches, such as structuration theory, contextualize socio-cognitive models emphasizing instead the balanced duality of agency and organizational structure. Networked approaches, like actor-network theory (ANT), emphasize the symmetry between actors and their technologies, and focus attention on the translations that occur as knowledge and resources are exchanged in networked interactions.

Theoretical approaches that emphasize agency, or equate agency with structure, can lead to overly optimistic expectations about the possibilities for ICTs to enable individual empowerment, because they tend to overlook the institutional influences that dominate collaborative action and associated ICT use. In contrast, our research indicates that institutions provide an overarching, framing context within which social actors make constrained choices about ICT use, particularly when they are situated within organizations. At least, that's what it shows when we use new institutionalist theory to examine the data.

Through a series of socio-technical, qualitative research studies, we have developed a conceptualization of the social actor for information systems research supported by new institutionalist theory (Lamb and Kling, 2003.) This emergent model provides a richer framework for examining ICT use in complex settings, and reflects an accurate view of the constraining and enabling aspects of information systems and organizations. We would like to think that our conceptualization can be used in place of decontextualized models to help researchers gain a better understanding of ICT related phenomena. However, it still seems to be missing a sense of how institutional influences manifest themselves in the day-to-day actions that propel collaboration and the use of ICTs.

Perhaps by taking an alternative, but complementary, theoretical path, we can infuse it with the sense of a social actor who energizes the flows that are channeled through institutional structures via technologies. At the same time, by identifying the

underlying concepts that allow for complementary theoretical comparison, we might move closer to our goal of formalizing the social actor as a unit of analysis for IS research.

In this paper we proceed toward that destination by examining the dimensions and characteristics of a social actor through the lenses of structuration theory and ANT. We begin by briefly reviewing the social actor construct.¹ In the following sections, we examine complementary concepts from institutional theory, structuration theory, and ANT to develop alternative explanations of the empirical model. As we compare and contrast the resultant frameworks, we draw on insights from ongoing research to better assess the putative advantages and explanatory value of each one. This exercise enhances our understanding of the social actor, and shows how explanations of ICT use can be extended through a series of theoretical associations.

THE EMERGENCE OF A SOCIAL ACTOR MODEL

We have developed our conceptualization of a social actor (see Table 1) from the data and analyses of three related qualitative studies:

SOCIAL ACTOR DIMENSIONS	CHARACTERISTICS and BEHAVIORS of connected and situated individuals
Affiliations (Definition: organizational and professional relationships that connect an organization member to industry, national and international networks.)	Social actor relationships are shaped by networks of organizational affiliations
	Relationships are dynamic, and related informational exchanges change with “flows” of capital, labor, and other resources
	Relationships are multi-level, multi-valent, multi-network (i.e. global/local, local/global, group, organization, intergroup, interorganization, culture)
	As relationships change, interaction practices migrate within and across organizations
Environments (Definition: stabilized, regulated and/or institutionalized practices, associations and locations that circumscribe organizational action.)	Organizational environments exert technical and institutional pressures on firms and their members
	Environmental dynamics vary among industries
	ICTs are part of the organizational environment
	ICTs are part of the industry/national/global environment
Interactions (Definition: information, resources and media of exchange that organization members mobilize as they engage with members of affiliated organizations.)	Organization members seek to communicate in legitimate ways
	Organization members build, design, and develop interactions that facilitate “flow” changes
	ICTs become part of the interaction process, (“interaction technologies”) as people transform and embed available informational resources into connections and interactions
	As firm members, people perform socially embedded (role-based), highly specified actions on behalf of the firm
Identities (Definition: avowed presentations of the “self” and ascribed profiles of organization members as individual and collective entities.)	Social actor identities have an ICT use component
	ICT-enhanced networks heighten ethnic and multiple other identities (global/local tension)
	ICT-enhanced connections among firm members transcend roles (project-based)
	Social actors use ICTs to construct identities and control perceptions

- 1) a mid-1990's study of online information services use (Lamb, 1997; Lamb et al., 2003),
- 2) a 4-year study of intranet development and use that was designed to test some early analyses of the online study (Lamb, 1999; Lamb, 2001; Lamb, 2003), and
- 3) an ongoing, 5-year study of ICT use in collaborative networking among scientists in academia and industry that uses the social actor model as a guide for data collection and analysis (Lamb and Davidson, 2005; Lamb and Karsten, 2006.)

Table 1: Multi-dimensional Conceptualization of a Social Actor

¹ It is, perhaps unfairly, assumed that readers have some familiarity with conceptualizations of social actors in IS research. If not, readers are advised to see Lamb and Kling, 2003 for the detailed analysis that links empirical data to the construct dimensions described here.

Through iterative analysis of our study data, we derived four dimensions -- **affiliations, environments, interactions and identities** – that characterize organization members and their ICT use contexts. The first two dimensions relate people to their organizations, and to the industries and environments of those organizations. The second two dimensions relate organizationally situated individuals to others and to the ICTs they use to interact with and present themselves to others.

With this empirical view, we could conceptualize organization members as social actors who form affiliations that are networked, exchange-related, multiple and changing². Their environments are technical, institutional, ICT-enhanced, and expansive. Social actor interactions are legitimated, action enabling, constructed, and role-based; and social actors continually reconfigure their roles to reconstruct and represent themselves as competent, ICT-savvy social actors. But, to use the view as a guide for further research, we needed to develop a coherent, theoretically based explanation of the emergent dimensions and characteristics.

FOLLOWING THREE PATHS OF THEORETICAL ANALYSIS

Our first theorizing journey followed a line of thinking that had guided the study series all along – institutionalist theory. This seemed prudent, but at the same time ground-breaking. Leading IS researchers had been calling for a better integration of institutionalist theory into ICT-related studies (Orlikowski and Barley 2001; Orlikowski and Iacono, 2001), and an institutionalist analysis of our social actor construct would be a response to that call (Lamb and Kling, 2003). As an aid to readers not fully familiar with institutionalist ideas, we will provide a brief primer on institutionalist theory, followed by a brief review of structuration theory and ANT concepts. This will provide a basis for our analysis of alternative yet complementary explanations of the social actor.

Institutionalism

Our institutionalist understanding of social actors relies on Scott's (1995) theoretical synthesis that, in order to examine how structured social arrangements vary, defines institutions in this way: "*Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers—cultures, structures, and routines—and they operate at multiple levels of jurisdiction*" (Scott, 1995 pp. 33.) (See Figure 1.)

According to Scott, theorists have usually stressed one of the three "pillars" of institutional thought: *regulative, normative or cognitive*. (Refer to the x-axis of Figure 1.) The regulative view gives primary emphasis to the role of oversight, mandates, coercion and sanctions to establish and maintain formal and informal systems of behavior. The normative view draws on the concepts of values and norms. These define what people should do and prescribe how things should be done, and they legitimize the role-based actions and cultural routines that particular individuals perform as they continually construct social institutions. The cognitive view adapts symbolic interactionist³ concepts to the institutional framework to explain how individuals' everyday actions are constrained by the overarching infrastructures that provide the resources for and shape the interactions of negotiations in their social worlds. Each pillar provides a different basis for legitimacy--conformity to rules, a moral value basis, or a common identity – which may work together or be in conflict. Thus, each of the three pillars reflects a different viewpoint, which can result in very different evaluative assessments of the phenomena under study.

Drawing on the works of Jeppesen (1991) and Giddens (1984), Scott describes how these institutional elements are "carried" or reproduced—through "cultures, social structures, or routines (and, perhaps also by technologies)" (Scott, 1995; p. 60.) (Refer to the z-axis of Figure 1.) Cultural carriers are codified patterns of meanings and rule systems that may operate at many levels, from belief systems to organizational cultures. Social structural carriers are characterized by networks of social positions, or role systems. These structures may be erected to exercise governance, or to differentiate codified systems, like academic departments in universities. Routines as carriers reflect the tacit knowledge of actors and the habits and procedures that may be based on their unarticulated understandings. The institutions and their carriers operate at several different levels, from organizational subunits, like marketing departments, to global systems, like international fiduciary regulations. (Refer to the y-axis of Figure 1.) Institutional theorists do not examine phenomena at the individual level. Their research focuses on

² See the Conceptual Complementarity section of this paper for an expansion of the terms in this paragraph.

³ "Symbolic interactionism is a theoretical approach... that seeks to explain action and interaction as the outcome of the meanings actors attach to things and to social action... meanings 'do not reside in the object' but emerge from social processes" (Jary and Jary, 1991, p. 508-509.)

situated action by firm members or other actors in social settings where the influences and interactions that shape behaviors and identities can be examined as integral.

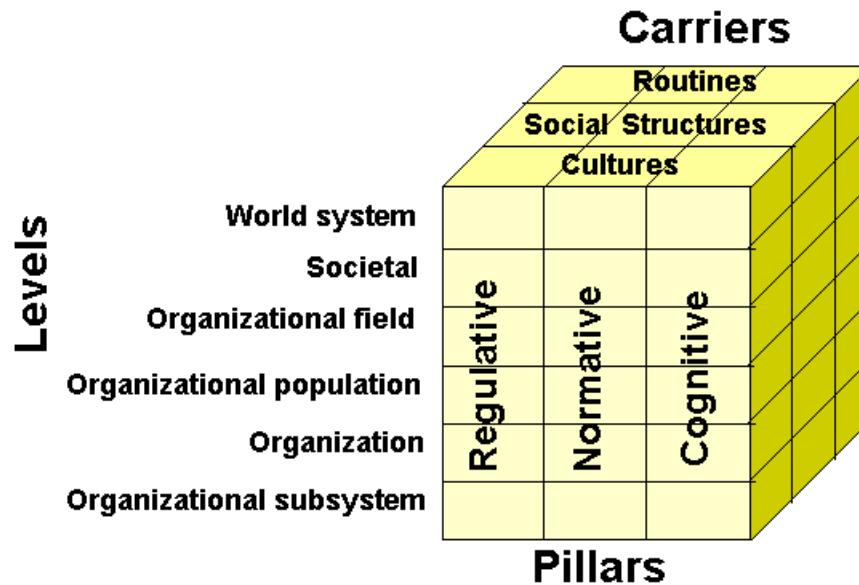


Figure 1: Institutional Pillars, Carriers and Levels (a 3-dimensional representation derived from Scott, 1995 pp. 34-59)

Within such settings, two concepts of change, *institutionalization* and *isomorphism*, are particularly important. *Institutionalization* is the process by which an organization develops a distinctive character structure -- a set of norms and routines, a way of doing things. Practices can become routinized within one particular firm, or they may become standardized throughout an industry. *Isomorphism* explains how organizations come to adopt similar market approaches, how they develop industry standards, and how they define legitimate forms of interaction. DiMaggio and Powell (1991) describe two types of isomorphism: competitive and institutional. Competitive isomorphic pressures are market-related, and tend to push organizations toward improving efficiency or toward better marshalling of scarce resources. Institutional isomorphic pressures come from other organizations in the industry environment. In accordance with the institutional pillars, these may be regulative (e.g. coercive, legally imposed restrictions that regulate the sale of drugs), normative (e.g. codes of conduct associated with industry professionals) or cognitive⁴ (e.g. mimetic imitation of practices developed by leading industry organizations.)

Scott's synthesis, particularly his treatment of its cognitive and constructionist aspects, largely overcomes the most common complaint against institutionalist analyses; namely, they tend to discount agency by focusing on organizational and societal levels of analysis, rather than individual or small group actions. It has provided a new institutionalist explanation of the social actor that is coherent and robust. What still seems to be missing, however, is a sense of how institutional influences manifest themselves in the day-to-day actions that propel collaboration and the use of ICTs.

Structuration Theory

As we began looking for a way to test our emergent social actor model with a new ICT (i.e. intranets), constructionist notions of how new ICTs shape and are shaped by social contexts (Bijker, 1995) gained salience in the study design. The underlying theoretical basis for constructionist views of IS (Pinch and Bijker, 1984; Orlikowski, 1992) comes primarily from Giddens' (1984) structuration theory, which in turn relies heavily upon the concepts of symbolic interactionism developed by Blumer (1969.) Considering this common intellectual heritage, it should not be surprising to find that institutionalist explanations of the social actor resonate strongly with constructionist explanations. There are some key differences, however, which relate directly to our open inquiry about social actors and their everyday use of ICTs.

⁴ Cognitive institutional isomorphism is referred to as 'mimetic processes' by DiMaggio and Powell (1983.)

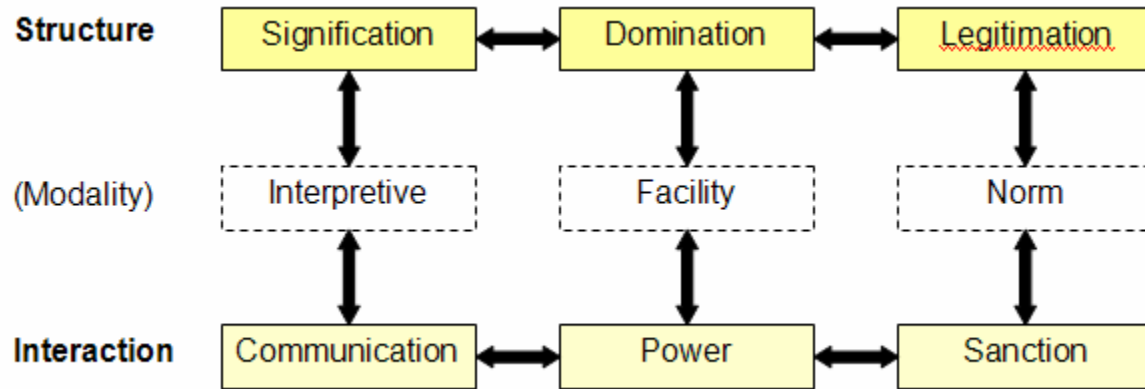


Figure 2: Structuration theory: analytical dimensions of duality of structure (from Walsham, 1993 p. 61).

Perhaps the most significant difference is the idea that, for Giddens, social structures are made manifest *only* in social action and interaction – that social institutions like rules and roles exist only as memory traces in human minds.⁵ Structures of signification (i.e. meaning), domination (i.e. resource allocation) and legitimation (i.e. norms) persist because people continually monitor their own conduct, and tend to follow routine patterns of interaction, giving perceived stability to social institutions. Nevertheless, this reflexive action can produce unintended consequences – and therein lie the seeds of change.

The analytical dimensions of this duality of structure conceptualization (see Figure 2) broadly align with the institutionalist framings of carriers (structure) and pillars (interaction and modality), but also unfold the *transitions* between interaction and structure by indicating *how* institutional elements are carried or reproduced (cf. Scott above). Although Giddens does not talk much about technology in his writings, IS researchers have adapted structuration theory (DeSanctis and Poole, 1994), and used it to postulate a theory of the duality of technology (Orlikowski, 1992.) However, Jones et al. (2004; p. 17) point out that these approaches harbor an "erroneous tendency to see technology as embodying structures, which are then appropriated by users during their use of it." Orlikowski's later work (2000) corrects this error by developing a *technologies-in-practice* view of ICTs that "starts with human action and examines how it enacts emergent structures through recurrent interaction with the technology at hand" (Jones et al. (2004; p. 18), thereby restoring a sense of the strongly voluntarist agency view that characterizes structuration theory.

Constructionist ideas of self-monitoring reflexivity, articulation and routinization in the shaping of social actor technology practices guided our research in the intranets study. But our institutional interpretations of the empirical data would not allow us to go too far in attributing power to agency, and so we looked for alternate ways to examine the constraints that shape social action. In other writings, Giddens has explored the issues of space/time in ways that help to describe these as constraints on agency in a limited life-span and limited physical world setting (i.e. the current human condition), while still maintaining a theoretical potential for change in every interaction. At this juncture, however, we had begun to appreciate the more compelling aspects of 'networks of power' (Hughes, 1983) in our studies of online and intranet use in ways that underscored the value of incorporating the network tracing methodologies of Latour (1987) as an alternative to quantitative social network analysis techniques (cf. Garton et al, 1997.)

Actor - Network Theory

By following the social actors (ANT-style) in our intranets study and in our studies of collaborating scientists, we gained an appreciation for the theoretical approach that Latour and his colleagues had derived from their own research pursued in this fashion. Still, we were reluctant to explain a social actor using only concepts from ANT.⁶ This was partially due to some confusion at the time over just what constituted the accepted corpus of ANT concepts, although we knew that some colleagues had already begun to link ANT concepts to structuration theory frameworks (Brooks and Atkinson, 2004.) Based

⁵ For a more comprehensive discussion of the use of structuration theory in IS research see Jones et al. (2004) and Walsham (1993).

⁶ See an early working paper that uses Castells' and Touraine's work to shore-up ANT concepts so that they can support a social actor concept (<http://lamb.cba.hawaii.edu/pubs/samant.pdf>).

on a recent clarification of ANT from Latour (2005), however, and using insights from our own ongoing science studies, a cogent ANT-supported explanation of the social actor concept can now be put forward.

In our effort to refine and formalize the social actor concept into a model for IS research, ANT offers promise because it explicitly theorizes about actors and the ways in which they are connected with and through their technologies. (See Table 2.) ANT theorists have given networks and ICTs a central focus in their theorizing about social systems, while carefully pointing out the differences in stability within the networks they have studied (Latour, 1987; Woolgar, 1991; Callon, 1991.) The networks they observe are richly nuanced, multivalent, dynamic, indeterminate and contingent. Affiliations among networked individuals, groups and organizations entail the use of ICTs to varying degrees.

Perhaps the most important observation by ANT researchers is that **people together with their technologies comprise social networks**. In addition to ‘actor’, they use the term ‘*actant*’ to refer to both humans and artifacts, emphasizing the ambiguous roles of information intermediaries in networks that are heterogeneous socio-technical *actor-networks*—where the technical and the social are inseparable. Actants assemble their social constructions through interactions that may *enroll* other mediators or intermediaries—a category that also combines ICTs and other people as hybrids. Mediators *translate* the actions and interests of one actor/actant into the actions and interests of another, thereby aligning the network to enable collaboration and coordination. Such alignments are often fragile, and ephemeral, requiring continual effort to maintain a series of network connections. The networks are also fundamentally dynamic, often requiring the reconfiguration of organization members’ roles, and also the novel use of existing or new ICTs that are *inscribed* with particular viewpoints and *delegated* to represent the interests of others.

Actor (or actant)	Actor is a hybrid category that includes both human beings and non-human actants, such as technological artifacts. These arrangements do not presuppose social asymmetries, hierarchies or cultures.
Actor-network	The actor-network is a heterogeneous network of aligned interests, including, for example: people, organizations, and standards. Alignments of long and short networks account for institutional aspects of social structure.
Enrolment and translation	These processes create a body of allies, human and non-human, by translating their interests and aligning them in actor-networks. Through alignment and translation the actants enrolled may morph from intermediaries to mediators to hybrids.
Delegates and inscription	Delegates are actors who ‘stand in and speak for’ particular viewpoints that have been inscribed in them.
Irreversibility, black boxes and immutable mobiles	Irreversibility is the degree to which it is subsequently impossible to go back to a point where alternative possibilities exist, or where network elements can be reconfigured. Such stabilizations of interpretive flexibility make durable the stuff of social ties; they strengthen asymmetries and establish boundaries that require traversal by boundary objects.

Table 2: Actor-Network Theory Concepts and Descriptions (adapted from Walsham (2001) p. 47)

In application, ANT has contributed important explanations of network level phenomena, such as network mobilization (through enrolment and translation) during the development of new technology projects (Akrich, 1993; Latour, 1996; Tuomi, 2001.) Although ANT theorists tell us that networks are often dynamic and that social actors are pliable, other ANT concepts suggest that both may also become inflexible and *irreversible* (in the sense that they cannot return to some former state) if networks stabilize around complex sets of dependent associations, and intermediaries become taken for granted. When organizational practices become institutionalized, or when powered relationships prevent organization members from reconfiguring ineffective hierarchical positions, those processes and roles may become unquestionable, inscrutable *black boxes* that further constrain networking logics.

CONCEPTUAL COMPLEMENTARITY

Using the complementary concepts of institutionalist, actor-network theory and structuration theory, as sketched above, we can now narrate a more expansive theoretical explanation in support of our empirical social actor view by reviewing the characteristics of each dimension: *affiliations, environments, interactions and identities* (see Table 3.)

Focus	Institutionalism	Structuration Theory	Actor-Network Theory	Social Actor Dimension
Agency	Symbolic interaction	Interaction, Reflexivity	Actant, Delegates	Identities, Interactions
Change	Isomorphism, Articulation, Institutionalization	Modality, Articulation, Routinization	Translation, Irreversibility	Interactions
Structure	Carriers, Pillars	Structure	Actor-network, Black boxes, Boundary objects	Environments
Level	Levels	---	Boundaries	Affiliations
ICT	Carriers	Duality of structure	Actant, Actor-network	Identities, Interactions, Environments
Network	Organizational field	---	Actor-network	Affiliations

Table 3: Complementary Sociological Concepts Focused on Social Actor Dimensions

Affiliations. Networks are a basic configuration for organizing social, economic and political exchanges. All social actor relationships are shaped by networks of organizational affiliations⁷, whether the actors are individuals, groups, collective political movements, information technologies, or some hybrid combination of people and their ICTs. This is a much stronger statement about networking forms than institutionalists make. Within networks, relationships are dynamic, and related informational exchanges change with “flows” of capital, labor, and other resources. To be disconnected from the network is to be essentially cut off from the flows of resources. Organizations are heterogeneous networks of aligned interests, and the network enterprise is a key configuration that relies on ICTs to achieve economically lean modes of exchange among social actors. Relationships are multi-level, multi-valent, multi-network (i.e. global/local, local/global, group, organization, intergroup, interorganization, culture), as social actors, in their various forms and functions (e.g. design teams, corporate officers, union representatives, etc.), become enrolled in multiple networks and begin to translate their interests. The concepts of enrolment and translation are fundamental to ANT explanations of social actor characteristics, just as isomorphic pressure concepts are to institutionalist explanations. On a network level, as relationships change, and new social actors are enrolled, interaction practices migrate within and across organizations through translation of their interests. Globalizing practices migrate in just the same way -- through chains of (often standardized) network interactions among connected social actors. However, the terms "affiliation" and "network connection" do not convey the same sense of active association. An affiliation may be a passive association, or even an ascription or interpellation that is actively resisted. Clearly, there must be different kinds and degrees of connectedness, and the ANT concepts of delegation and inscription help to explain how some social actors (e.g. demographic databases or criminal records systems) can "stand in and speak for" others, or can provide a proxy for the disconnected.

Environments. The idea of an environment is a bit more difficult to convey with ANT than with institutionalist theory. However, structuration theory concepts of the duality of structure and the durability of structure in human memory traces provides a transition from a seemingly pliable world of *interactions* to a choice-constrained world of *environments*. So how, exactly, do organizational environments exert technical and institutional pressures on firms and their members? Callon (1991) has described how particular sets of network links can achieve longevity, or *irreversibility*, so that they take form as stable environments that tend to shape future translation processes. The use of technical elements, like email, can become standardized through the alignment of social actor interests. Behaviors, like manufacturing quality management processes, can be coerced through legal and political actions that social actors in state, regulatory agency, professional and industry networks mobilize to establish laws, mandates, codes of ethics, and industry practices. Environmental dynamics vary among industries, because over time actors have shaped different irreversible elements in different industries, and those "black boxes" and "immutable mobiles" continue to shape current translation processes, despite the spread of globalizing practices. Through these dynamics, as Giddens points out, society produces the historical context of its own future. Moving between structuration and ANT concepts, can provide a sense of background (i.e. environments, institutions) and foreground (i.e. affiliations, networks), and that is similar to what Scott's institutionalist synthesis provides by shifting between cognitive, regulative and normative pillars. Within this framework, ICTs are part of the organizational environment once they stabilize as irreversible network enterprise elements; and ICTs are part of the industry/national/global environment once they become routinized as globalizing technical practices. These networks of stabilized and dynamic elements, of actors together with their

⁷ Underlined phrases correspond to Characteristics and Behaviors in each Social Actor Dimension of Table 1.

ICTs, constitute the informational environments that enable and constrain the interactions of organization members (Lamb et al., 2003.)

Interactions. Organization members are by definition enrolled in actor-networks that take shape among organizations as well as individuals. In their organizational actions, they may seek to further their own interests; but they must also represent or stand in for a collective social actor -- "the firm." As firm members, people perform socially embedded (role-based), highly specified actions on behalf of the firm. These exchanges and interactions take the forms and follow the practices that have stabilized within their relevant networks, and organization members seek to communicate in these legitimate ways. They are reflective in action in ways that help them articulate innovative work-arounds, as well as to develop routine patterns of work. Organizations, as network enterprises, are connected through multiple networks, and within those networks, their relationships with other actors (of various collectivities) are multi-valent, and often in conflict or misalignment. This condition puts pressure on organization members to build, design, and develop interactions that facilitate "flow" changes and that will be better aligned with the firm's (and, if possible, their own) interests. These changes are energized by organization member agency through a range of modalities that is channeled through powered networks of stabilized and dynamic elements (e.g. institutions and globalizing practices.) Throughout the process, organization members enroll both human and non-human allies into their actor networks. ICTs become part of the interaction process, ("interaction technologies") as people transform and embed available informational resources into connections and interactions. These concepts provide a powerful lens through which to view the social actor and her interactions through ICTs as vectors of social change.

Identities. The common symbolic interactionist basis of structuration theory and institutionalism understands identities as being constructed through the process of interaction. Because affiliations and their attendant interactions are multi-level and multiple, social actor identities are also multiple, and they are constructed around various groupings. Within ANT this constructionist view is extended -- "actors" are a hybrid category that includes both humans and technologies. Therefore, it follows easily that social actor identities have an ICT use component. How tightly human and ICT capabilities and qualities are interwoven during identity construction will depend on the relationship that an organization member seeks to create or maintain. ICT-enhanced connections among firm members transcend roles -- they may be project-based, departmental, or location-specific. And the legitimate forms of interactions, the collectivities of the interactors, and the appropriate uses of ICTs will vary depending on the relationship, the network(s) in play and the resource(s) being exchanged. Social actors use ICTs to construct identities and control perceptions at various levels. In most presentations of social constructionist and actor network theories, the social actor unit is allowed to vary in accordance with self-representation and relationships to other actors, without trying to retain the notion of an individual subject as a set of values and preferences that guide actions. In some ways this masks the sense of conflict that people feel as ICT-enhanced networks heighten ethnic and multiple other identities. Institutional views, in contrast, acknowledge the effect of global/local tensions on identities in explanations of how the legitimacy of existing institutions and social movements (i.e. differently stable networks) influence collective identities (Kling and Iacono, 1994).

DISCUSSION

The foregoing institutionalist, structuralist and ANT explanations of the social actor do not reach a conclusion about which social theory is best. As Walsham has pointed out: "there was not and never will be any 'best' theory"... "Our quest should be for improved theory, not best theory, and for theory that is relevant to the issues of our time" (1997, p.478.) In our interpretation, that does not mean we need to create a "unified theoretical view" of the social actor, but rather a prismatic way to use the lenses of multiple theories to examine social actor characteristics. To that end, each theoretical lens provides a coherent explanation of empirically derived social actor dimensions and characteristics. By juxtaposing these three different approaches, we have perhaps identified strengths and weaknesses in the emergent model offered by each explanation; as well as strengths and weaknesses in each theory further exposed by the empirical social actor construct.

Day-to-Day Actions

Our primary goal in this analysis was to articulate a sense of how institutional influences manifest themselves in the day-to-day actions that propel social actors' collaboration and their use of ICTs. By relying on Giddens' explanation of structure as *only* existing in human memory traces, we can focus on the enacted everyday transitions between interaction and structure -- i.e. reflexivity, articulation and routinization. However, we lose the perceptual concreteness of institutional constraints. ANT offers a performative way around this conceptual conundrum. One clear advantage of ANT is that it comes with a well-articulated methodology for examining the links between social actors, as they represent themselves, at multiple and various levels. Since "actants" may consist of ICTs as well as humans, ANT also encourages researchers to give equal time to details on aspects of social interaction and technological inscriptions. By using Latour's network tracing approach to collect data during the final phase of our intranets study and in our studies of collaborating scientists, we observed and analyzed

important aspects about everyday ICT-infused interactions, such as the construction of project-based identities (Lamb and Davidson, 2005), that helped us understand how technologies-in-practice strengthen social ties and underscore memory traces – making them traceable and durable (Latour, 2005.) Our complementary explanation of the social actor is also better, we think, at explaining change--particularly changes involving ICT introductions--because it rests on the basic assumption that networked interactions are dynamic, relational and fundamentally socio-technical.

A Sense of Time

One unexpected benefit of this analytical exercise is that, in addition to reinfusing our social actor view with a sense of the everyday, it also brought along a coherent sense of time. In early codings of social actor elements, we had included a characteristic called 'Pace of Business' that described how client expectations placed certain demands on organization members to interact in more frequent, faster, and often ICT-enabled ways. In later analyses, we struggled with the concept of the 'project' which dominated organizational task structurings in both the intranets and collaborating scientist studies – defining interactional modalities (i.e. project-based integration (Lamb, 2003)) as well as foci for identity construction (i.e. project-based identities (Lamb and Davidson, 2005).) Giddens' conceptualization of time segmentation as a social construction provides a way of understanding these *temporalities* as another dimension of the social actor that was not available (or not apparent) to us through institutionalist theorizing. (See Table 4.)

SOCIAL ACTOR DIMENSIONS	CHARACTERISTICS and BEHAVIORS of connected and situated individuals
Temporalities (Definition: socially constructed segmentations of time that shape the interactions of an organization member in response to the expectations of networked affiliates.)	Social actor interactions are responsive to relational time constraints
	Project-based time segmentations transcend organization and network structures
	ICTs reinforce (i.e. speed up) existing time constraints and precipitate interaction
	... (to be continued, pending further empirical data analysis) ...

Table 4: A theoretically-derived dimensional addition to our Conceptualization of a Social Actor

We will continue to review our data for exemplar characteristics and behaviors of this dimension, keeping in mind (as one reviewer astutely noted) that projects are an institutionalized organizational form of dealing with time pressures which may be better conceptualized within the **environments** dimension. In response to suggestions by another helpful reviewer, we will also look more carefully at our data for evidence of the constructed histories or *genealogies* of social actors that ANT studies have emphasized. This may provide a stronger theoretical basis for characterizing long and short linkages of time-segmented interactions in ways that can be explored through simulation.

FUTURE STUDY

Our aim in this paper has been to augment our institutional explanation of an empirically derived social actor view, with concepts from two complementary perspectives, primarily to see if such an analysis could suggest ways to refine or expand the construct, but also to find ways to make it accessible to a wider group of IS researchers.

We intend to continue this analysis through a series of agent-based simulation (ABS) studies that operationalize a social actor in terms of more accessible socio-technical networking concepts (see Lamb, 2005 for details.) For simulation purposes, the most controversial aspect of ANT – the symmetry between human actors and technologies, and the inseparability of their social and technical characteristics--is perhaps its greatest strength. ANT constructs a single social unit around people and their technologies, and demands that we treat them as hybrids. This is actually a more comfortable theoretical position from which to investigate social actor dimensions and characteristics, which reflect the tight composition of collective actors as “organizational representatives and the ICTs they use on behalf of the firm.” Data from our studies repeatedly show that organization members and their technologies are hybrids/delegates, in various combinations and representations. ABS studies also allow us to manipulate time constraints in ways that can help us carefully examine the implications of incorporating a theoretically derived (and empirically supported) *temporalities* dimension into our emergent social actor model.

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