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From cybernetics to the theory of Human agency: towards user-focused IS management

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ABSTRACT

The concept of the IT sector user is not only limited but is also an object of fascination in Information Systems Management (ISM). The present paper attempts to explore concepts regarding this actor, considered as fickle and erratic by recent theoretical research such as the theory of human agency, through the lens of social science theories. Our approach, which does not claim to be exhaustive, focuses primarily on research into ISM that has adopted social theories to develop its arguments. We explain the context of this research in order to shed new light on IS user activities. Our paper attempts firstly to provide an overview of evolutions regarding the place of human beings in IS research, secondly, to identify contributions made by certain IS studies that have harnessed social theories, and thirdly, to explore potential future lines of research by pointing to a lack of interest in certain theories that we believe could be useful in filling gaps in present IS research.

Keywords

End user, Cybernetics, Human Agency

INTRODUCTION

In proposing data exchange models, cybernetics should help us to move away from individuals and their relationships and closer to the study of systems interaction principles, with people management giving way to the administration of systems' users. Over time, the practices of individuals and IS users have become increasingly contextualised and distant from traditional optimisation models.

Research in the field of IS has borrowed from a set of social theories to develop more rigorous and relevant work. The diversity of theoretical constructs used in IS research may be explained by changes to the definition of the term 'information system' and what it implies. At the beginning, the term 'information system' was generally associated with the notion of technology, defined by Winner (1977) to match three social science uses. Firstly, technology is often associated with apparatus, machines and other physical components. Secondly, it can refer to the behaviours and cognitions which form an instrumental action. Finally, technology is frequently used in the sense of an organisation, a specific arrangement of

people, materials and tasks. For many years, the technical vision dominated IS research, reducing research on objects to an artefact of technological objectives. Other studies, however, have tried to go beyond this aspect by focusing more on the human actor who develops, uses and adapts this technology. In this respect, the definition put forward by Reix & Rowe (2002), which considers IS as “a system of social actors who memorise and transform representations via information technologies and operating modes,” emphasises the importance of individuals as the cornerstone of IS. Furthermore, a study by Desq *et al.* (2002), based on 1018 articles published in journals or IT-specific congresses between 1977 and 2002, put the main issues dealt with in such works into three categories (strategic information systems management, development and control). Their study indicates that the technical dimension is not the most important in IS research, consequently leaving researchers free to focus on other aspects that link interactions between individuals, IT systems and organisations. Taking the example of structuration theory as a social construct in IS research, Jones & Karsten (2008) identify a large amount of work that has used this approach and its significant and constructive contribution, thus defending the validity of social theories and their contribution to IS research (Mingers & Willocks 2004; Orlikowski & Barley, 2001). Akrich (2006), on the other hand, considers that the technological determinism hypothesis is refuted by everyday experience that demonstrates the great diversity of uses users make of a single object (p.164).

We did not take the archaeological approach, which would portray us as specialists of a specific theoretical field, but instead adopted a genealogical approach. Here, the focus is on a user-centred perspective examined through the lens of Information Systems Management (ISM) literature that adopts a social science framework. This theoretical ‘perambulation’ highlights the gradual emergence of the user as a social actor in the theoretical constructs mobilised in ISM literature.

The present paper has three objectives: firstly, to briefly present changes in the place given to human beings in IS research; secondly, to highlight the contributions made by some IS studies that have adopted social theories, and thirdly to explore potential future lines of research by highlighting a lack of interest in certain theories that we believe could provide answers to gaps observed in present IS research.

Our study indicates that IS researchers have adopted social theories to explore new issues and develop original modes of argument. The wide scope of sociology enables them to better understand the interactions between IT and human actors in contexts where individuals are reclaiming their position as social actors in their own right. Our methodology consists of a non exhaustive selection of user characterisations in ISM literature within a social science framework.

The paper is organised as follows. The first part presents a definition of the user limited to decision-making in a context of artifactuality. The second part places the user in a socio-technical context, the third part analyses the content in relation to the structuration theory paradigm and finally, the fourth part takes a fresh approach to the user as a social actor.

1. ARTIFACTUALITY, THE FOUNDING PREMISE OF IS WITH THE USER LIMITED TO DECISION-MAKING

Artifactuality, limited rationality, the mechanism of feedback, or adaptation in management sciences are among the founding paradigms of ISM. Models thus describe an isolated individual who optimises IT and acts in accordance with decontextualised models (Lamb & Kling, 2003). Problem-solving takes place according to predefined cognitive processes [intelligence of the problem, modelling, choice and evaluation] (Simon, 1983; Kéfi & Kalika, 2004). Fiske & Taylor (1991) looked at individual decision and behaviour models involving ICT use. Studies of users within this paradigm thus attempt to link ergonomic factors, processes and cognitive psychodynamics that measure the limits of human interaction with the system. Many studies have looked at IS user satisfaction, drawing on work by Simon related to social and applied psychology.

Cybernetics and the science of self-regulating systems are less interested in components, such as the user, and more in their interactions. In this case, only the overall and artefactual behaviour is taken into account, along with the study of relationships between the “governing (or control) systems” and the “governed (or operational) system,” regulated by retroaction or feedback processes (Simon 1991; Le Moigne, 1974). The models developed describe an actor who employs a maximisation strategy, with well-defined preferences, who may exercise discretion in the choice of Information and Communication Technologies (ICT) used, and has certain cognitive limits.

By definition, cybernetics is a modelling of the exchange of information, putting individuals to one side to focus instead on the study of principles of interaction. These models describe a decontextualised and maximising individual actor. The cybernetic model (Fiske & Taylor, 1991) laid the foundations for a more informed understanding of ICT user behaviour. Breton & Proulx (2002) consider that if communication is so widely discussed today, it is largely due to cybernetics. User-centred studies attempt to explain the ICT concept by examining models of tasks and the ergonomic and cognitive models that define the limits of individuals’ interactions with information systems (Norman, 1986).

Cybernetics introduced the notion of artefact or artificially built object. H.A. Simon rapidly extended this notion (1991) so that an artefact no longer referred to just the technical objects, but also to human constructions like organisations. The artefact (or artifice) rapidly came to designate intentional and processual collective forms of action based on the development of objects and architectures (Forest, 2006). The focus was on the emergence of challenges and alternatives (“means ends analysis”).

The user was not explicitly mentioned. In theory, all individuals have the same potential and the same limitations, to varying degrees, ranging from novice to expert user. Other studies have developed cognitive models detailing the perception of people and their rational actions (Mishra *et al.* 1996). These are closer to the laboratory experiments commonly found in ICT design. For example, the design of online services was largely underpinned by individual models to explain their use or non use by ‘intermediaries’ or end-users. Utilisation is followed by the design or “description of an artefact in terms of its organisation and functioning – its interface between the inner and outer environments” (Simon, 1991), with unexpected objects which could be thought to stem from a natural penchant like altruism (Simon, 1993).

Thus, many studies do not take the “out-of-laboratory” context into account (Marakas & Elam, 1997; Barki & Hartwick, 1994), in other words, organisational and industrial factors (Baldwin & Rice, 1997). Consequently, in many instances users are unable to choose their ICT (Karahanna & Straub 1999). In other words, the concept of ‘user’ totally excludes a framework that incorporates the users themselves. Von Bertalanffy (1993) points out that unification into a general theory of systems is of obvious scientific interest, but what of the user? The founder of modern cybernetics and IS, Von Neuman, does not hide his admiration for a subject that is so difficult to mechanise. For the father of modern computer science: “ 10^{10} neurons, treated as simple relays, are wholly inadequate to account for human capacity.”

THE SOCIO-TECHNICAL APPROACH : AN ENMESHED USER

The socio-technical approach indisputably provides an in-depth reconceptualization of the user. The objectification of social transformations is reflected by much of the literature in the field. The Tavistock Institute, represented by Trist & Bamforth in particular (1956), refers to the inclusion of practices in a socio-technical system. The latter apply their observations to

coalmines in an action-research framework. Social transformations resulting from technical innovation cannot be dissociated from the existing organisation. The latter is not set in stone and innovation provides actors with a number of choices. Their collective intelligence then enables them to select the best work environment.

- An enmeshing technical innovation

The user is enmeshed in the technical system that includes IS.

The interconnection between task systems, technical and human systems was considered as obvious for ICT designers in the 1970s. Extensions to ICT applications resulted in a growing dehumanisation and a disconnection from user needs. At the same time, socio-technical approaches or STS¹ began to be adopted. The technical object was mainly considered as the social construct of an innovation process. The idea was to show that innovation developments are not influenced by purely technical necessities or by the imposition of certain socio-political forms (Akrich, 2006).

Enmeshing is particularly noticeable in the sociology of innovation, considered in the present paper as a socio-technical approach. From this perspective, user participation is linked to the extent and type of networks that the users find themselves in when using the technical system. Continual interaction between a technical system and the user is underpinned by a need for intercomprehension: the system must be capable of reacting coherently to any request, just as the user must be in a position to grasp the recommended course of action in order to meet the desired objectives (Akrich, 2006). Interacting with a technical system cannot be reduced to intention or prescription and the actor-user concept neatly slots into the gap between these two terms (Akrich, 2006a, p. 188). The notion of actor is replaced by that of active agent via the extended translation model (Latour, 1984, 1987). An active agent is an entity endowed with the ability to act, in other words, to generate differences in a given situation, and who exercises this ability. Active agents may show resistance to the definitions forced on them, act differently and, consequently, become... different (Callon, 2006, p. 243).

Despite the evolutions in STS, work relationships are changing worldwide (Mumford, 2000), with socio-technical studies recommend power sharing to improve work conditions. While scholars are well aware of the structural constraints that may impede this, they nonetheless consider that social actors can bring about change. Initiatives taken in STS have indeed tried to change structures and production technologies. STS consider that technologies may be implemented in such a way as to improve the quality of work practices, thus creating a more productive environment based on more satisfying human relationships for workers, who in turn become more productive.

These studies have added to our user-focused insights by highlighting the cognitive complexity of tasks and acknowledging that users generally take on more than one role at any one time. Thus, as they increase their IT skills, users have tended to gradually modify their systems, and their role as a simple user has got closer to, and merged with, that of developers. However, as Akrich suggested (2006b), this approach considers task distribution between the different stakeholders to remain relatively standardised. More often than not, users are urged to stay out of technical discussions, and are especially discouraged from trying to define potential options in the place of the developers. Reality differs, however, and IT users often play a very active role. Akrich (2006b) identifies four types of user intervention: transfer, adaptation, extension and diversion.

Sociological theories based on the actor-network, which could have filled a section of its own, replace the purity of scientific fact and technical artefacts by a hybrid reality made up of successive transpositions (Callon, 2006). The idea of a human-composed society is replaced by that of human and non-human networks (Callon, 1986, Latour 1991). In the field of IS research, the actor-network theory served as an alternative to the theory of structuration, which appeared to view technology as an artefact to a limited degree only (Hanseth et al. 2004, Monteiro & Hanseth 1996, Walsham 1997). The ANT (Actor-Network Theory) minimises the distinction between structure and agency, placing technology on the same level as individual actors (all considered as active agents), and viewing them as participants in a heterogeneous network of components (Mutch, 2002). Despite the inclusion of technology as one of the active agents, the focus on negotiation (a human activity) puts greater emphasis on human actors. Volkoff and Elmes (2007) argue that this theory provides a negotiation-oriented explanation which fails to emphasise the active role of technology in the latter. Mutch (2002) also notes that ANT acknowledges the material aspects of technology more than ST, but that the confusion between agents and structures limits our ability to understand how technology may lead to change in organisations, with a more descriptive than explanative focus (Howcroft et al. 2004, Walsham 1997).

- CSCW and the attempt to oust the user

¹ STS: Socio-Technical Studies.

The enmeshing between the technical system and the user is witnessing the disappearance of the latter.

Many critics opposed the concept of user, notably a group of researchers known as the “Computer argued against any distinction between ICT developers and users. Several authors, such as Banon (1991), Grudin (1990), and even Westrup (1997), in collaboration with other scholars, have highlighted the difference of opinion. Indeed, users consider themselves to be professionals, working with others and using computers as supports for their interactions. Social actors interact with others to form a third entity and form the basis of social institutions and identities (Goffman 1959; 1974). Technologies (and ICT in particular) are an integral part of these interactions and so shape identity and institutions. Consequently, they form part of the structure and create a ‘boomerang’ effect, as defined by Ciborra et al. (2000). Some even consider the term ‘user’ as pejorative (Blomberg et al. 1994).

A large number of IS specialists point to the lack of definition as to what a user is exactly, which makes it difficult to determine their identity. The socio-technical school of thought agrees that an individual’s environment and context are only rarely taken into account. Admittedly, supporters of the human relationship theory perceive ICT as inadequate and dehumanising in a productive work context. The whole work system is integrated within its environment, and the inner social and technical sub-systems are interdependent. Thus, the work system components, in other words, the individual, the structure, the technology and the task are all inter-connected. STS advocates consider that the system needs to be optimised to obtain better work conditions. Consequently, there is a need for the distribution of power and greater recognition of tacit human knowledge since individuals take part in the organisational process. STS initiatives, such as the “participatory design movement” (Lamb & Kling, 2003) purported to enhance work conditions, while maintaining a high level of productivity, by improving production technologies and increasing employee satisfaction. Placing the user at the heart of the software engineering process and blurring the distinction between users and IT development, while making the user a co-creator, as defined by Simon (see above), renders this term obsolete. This, at any rate, was the conclusion posited by a number of authors (Bannon 1991; Grudin 1990; Westrup 1997).

The CSCW authors observed that users’ opinion of themselves differs from that of information systems analysts, and in addition, they do not like being labelled as users (Beath & Orlikowski 1994; Grudin 1990; Markus & Benjamin 1996). Users see themselves as professionals, working with other individuals and using computers as a support for their interactions, according to Lamb & Kling (2003). Recent CSCW criticism is based on constructionist perspectives. The latter regard social actors as participants in the creation of social structures, through daily and repeated everyday practice, as well as by their ability to initiate change (Berger & Luckmann 1967).

The social actor interacts with a variety of people to form the bases of institutions and social identities (Goffman 1959, 1974). Technologies and ICT in particular, integrate these interactions and thus help to shape identity and institutions.

2. THE STRUCTURATION THEORY: TAKING THE “KNOWLEDGEABLE USER” INTO ACCOUNT

Giddens (1979, 1987) argued against a dualism between structure and action, arguing for the duality of the structure in response to the divergence and ongoing debate between approaches focusing on determinism or voluntarism in social science. He proposed a human agency approach via his structuration theory, which would resolve the issue of dualism and at the same time, would preserve the concepts of human creativity and intentional action, while taking the individual’s experience into account. In order to construct his paradigm, Giddens considered all individuals as “knowledgeable” actors, with the latter capable of producing and reproducing structures, even with involuntary forms and unexpected outcomes. Thus, he challenged the structuralist movement, which reduces the individual to an epiphenomenon of the structure. He put forward a theory of human agency (subject/agent) that implies that the individual’s relations with the social world are developed with (1) the unconscious (mind), (2) practical conscience and (3) discursive conscience.

Orlikowski’s structurationist model of technology (1992)

The theory of structure allows us to regard users as free to make choices.

The development of the theory of action as defined by Giddens (1987) requires an adequate theory of the subject, in other words, “subject retrieval.” This means capturing what cannot be said or (thought) as a practice observed in reality. Action implies that actors intervene and strategise in accordance with the rules applied within the structure, at the same time taking into account the resources available to them, and according to their personal knowledge.

To render the concrete dimension of the action operational, Giddens (1987) employs the concept of “analysis of strategic conduct,” which focuses on the ways in which actors use structural properties to build social relationships. It firstly explores discursive and practical awareness, as well as the control strategies employed by actors in predefined structural contexts. In addition, it identifies the key dimensions needed for a clear understanding of this concept, namely: (1) the need to avoid poor descriptions of agents’ knowledge; (2) greater inclusion of personal and group motivation of individuals; and (3) an interpretation of control dialectics.

Based on an in-depth study of IS articles published between 1983 and 2004, and incorporating concepts derived from structuration theory, Jones & Karsten (2008) identified three research categories: the application of structurationist concepts; the development and application of a specific version of structuration theory in IS; and research work critical of this theory. The second research category may be represented by two schools of thought led, firstly, by Orlikowski and his followers, and secondly, by DeSanctis and Poole along with several others authors who adopted their adaptive structuration theory.

Below, we present these two research groups and highlight their contribution.

The concept of duality in technology (Orlikowski, 1992) gave greater insight into the role of technology in the structuration process. This concept stems from a transposition of Giddens’ fundamental idea of structure duality to the idea of technology duality. Associated with the concept of “knowledgeable” actor, Orlikowski (1992) developed a structurationist model of technology, based on recursive and dynamic relationships between technology, the individual and structure. Several authors (Barley, 1990), Orlikowski (1992, 1996, 2000), Walsham & Han (1993) belong to this research trend, grounded in a structurationist perspective of technology. This vision of the relationship between technology and organisations argues against the position taken by previous work, developing instead a unidirectional and static relationship between the two entities, in line with a positivist and determinist approach.

Orlikowski (2000) suggests that the study of technology is more relevant when it is used and modified by users on an everyday basis. She introduces the idea of *technology in use* and replaces the concept of interaction between technology and user, by that of “*enactment*” which favours the emergence of new structures in technology. She also notes that “the use of technology is not a choice among a closed set of predefined possibilities, but a situated and recursive process of constitution.” This process, while it often generates anticipated activities or familiar and iterative uses, can also, at any given time, ignore these conventional uses or provide new ways of doing things. The use made by an individual or end-user is the central element that allows us to understand the nature of the interaction between IT and users. As a result, structuration theory provides a useful analytical framework for understanding users’ rationale following the introduction of new IT.

It is significant that Orlikowski (1996, 2000) moved away from the initial position she adopted in 1992, developing a distinction between “technological artefact” and “technology in practice” in order to differentiate between emerging and established technological structures. Action plays a pre-eminent role and the user’s freedom of choice strengthens the “human agency” dimension of structuration theory. Thus, Orlikowski (2000) considers that action plays a determinant role. IT are social constructs that are flexible from an interpretative point of view. They are capable of producing diverse social meanings and of providing a wide range of potential uses.

DeSanctis and Poole’s adaptive structuration theory (1994)

The second trend in IT research, influenced by the theory of structuration, and further freeing the user from the structure, was developed by DeSanctis and Poole (1994) who presented their adaptive structuration theory (AST). This theory provides a conceptual framework for the study of organisational change variations which are a by-product of the use of advanced technologies. The main concepts in this theory are structuration and appropriation, providing a dynamic vision of

the process through which actors integrate technologies into their work practices. The authors consider technology design as a “spirit”, acknowledging that structural properties may be integrated into technological applications. However, they emphasise the existence of human choices, considering that users may appropriate technologies in a ‘disloyal’ manner, contrary to the initial design. A variety of appropriations can arise from the interaction between the integrated structures and user activities in practice, leading aspects of everyday use to change over time according to the individuals. The authors define appropriation as a process by which individuals incorporate advanced technologies into their work practices. Appropriation paves the way for potential reinvention or diversion (uses may or may not remain faithful to the technology’s spirit). Isaac et al. (2006) note that if individuals often do not have a choice when adopting, accepting or rejecting a new technology, they nonetheless have the possibility to develop different types of use via diverse appropriation and reinvention mechanisms.

Therefore, the outcomes of IT introduction into an organisation depend largely on user appropriation (DeSanctis & Poole, 1994), interpretation, and the meaning that actors associate with it. Two important structuration sources influence the actors’ appropriation (DeSanctis & Poole, 1994). The first, “social structures in technology”, comprises the spirit of the technology and its structural makeup (IS architecture). The second, known as “social structures in action”, refers to a wide range of resources related to the social context (group norms, environment, tasks). This theory had a significant impact on structurationist IS research. Numerous papers have adopted an AST approach in various fields, such as group decision support systems and computer-mediated communication, often employing laboratory experiments (Gopal *et al.*, 1993; Miranda & Bostrom, 1993; Chidambaram, 1996).

According to Markus & Silver (2008), DeSanctis & Poole’s adaptive structuration theory fits into an integrative school of thought. This perspective is qualified as “social technology” in which the “technology has structures in its own right, but social practices moderate their effects on behaviour” (DeSanctis & Poole, 1994, p. 25). Consequently, the AST model takes both the influence of technology and social processes into account. DeSanctis & Poole (1994) base their model on two key concepts. The first is defined by the term “structural features”, which are the social structures inherent to the technology, described as specific types of rules and resources or capacities provided by the system.

The second concept is that of the spirit of the technology, defined as the general purpose attached to the technology, linked to the underlying values and objectives of a given set of structural characteristics.

Individuals – IT users – may adopt an IT system faithfully, in other words, in a manner coherent with the structural characteristics of its design, or unfaithfully, and by so doing, generate unexpected outcomes.

The concept of “integrated social structures” in technology was criticised by Jones (1999), Jones & Karsten (2008) as an unfaithful appropriation of Giddens’ theory of structuration. According to Jones (1999), Jones et al. (2004), Giddens considers that social structures are not independent from human action and do not constitute material entities. He describes them as ‘traces of mind’ and considers that they can only exist through human activities.

For Markus & Silver (2008), one of the main problems of the AST developed by DeSanctis & Poole (1994) is that it considers the “spirit” as a “characteristic of technology” (p.126), defined in terms of “general intention” and “objectives and values”, and not directly linked to the structural characteristics of the system. Assigning human qualities such as “intention” and “values” to artefacts is confusing for many analysts, including realist and post-modern researchers such as Jones (1999), Latour (2005) and Pickering (1995). To resolve this problem, they suggest three new concepts that they believe improves the way the impact of IT is perceived, namely, technical objects, functional affordances and symbolic expressions. The concept of technical objects relates directly to IT artefacts. Functional affordances and symbolic expressions refer to the relationships between technical objects and users (p. 620). Naturally, no explanation of IT effects would be complete without also taking the users and the environment of use into account.

Despite the great interest in Giddens’ work in management science in general, Whittington (1992, p.707) concludes his section on the use of ST in management research by noting that “Giddens has not yet been fully implemented.” This conclusion is shared by Jones & Karsten (2008) who, on the basis of their analysis, point out that IS research has not yet made full use of the contribution and potential applications of Giddens’ work. They suggest furthering research by including Giddens’ ST as well as other work by Bourdieu and Bahskar that have been largely ignored by IS scholars. More critical studies on structuration theory and its application in IS research are still needed. To this end, in-depth analyses of other social theories such as the human agency theory and its contribution to IS research would provide greater insights into the interactions between technology-individuals and organisation.

Human agency theory: user emancipation

Emirbayer & Mische (1998) suggest that the work by Giddens (1979, 1987) and Bourdieu (1972 re-edited in 1979, 1980, 2000) fits into the “theories of practice” framework. Giddens conceptualises the agency dimension of actors’ routine behaviour according to the “model of action stratification” (Giddens 1979, p.56). By separating the three levels of consciousness (the unconscious, practical conscience and discursive conscience), he develops a continuum between the non-reflective and reflective dimensions of action, nonetheless putting greater emphasis on routine actions to explain social reproduction.²

Emirbayer & Mische (1998) acknowledge the contribution of structuration theory to social science, but consider that it focuses more on user stability and routines, than on the organisational change produced by the latter. By presenting their own “human agency” concept in which they deconstruct human action, they position the interaction between the reproductive and transformative dimensions of social action more precisely (Hays, 1994), explaining how an individual’s reflexivity may evolve towards a growing routinisation of action or a continual questioning of experience. Emirbayer & Mische’s research and their “human agency” theory interested a number of IS researchers, and found its way into work by Boudreau & Robey (2005), Cousins & Robey (2005), Chu & Robey (2008), and Azan and Beldi (2009), among others.

Boudreau & Robey (2005) adopted the theoretical “human agency” framework to explain the different modes of activation of an Enterprise Resource Planning (ERP) by end-users within the same company. They identified an evolution in ERP user mode, which moved from a certain degree of inertia, expressed by the reluctance to use a new tool, to alternative solutions or reinventions. The authors explain this adjustment by the improvised learning arising from the social influence of project managers, key power users and colleagues. Cousins & Robey (2005) also examined the use of mobile technologies according to the context of personal, professional or family use.

Chu & Robey (2008) employed the “human agency” theory to account for changes in learning and work practices following the implementation of an e-learning programme in a Taiwanese hospital. They applied a temporal conception to human action, which broke down the concept of agency into elements that reflect the behaviour of actors’ in the past, present and future. Using a case study, their aim was to explore why learning and work practices changed following the implementation of an online learning tool. Their findings illustrate the practical contribution arising from the blend of human action, technological constraints and structural conditions that explain changes in user practices.

TOWARDS THEORIES OF USER ENCIRCLEMENT

Unlike Giddens’ structurationist approach, Bourdieu’s theory of practice is, to our knowledge, little used in IS research. We found very few articles that use or refer to Bourdieu’s works (apart from Levina, 2005; Levina & Vaast, 2005). In his work and in practice, ‘reflexive’ agents produce, reproduce and transform structures, enabling them in turn to facilitate or restrict their actions (Bourdieu, 1977). Bourdieu’s work introduces a widely used concept: **habitus** as the principle behind the agent’s action, **field** as the fundamental space for social competition and **symbolic violence** as the primary mechanism of power.

Encirclement reduces the user’s private sphere, increases the risk of e-manipulation and integrates them in a techno-humanity.

Habitus is one of the key concepts in Bourdieu’s theory of practice, and is defined as “the universalising mediation which causes an individual agent’s practices, without either explicit reason or signifying intent, to be none the less ‘sensible’ and ‘reasonable.’ That part of practices which remains obscure in the eyes of their own producers is the aspect by which they are objectively adjusted to other practices and to the structures of which the principle of their production is itself that product” (p.273-274). This theory of practice appears to focus more on the explanation for stability and social order than on the change itself. Indeed, *habitus* is the product of the inculcation and appropriation required for these products of collective history, in other words, objective structures (of language, the economy, etc.), to be reproduced in the form of lasting dispositions in all organisms (which we could, if we wished, call individuals), subjected to the same conditioning over the long-term, and thus

² Giddens is particularly interested in the concept of reutilisation for its ontological presuppositions. He stresses the need for “basic trust” and “ontological security” that leads human beings to transform their practices into a routine and brings order and stability to their relationships, in particular when confronted with the ever-growing complexity and diversity of modern society (Emirbayer & Mische, 1998, p.978).

placed in the same material conditions of existence (Bourdieu, 2000, p. 282). Bourdieu (2000) considers that practices only exceptionally reach one or other of the limits, in other words, pure strategy or pure ritual.

Levina (2005) adopted an approach based on the theory of practice. She concentrated on what individuals do and how their actions affect, or are affected by, different sources of power (relational resources that agents use to influence their own actions and those of others). She applied this framework to a joint development project between two companies of an IS.

Levina and Vaast (2005) also used Bourdieu's "field" concept to explain the idea of "boundary spanning" in practice. These are spaces in which agents negotiate and generate new common fields of practice that reflect common interests. Thus, the two authors concentrate on the transformational potential of practice and, in particular, on the individual's capacity to overcome constraints resulting from formally defined roles and artefacts. European sociology analyses the relationship between the user as a social actor and technologies (Castells 1996; Latour 1987; Touraine 1988; Tomi 2001).

Contrary to Bourdieu, Castells (1996), another sociologist, produced a specific analysis of information technology, seeing the user as part of an interconnected network which makes up the fabric of society. He describes a user within a "rich" environment and as a source of social interactions. Stimulated by the actor/network relationship, scholars have shown a keen interest in ICT in their theories on social systems and have meticulously identified the differences in stability between the networks studied (Callon 1991; Latour 1987). Social networks comprise both a group of people and their technologies. Today's relationships between individuals, groups and organisations depend on the use made of ICT. Consequently, all networks may be considered as heterogeneous socio-technical actor-networks. In effect, technology and social phenomena are inseparable and the actors' identity reflects this fusion.

In the following table (table 1), we present the social theories mentioned in this article, highlighting their key concepts and contributions. Our study does not aim to provide an exhaustive explanation of the different social theories used in information system research, but rather to demonstrate the rich nature of each of them, and their contribution to explaining and/or understanding the multifaceted interactions between individuals and IT.

Figure 1. Synthesis of the leading social theories in IS research

Theories	Founders	Leading authors in IS	Main concepts associated with the user	Main contribution
Cybernetics	Wiener , von Neumann,	Simon, Newell	Cybernetic loop, artifactuality	Technology use may be formalised by a system defined by action and feedback loops
Socio-technical theory	Trist Callon , Latour	CSCW Banon (1991), Grudin (1990) or even Westrup (1997) Ciborra (2000)	Man – Machine Interaction Theory of networks, Propagation, percolation, technology dissemination, study of structural gaps	Interaction between a human system and a technical system leads to a source of learning for enhanced performance Information technology use largely results from dissemination processes that can sometimes be expressed mathematically
Structuration theory	Giddens (1984)	Orlikowski (1992, 1996, 2000) Desanctis & Poole (1994)	The duality of structure The “knowledgeable” actor	Surpassing the actor – structure dualism/dichotomy in the study of technology
Theory of human agency	Emirbayer & Mische (1998)	Boudreau & Robey (2005) Cousins & Robey (2005) Chu & Robey (2008) Azan & Beldi (2009)	The temporal triad of action	Including the temporal factor in the explanation for interaction between an actor and IT
Theory of practice	Bourdieu	Levina (2005) Levina & Vaast (2005)	Habitus Field	The importance of practice to understand modes of IT use

One of the most significant observations emphasises the disruption to institutions and the obstacles to the consumer society, while recognising the potential for societal change of the actor through ICT design and use (Bilkson 1996). This observation, in Castells’ second volume (“the information age”), aims to define new sources of identity for the emancipated actor in a society where traditions and points of reference suffer from technology and connectivity. The present social shift is considerable as it eliminates structural components and leads to the development of new social strata and the end of the working class. Information workers are taking their place in a faceless form of capitalism.

CONCLUSION

This paper presents a non exhaustive review of certain social theories utilised in the field of information systems. Our synthesis adopted a qualitative approach that aimed to demonstrate the contribution made by seminal articles that employed one of a range of socially-oriented theories. We analysed the evolution of the user's place in information system research via diverse social theories that place more or less importance on the individual in their interaction with the technical object, in other words, information and communication technologies (ICT). This highlighted the rich content of existing social theories and their contribution to our insights into ICT-related phenomena observed in organisations and/or Society. However, we also notes that information system researchers tend to use certain theories more than others. Work by French authors, such as Bourdieu and his theory of practice, could offer a fresh and relevant perspective in ICT research.

We would like to conclude with three ideas. It is important to include a historical approach in the concept of the user. Habermas (1989) linked the emergence of a private sphere as opposed to a public sphere during the industrial capitalism boom, which began as financial before becoming informational. This also coincides with users becoming more empowered, and an evolution in the rationale behind their actions due to the introduction of new systems.

User empowerment is only relative, however, as the user is more empowered with regard to information but is nonetheless increasingly open to manipulation by the latter, as Tumber suggested (1993): "Information management ...is fundamental to the administrative coherence of modern government. The reliance on communications and information has become paramount for governments in their attempts to manipulate public opinion and to maintain social control."

The status of an objectified social theory of the IT user is strengthened. Wittgenstein may have declared "If I were told anything that was a theory, I would say no, no! That does not interest me," but the fact remains that IS management has a thirst for social science theories, contrary to the *Dreyfusian* notion that social phenomena is impossible to apply in a scientific context. The development of artificial intelligence attests to this. Its dissemination objectifies the rationality (Wolf, 1984) that exists externally to all that is human and the theoretical formulations take the form of a rule-based model, in contrast to neural networks that are indeed capable of learning but are developed in such a way as to cope with the limits of human understanding and are able to complete human analytical rationale.

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