PRACTICE PERSPECTIVES ON INFORMATION INFRASTRUCTURES

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PANEL
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1   The Conceptual Challenges of Information Infrastructures

As information technology becomes ubiquitous and as networks connecting information systems are growing denser and continuously expanding, information infrastructures (II) emerge as a relevant and interesting topic for IS research. At the same time, design and management of information infrastructures become issues of practical concern for policy makers and managers. Information infrastructures have been studied for some time by IS academics and important ideas and insights have emerged from these studies. However, traditional IS research methods and theories are ill suited to the study of information infrastructures. Information infrastructures can be seen as extensions of inter-organisational information systems (IOIS) but are characterized by a much broader and heterogeneous set of users and developers as well as a more diffuse functional scope (Star and Bowker, 2002). While IOIS are frequently studied using traditional approaches that view IS use as the result of an adoption decision and that model the transition from non-use to use as a time-bounded implementation project, such approaches become infeasible when considering information infrastructures. By definition, II are not adopted by single decision makers nor can their development be adequately described by a sequence of pre-determined phases such as implementation and use. Thus, their study requires novel theoretical perspectives in IS.

The challenges for such novel theories are daunting and have been previously described in the IS literature. According to Hanseth and Ciborra (Ciborra and Hanseth, 2000; Hanseth, 2000), information infrastructures are not developed from scratch but always grow on the basis of an installed base. Star and Ruhledder (1996) argue that information infrastructures form a taken-for-granted background against which actors make development and use decisions. Together, these few examples of theoretical reflections point towards the problem of how to conceptualize use and design practices without assuming that these are necessarily the result of conscious decision making processes amenable to analysis through models of rational and explicit choice.

This problematic also raises the question of what the role of management or policy is or should be with regard to information infrastructure development. Hanseth and Lyytinen (2010) have recently proposed a set of principles that can be used to guide the design of information infrastructures. However, one may question whether the design metaphor is still adequate with regard to development of information infrastructures. Ciborra and Hanseth (2000) have argued that 'evolution' might be a better metaphor for studying the development of information infrastructures. Once this perspective is adopted, the role of management becomes problematic. What are the points of leverage management has for influencing II evolution? For example, the notion of evolution suggests a much more limited

set of action possibilities as compared to the notion of design which implies that most system variables are under the control of a single decision maker.

Finally, the level of analysis requires reconsideration. While IS studies traditionally focus on individual organisations or networks of organisations, studying II seems to require a higher level of analysis such as an industry (Steinfield et al., 2005). Trade associations, standardisation initiatives and industry-level working groups come into focus. Economic and sociological analyses of this 'meso-level' of economic action are not well developed. Establishing these units as proper objects of social science analysis is itself problematic because there are few theoretical tools and methods readily available. Yet, this level seems to be of crucial importance when studying II development and developing normative conclusions. This level has not yet been convincingly characterized by scholars. Empirical knowledge is limited and often of anecdotal character (cf. Damsgaard and Lyytinen, 1998 and 2001, and Monse et al., 1993). How do these industry-level discourses and practices affect and interact with organisational practices that are being aligned as II emerge and develop?

2 The Potential of Practice Approaches to Information Infrastructures

This workshop will explore the usefulness of practice theory to fill this gap. Our concept of practice theory is informed by such authors as Giddens (1984), Bourdieu (1990), Schatzki (2005 and 2006), Reckwitz (2002), Lave and Wenger (1991), and Orlikowski (2000). Our broad practice theoretic orientation can be characterized by the following three characteristics (Reimers et al., 2011). (1) Practice theory operates on a meso-level, typically on a level between individual action and phenomena of institutionalization. Specifically, it does not attempt to predict individual action or to describe emergence of institutional structures on the societal level. (2) The focus of practice theory on the role of the human body allows for a novel way of incorporating (information) technology into a social theory framework. Specifically, it views technology as the material complement of the human body that, through mutual attunement, jointly create affordances for purposeful action. This contrasts with the established view of technology as the theoretical object (artefact) of a rational calculus. (3) With practices, rather than actions or decisions, as its basic unit of analysis, practice theory also adopts a different view on change and persistence; these are not seen as intended or unintended consequences of decisions; rather, a practice is seen as being continually renewed (reproduced) which simultaneously accounts for persistence and change. As a consequence, both persistence and change are seen as active achievements of social actions.

Based on this interpretation, practice theory appears to hold great potential to address the issues raised above. With practices as its primary unit of analysis, rather than individual decisions and actions, it promises to provide a suitable theoretical perspective on the development of information infrastructures that cannot be appropriately modelled as resulting from conscious individual decisions. Moreover, practice theory does not artificially force information infrastructure development into pre-determined phases but views II development as the co-evolution over time of aligned practices.

There are however certain problems in applying this promising perspective to the large scale II phenomenon. Practices are usually conceived of as relatively small scale phenomena while the study of information infrastructure evolution requires analysis on higher levels such as industries. Moreover, practice theory has no clear role for management action and intervention. Indeed, it may be argued that practice theory has an empowerment agenda and attempts to utilize it for management purposes are fraught with ethical problems (Su et al., 2011). In addition, the autopoietic nature of practices tends to isolate them from intentional external manipulation. The workshop aims to take stock of recent advancements in the application of practice theory to the study of information systems and to critically evaluate its potential for studying and shaping II development.

3 Structure of the Proposed Panel

Panel discussions will be structured by the following questions. These questions will be given to panel members beforehand and it is expected that they will prepare initial answers to each question. However, the moderator will ensure that panellists will not make 'mini presentations'.

- How can practice theory contribute to the study of II development?
- What are the drawbacks of applying practice theory to the study of II?
- To which extent can II be designed/managed as seen from a practice-theoretical perspective?
- How do industry-level practices interact with company-level practices in processes of II development?
    - What constrains the possibilities for acting in such initiatives?
    - How do existing II create/condition opportunities for acting

4 Panel Composition

Panellists have been selected for their expertise in either the emergent fields of information infrastructures or practice theory or both.

Robert B. Johnston (http://mis.ucd.ie/staff/RJohnst)

Robert Johnston has researched B2B Electronic Commerce and Interorganisational Information Systems for about 17 years. His interest now is in applying a practice perspective to IOIS and Information Infrastructures as a way of moving beyond technocentric and managerialist accounts.

Séamas Kelly (http://mis.ucd.ie/Members/sbkelly)

Séamas Kelly's work has been concerned with the development of practice theory perspectives on information systems and knowledge management. His recent work explores the affective dimensions of management (e.g. anxiety, style and mood) that are brought into focus by such approaches, with specific application to areas such as globally distributed software work or the development of national health information infrastructures (Kelly and Noonan, 2010).

Stefan Klein (http://www.wi.uni-muenster.de/wi/organisation/stefan-klein.html)

Stefan Klein's work uses a practice perspective to study the impact of corporate communication infrastructures, specifically the transformation of work practices at a group level. At the level of industry information infrastructures he uses a practice lens to study collective action or the lack of it.

Kalle Lyytinen (http://weatherhead.case.edu/faculty/Kalle-Lyytinen)

Kalle Lyytinen has recently prominently contributed to the study of information infrastructures (Hanseth and Lyytinen, 2010). He is particularly interested in the study of change vs. stability and control vs. autonomy and will critically explore the contribution of practice theory for the study of information infrastructures.

Joan Rodón Mòdol (http://is.esade.edu/faculty/rodon)

Joan Rodón's has studied inter-organizational information systems from a variety of perspectives, including Structuration theory and Actor Network Theory. He is especially interested in the role of

conflict in IOIS implementation and assimilation and thus will bring this aspect to the discussion which is sometimes seen to be a weakness of practice theory (Rodon and Sesé, 2010).

Volker Wulf (www.uni-siegen.de/fb5/wirtschaftsinformatik/mitarbeiter/wulf/index.html.en*)*

Volker Wulf has recently contributed an insightful paper which proposes to overcome the traditional distinction between design and use (Pipek and Wulf, 2009). Based on Star and Ruhleder, he argues from a practice theoretic perspective which he applies, inter alia, to user driven software development.

Moderation: Kai Reimers (http://www.kai-reimers.net/)

Kai Reimers has studied inter-organizational information systems since more than two decades. His original approach towards analysing implementation and development of IOIS was based on new institutional economics but, over the last decade, he has gradually appropriated sociological concepts for that purpose, including structuration and practice theory.

5   About the Proposers

The proposers have been jointly researching IOIS and II for about a decade. Before that, they have contributed individually to the IOIS literature. Beginning in 2004, they have hosted a series of six annual workshops on various aspects of IOIS on the Bled e-commerce conference, which featured contributions from many of the leading scholars in the field.

6   Targeted Audience

It is expected that the panel will draw on two communities for its audience. On the one hand, a revived interest in the study of inter-organisational information systems has seen a number of researchers contribute to this field. Many of these researchers have also started to broaden their unit of analysis to include information infrastructures. On the other hand, practice theory continues to appeal to a broad range of IS researchers, including knowledge management, computer supported cooperative work, and information systems development. This panel should be highly interesting for both communities as it will further our understanding of the potential of practice theory as a broad basis for information systems research and also show how diverse types of IT applications often already are components of information infrastructures.

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