48 HOW STAKEHOLDER ANALYSIS CAN BE MOBILIZED WITH ACTOR-NETWORK THEORY TO IDENTIFY ACTORS

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Abstract Actor-network theory studies provide detailed accounts of how human and nonhuman actors gradually form stable actor networks. However, due to their focus on a particular context, there is little generic guidance on how such relevant actors can be identified when a different research context is under study. The principles of (human) stakeholder behavior presented in this paper guide the identification of human stakeholders through an iterative, interpretive, dynamic and context-contingent process. We show how they can be adopted and extended to include the identification of nonhuman actants as well. Thus, we argue that they can be instrumental in providing a generic, context-free guidance to stakeholder identification that is currently missing from ANT studies.

Keywords: Stakeholder analysis, actor-network theory (ANT), actors, stakeholders, implementation

1 ACTORS AND STAKEHOLDERS

Actor-network theory (ANT) has its origins within the work of Callon (1986, 1991) and Latour (1987, 1992). According to ANT, humans and machines interact in a multiplicity of roles, together constituting networks that act as independent autonomous actors, the *actor networks*. An information system with its information technologies and

its human users may be viewed as an actor network. In actor networks, actors collectively act; actor networks are by nature heterogeneous and information-based. Networks within ANT are also perceived as actors (Latour 1999; Suchman 2002). A key proposition of ANT is to treat human and nonhuman actors as well as networks symmetrically. However, there is little guidance on how these actors are identified. According to ANT, the researcher can trace the actor network by following the actors and observing what they do. The ANT literature provides several examples of how this can be applied in a specific context. However, the idea of following the actors cannot easily be translated to practical guidance for the researcher engaging with complex socio-technical phenomena. Stakeholder analysis is an approach much more explicit in this respect (Pouloudi 1999). However, the application of stakeholder analysis (unlike ANT) in the IS context has been predominantly restricted to the study of human stakeholders.

We argue that mobilizing stakeholder analysis with ANT, within research and practice, offers a means of identifying ANT actors systematically, thus enhancing ANT analysis. Although the notions of stakeholders (in stakeholder analysis) and actors (in ANT) are implicitly related, there is little research that attempts to bring the respective approaches together. This paper makes a contribution in this area by extending the stakeholder identification process to nonhuman actors and networks, with a view to support ANT analysis.

2 STAKEHOLDER IDENTIFICATION IN ANT

In order to offer generic guidance for stakeholder identification within ANT, we need a broad definition of stakeholders. Thus, we adapt Freeman's (1984) definition of organizational stakeholders for information systems: "A stakeholder of an information system is any individual, group, organization or institution who can affect or be affected by the information system under study."

Previous research in IS proposes a number of principles of stakeholder behavior that can be used to guide an interpretive identification and analysis of stakeholders (Table 1). This approach puts forward a case for dynamic and iterative stakeholder identification. Such a dynamic and iterative process relates closely to some of the fundamental premises of actor-network theory, which "concentrates attention on a movement" (Latour 1999 p. 17).

The term *nonhuman stakeholders* has been used in information systems research already (e.g., Pouloudi and Whitley 2000; Vidgen and McMaster 1996). Here, we explore whether the stakeholder identification process cited above can include them. For this, we refer to the principles of stakeholder behavior and their implications as depicted in Table 1.

- The first principle emphasizes the importance of context and the specific time frame. It applies to human stakeholders as it does to nonhumans and networks. Indeed, ANT also emphasizes the importance of local context, as the stories told in ANT terms are largely defined by this.
- The second principle, prompting the researcher to explore links among stakeholders, is central to the notion of the actor network in ANT. Clearly, in ANT,

Table 1. Propositions for Stakeholder Identification and Analysis (Pouloudi 1999)

Principles of Stakeholder Behavior	Implications for Stakeholder Identification and Analysis
1. The set and number of stakeholders are context and time dependent	• stakeholder map should reflect the context • stakeholder map should be reviewed over time
2. Stakeholders cannot be viewed in isolation	• consider how stakeholders are linked
3. A stakeholder's role may change over time	• adopt a long-term perspective
4. Stakeholders may have multiple roles	• study how perceptions change
5. Different stakeholders may have different perspectives and wishes	• there are different versions of the stakeholder map to be drawn
6. The viewpoints and wishes of stakeholders may change over time	• these different versions of the stakeholder map should be reviewed over time
7. Stakeholders may be unable to serve their interests or realize their wishes	• need to consider political issues (as well as technical, economic or other)

these links or interactions occur among nonhuman and human entities. Bringing the two principles together, Latour (1999, p. 18) notes that "the network pole of actor-network…refers to…the *summing up* of interactions through various kids of devices, inscriptions, forms and formulae, into a very local, very practical, very tiny locus."

- The third and fourth principles can also be interpreted broadly to include nonhuman stakeholders. For example, technological artifacts, such as information systems, can be put to different uses at different points in time or depending on the human agents that interact with them.

The implications of these principles for identifying human *and* nonhuman stakeholders in an actor network, as well as the networks themselves, is that stakeholders should reflect the dynamics of the local context and not be treated as static elements but, rather, revisited over time for new entries. Pouloudi (1998) suggests that each stakeholder can lead to the identification of further stakeholders; for example, stakeholders refer implicitly or explicitly to other stakeholders when interviewed. While a nonhuman stakeholder cannot be interviewed, other (multiple) actors may speak on its behalf. An IT director, an upgrade specification, or a user speaking on behalf of the technology are examples. Some nonhuman stakeholders (e.g., texts) include reference to other human or nonhuman stakeholders, therefore providing cues for further stakeholder identification.

The last three principles (5, 6, and 7) of Table 1 may be seen to concern human stakeholders exclusively, as they refer to perspectives, viewpoints, interests, and wishes. However, organizational networks, through successive translations, are made up of humans and nonhumans with aligned interests. These principles imply there can be

different versions of who the stakeholders are, depending on the time frame and the perspective adopted. ANT does not explicitly support this process, even though it strives to allow new actors "to define the world in their own terms, using their own dimensions and touchstones" (Latour 1999, p. 20).

The final principle draws particular attention to the political nature of stakeholder identification. While ANT acknowledges the importance of politics (Latour [1987] eloquently presents the politics of research), it does not do so explicitly in the process of *describing* the actor network. Instead, the ANT researcher is typically perceived as a reliable spokesperson for the network's establishment and/or the translation(s) of the actor network. It could be seen, though, that the researcher is acting on behalf of another (university or professional) network, one that is seeking to translate the network under investigation in line with its own (research) interests; indeed mobilizing stakeholder analysis is itself an analytical artifact, a machination, to achieve this.

3 CONCLUSIONS AND FURTHER RESEARCH

Atkinson and Brooks (2003) argue that despite ANT's call for a symmetric treatment of humans and nonhumans, the human/machine network duality "exists at the heart of the IS practice and research." Aiming to support ANT's more holistic approach, this paper has made the case for using stakeholder analysis together with ANT. The actor network binds the stakeholders together; what influences one stakeholder can ripple through the network. This idea of strongly interlinked stakeholders, that are contingent on the context, has been put forward for studying stakeholders in information systems research (Pouloudi 1998). Taking these research proposals on board, and exploring their application to nonhuman stakeholders, we have argued that stakeholder analysis can provide guidance for the systematic identification of the multiple, inter-dependent human and nonhuman actors and networks. In turn, the powerful notion of translations in ANT, coupled with stakeholder analysis, can contribute to a richer understanding of complex phenomena. Our point is that both stakeholder and actor network analyses have been influenced by the element of alternative interpretations of the network under study.

Starting with a set of guidelines for stakeholder identification suggested in earlier information systems research, the paper explored their applicability alongside ANT studies. We have argued that, while the value of ANT is to a great extent due to its attention to the local context, and the recommendation to follow the actors in it, it does not help the researcher recognize who the actors worth following are. The approach suggested in this paper recognizes and addresses this fundamental methodological weakness, without overlooking the importance of the local context that is key to ANT. Specifically, it guides the researcher to consider who would be the relevant stakeholders for each further actor or actor network identified. It argues, in line with ANT, that actors should reflect the local context and are interlinked, but are also likely to change over time. Importantly, it makes explicit the political nature of ANT itself: the actors and actor networks identified are contingent on the researcher; thus there are different actor networks to be identified, different explanations to be given for their formation, and different stories to be told. This argument provides an opportunity to revisit ANT within an interpretive research framework.

Thus, stakeholder analysis enhances ANT methodologically because it acknowledges explicitly the multiple stakeholder agendas, interests, and values. This prompts the researcher to recognize that there are multiple versions (or stories) of translation in each actor network, depending on the perspective adopted and the values and interests that characterize (or are inscribed in, in the case of nonhumans) stakeholder views. Research is, it may be argued, itself a translational struggle between the researchers and their university network and the subject network(s) under review.

Further research is called to explore the value of the guidelines presented in this paper in practice. We intend to look at one of the recent initiatives introduced by the National Heath Service (NHS) in the UK, the Integrated Care Record Service (ICRS). It is a "broad, continuously expanding and maturing portfolio of services covering the generation, movement and access to health records," which includes electronic prescribing in hospitals and workflow capacities to manage patient care pathways through the NHS (NHS 2002). The scale and ambitious outcomes of the ICRS project make it an interesting, complex context of information systems implementation for study. The interplay and critical role of both human stakeholders, such as patients and healthcare professionals, and nonhuman actors, such as care records, in the implementation of the ICRS have already prompted the use of ANT for its analysis (Gandecha et al. 2003). We believe that the line of research suggested in this paper can further help in the study of complex information systems implementations, such as the ICRS.

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