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On Categorizing the IS Research Literature: User Oriented Perspective

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Abstract

The purpose of this paper is to propose a new approach for categorizing the body of knowledge captured in the existing literature, past and present in such a way that contributions to the use side of systems development are made explicit. The new twist of this approach is that it seeks to bridge the most prevalent divides currently fragmenting the IS literature by offering an integrative classification framework for "use side" oriented IS research. We call our approach to literature classification "substance oriented", because it builds on social theory concepts related to user concerns. It follows neither the latest paradigmatic nor earlier inductive citation or key word based literature classification schemes. Instead, it explicitly builds on the core concepts of Giddens' Structuration Theory (ST), at least at its highest level. The approach has some affinity to Ritzer's (1991) "metatheorizing".

Keywords: User orientation, IS theories, cross-paradigm research integration, structuration theory, research literature classification, coding and retrieval, IS core properties.

Introduction

The monograph on the dialectical relationships between use and redesign of IS places an important question before IS researchers, in their roles as both contributors to and readers of the research literature:

In which ways could studies of the use side particularly benefit from a relationship to philosophical frameworks such as hermeneutics and phenomenology?

The term "use side" is obviously associated with user perspective and both of these terms are in need of interpretation. The end-user literature defined user as any person that directly interacts with a computer-based system, but not a trained IS professional with the principal responsibility for IS development maintenance or administration. For our purposes, this definition is too narrow. It is difficult to find a thorough working definitions of the terms "use side" or user perspective in the IS literature even though such distinctions as direct and indirect user have been made. We found that the terms use side or user perspective are widely used undefined (Belcher & Watson, 1993; Joshi, 1991; LaPointe & Rivard, 2005) and "use side" is not a common phrase at all. The call for papers of this special issue appears to associate the use side with the following at least four characteristics. The first two are "*aspects of use*" and "*learning and unlearning*", It also refers to "*lived human experience and reflection upon that experience*" as having a potential impact upon the "*dialectic*" relationship "*between meaningful use and reflection upon use*" and "*unwelcome burdens*" All of these conceptual hints are in further need of clarification. For example, "*aspects use*" in our minds could refer to the extensive literature on the need for ease of use, user-defined requirements and user friendliness. "*Learning and unlearning*" could be interpreted as related to organizational change, mental shifts and sense making the latter being extensively discussed in the literature on lifeworlds (Husserl, 1970, Schutz & Luckman, 1983) and the philosophy of hermeneutics, especially Gadamer. Drawing attention to '*unwelcome burdens*' that the new learning associated with systems change might demand from users reminded us of interpretive studies on alienation and user resistance. Last, but not least, the reference to "*lived human experience and its reflection*" appears to have a distinctive Heideggerian flavor evoking the specters of loss of meaning in the work experience, increased stress and reduced freedom resulting in a deterioration of "being", i.e. the impoverishment of general conditions of human existence that Heideg-

ger saw as a critical question arising form the intrusion of technology into all spheres of life (cf. Heidegger, 1978; Introna, 1994).

Whereas it is impossible to reflect all of these aspects of "use side" in a working definition, the hints in the call for papers on its possible meanings do make it clear that the classical end-user definition is too narrow. For the following we shall adopt *a role oriented* working definition by considering as "user" anyone who has to cope within his "normal" day-to-day work roles with externally imposed system changes and whose normal work roles do not include the building or maintaining the types of systems "coming down the pipe" by external fiat. This definition is based on the observation that in organizations a parallelism exists between different classes of users. Consider first the example of a systems programmer/analyst, who is primarily concerned with developing applications for "application end-users". If the systems analyst is suddenly forced to switch to an entirely new development method with a new type of CASE (Computer-Aided Software Engineering) tool suite for the development of application systems, this may be just as frustrating and "burdensome" to him or her as it is for the end-users who may find that the new application systems implemented by the programmer/analyst are imposing *"unwelcome learning burdens"*. This type of reasoning extends backwards into the organizational food-chain. As an example, consider the situation of a professional CASA/CASE (computer-aided systems analysis /computer-aided software engineering) tool specialist whose main responsibility is developing and implementing new CASA/CASE tools for applications analysts. He may experience the same frustrations as the programmer/analysts as users, when she is forced into using a new operating system or having to learn a new programming standard. Orlikowski's (1991) study of ISD case tools as managerial control mechanisms has, indeed, described such a situation.

Researching the user side in this broad sense requires us as researchers to take a holistic perspective of the impacts of IS changes. This in turn has implications for research methodology in that interpretive types of research tend to be relatively best suited for analyzing the broader issues of the user side including but also extending beyond the details of user-friendly, ergonomic interfaces. In principal, there appear to be two contrasting research strategies to study the use side or user perspectives of IS. One is to investigate directly users' lived experience either by a hermeneutic or phenomenological study (Creswell, 1998, 2003) or

through an autobiography if at least one of the researchers has gained a significant amount of professional user experience herself before joining academia.

In this paper, we committed to the second approach. Its basic idea is to look for a theoretical a priori basis that in principle is capable of capturing a broad range of user oriented concerns and issues associated with user needs, values and requirements. Such an apriori theory should explicitly address sense making, which are related to user understanding and learning, ethics, which is related to the legitimization of user values and needs, and power; the last is critical for the user side, because issues of social influence and control are always a major concern at the user side because of the Heideggerian concerns with technology. A theory focusing on these phenomena can be used to formulate a user oriented perspective. An integrative framework based on such a theory can be called user oriented. If such a framework is used to classify the existing research it should provide a focus on the user side of the past IS research showcasing the extent at which the past literature has represented the user side and by implication, identifying the current gaps in our understanding of the user side with obvious implications for future research.

Continuing with this approach, the purpose of this paper is to identify a theoretical basis that can link the phenomena defining the use side as consistently and comprehensively as possible in an integrative framework bridging the current paradigmatic divides. Hardly any research paper would deny the importance of user issues, yet only a subset tries to address them substantively with appropriate theory. A social theory based classification should clearly showcase these. In addition, many research papers contain isolated insights on user issues, but if their focus is elsewhere, the user related insights are often lost, because the papers cannot be easily retrieved with user-oriented keyword searches.

In line with these considerations, this paper proposes a new approach to the categorization of the body of knowledge captured in the existing literature, past and present in such a way that contributions to the user side of systems development are made explicit. The new twist of this approach is that it seeks to bridge the most prevalent divides currently fragmenting the IS literature providing more integrative perspectives on IS use. By addressing this purpose, we intend to point to a line of progress from the first keyword based classification of IS research (Barki, Rivard, & Talbot, 1988), to multi-paradigmatic classification schemes

(Hirschheim & Klein, 1989; Orlikowski & Baroudi 1991) to substantive classification schemes that go beyond paradigm categories, at least at the primary level of categorization. We call our proposed new approach to literature classification "substance oriented", because it follows neither the latest paradigmatic classification nor the early bottom up citation or key word based literature classification schemes, but explicitly builds on "substantive" social theory concepts, at least at its highest level. . Our approach has some affinity to Ritzer's (1991) "metatheorizing".

The next section identifies the preferred theoretical basis for this paper and reviews some prior approaches to literature classification. The section following the next one explains our arguments for believing that an alternative approach to literature classification is needed that we call "substance-oriented". This section also more fully explains the rationale for choosing ST as the basis for such a new coding scheme. Then we present an outline of the proposed approach with some examples. The section before the last one discusses some limitations and philosophical issues that our approach raises. The final section presents a conclusion regarding the benefits of our approach for research on user side issues and the current identity and core property debate.

Theoretical Basis and Literature Review

The call for papers of this special issue gives some guidance for the characteristics of the social theories that are most suitable for capturing user concerns. Based on prior work (Klein, 2004), we agree that they should be sought from those theorists that have responded to the revolutions in social thinking and epistemology brought about by the hermeneutic and linguistic turns and by the recognition of the multi-paradigmatic nature of the social and cultural sciences, in particular of sociology. Clearly these revolutions in the very foundations of the social and cultural sciences have had a profound impact on all their applied branches, which include the field of IS. In particular, a new generation of classification schemes should include the interpretive and critical research streams, while it must not ignore the many insights from the fact-finding and hypothesis generation efforts in the positivist literature. To meet these criteria we looked for theories meeting two conditions: (i) they should have the potential to bridge some of the paradigmatic divides in the IS literature and (ii) through reclassification, they should bring to bear a wide range of the mainstream literature on user related

concerns. After evaluating four widely recognized social theorists (Bourdieu, 1990, 1979; Foucault, 1970; Habermas, 1984, 1987; Giddens, 1984), we concluded that the three structural dimensions of Giddens' structuration theory (ST) provide the most promising starting point for two reasons. First, Giddens' structural dimensions of signification, legitimation, and domination relate to the key user issues of understanding (or inability of making sense of the IS artifact), social acceptance (or resistance) and social control. One or more of these phenomena are typically at the core of user issues. A proper analysis and understanding of these issues is the prerequisite for building a practical approach of dealing with these issues in IS development (ISD) projects.

A second reason for preferring ST as an intellectual base is the potential that ST can bridge the philosophical divides between positivist and interpretive research approaches. Giddens (1984) himself has made this claim. In addition, we have reasons to believe that his concepts can also be linked to key concerns of critical social theories such as Habermas' Theory of Communicative Action (TCA), Bourdieu's theory of social and cultural capital and Foucault's insights gained from studying the archaeology and genealogy of knowledge. An example for such a critical study can be found in Orlikowski's (1991) study of ISD methods control mechanisms in a consulting firm. However, for the sake of keeping this paper within reasonable bounds, we shall not try to extend the proposed approach to classifying the critical research streams also even though we believe that in principle this is possible – in a later section (cf. the section titled: On the Assumptions and Completeness of ST: the case of critical management research) we shall briefly expand this claim. To the extent, in which the existing literature body of knowledge can be shown to contribute to the analysis, understanding, and thereby to an approach of handling the three key human-social user issues, it does contribute to the user side of ISD.

The most recent and influential stream of past approaches to classifying the IS research literature has derived classification categories from an analysis of paradigmatic assumptions, most notably those identified by Burrell and Morgan (1979). Whereas the first keyword approaches were limited to a single paradigm, the mulit-paradigm classifications lost the connections to the substantive contents of IS research by relying on such categories as "interpretive field study" or "realist ontology". These types of concepts refer to general characteristics of the underlying research philosophy or methods. In contrast, substantive classification

categories relate to an article's language for describing its research situation and thereby to identifiable phenomena (incidents, social entities, objects) in the field, with which the researcher engaged to address the research question and which are then described in the contents of the research report.

We emphasize that classification of research along dimensions not directly related to paradigm characteristics (or at least appear to be so), is different from ignoring the existence of multiple paradigms, as has been the case with single paradigm classification of research. To the best of our knowledge there were only three single paradigm classifications. The first of these, Barki et al. (1988), derived their top-level categories from a positivistic-functionalist framework (i.e., Ives, Hamilton, & Davis 1980). The second (Hirschheim, Klein, & Lyytinen, 1996) made a claim to generality for comprehensively classifying the ISD literature. In principle, it might be possible to apply it to other specializations in IS research; because it is based on a general theory of social action, but this has not been worked out and tested in detail. Hirschheim et al. (1996) derived categories from Habermas' TCA (1984, 1987) and the resulting classification is concerned with substantive issues as opposed to methodological ones. The resulting classification of IS research is based on the social action types of TCA and can be said to result in a paradigmatic bias, because TCA is the successor of Habermas' (1972) first version of Critical Social Theory (with focus on Knowledge and Human Interest) and widely perceived as one of the principal contributors to the critical research philosophy (along with Foucault, Bourdieu and possibly other theorists). In fact, the TCA-based research categorization is not even representative of the whole spectrum of critical research as is evident from Deetz (2000).

Deetz (1994, 1996) proposed a third classification scheme. It is a modification of Burrell and Morgan (1979) by replacing their "subjective – objective" dimension with "origin of concepts and problems" (local/emergent vs. elite/a priori). It appears to be primarily suited for classifying critical research, at least this is the way Alvesson and Deetz (2000) used it for classifying critical management research. However, Schultze and Leidner (2002) used it for analyzing the knowledge management research in general. Hence, we are left with the impression that no classification has been proposed that explicitly attempts to bridge the divisions between functionalist-positivist, interpretitivist and critical research.

The Need for Complementary IS Research Categorization

While the classification of research by methodological orientations (paradigms) remains important for general orientation and training in alternative research methods, it is not sufficient for all purposes.

The Need for Alternative Classification Schemes

We see three reasons for the need for a substance-oriented classification of IS research that complement one along methodological lines. (i) Such a classification helps in organizing the rapidly emerging body of IS research in a way so that different approaches to similar areas of concern or research questions can easily be located. (ii) It helps us identify important topics that are under-researched, which helps to discuss and formulate research priorities. Moreover, a good classification of the past archival research record says something about the identity of IS research, what it is, and what it has and has not accomplished so far. Hence, it will contribute to the identity discussion by demonstrating what the core efforts and properties of IS research have been in the published literature. (iii) A good substantive documentation of research results is also invaluable for newcomers and for other academics that want to know what IS researchers do and who are not primarily interested in whether the methods used have been positivist, interpretive or critical.

The approach of this paper for creating such a classification is to try to relate representative articles employing radically different research methods to a common conceptual scheme without denying their diverse origins. To achieve our objective, we searched for a theoretical basis that explicitly reaches beyond the most prevalent current distinctions in the epistemological and methodological debate of IS research with the relatively least amount of bias. The only theory that we could find coming close to this ideal is Giddens' Theory of Structuration or ST for short. Of course, we must be sensitive to the objection that no theory can be completely free of biases. If so, it might not be possible to map all IS research equally convincingly or with equal ease into the framework underlying ST. We feel that such difficulties or "distortions" themselves are noteworthy results. The difficulties will shed light on the characteristics of various research streams and whether ST can live up to its bold claim that it can bridge the major divisions in the social and cultural sciences, on which IS has drawn as reference disciplines.

Why ST?

The introductory chapter in the "Elements of the Theory of Structuration" explicitly addresses the divisions that Giddens seeks to overcome:

> "One of my principal ambitions is in the formulation of structuration theory is to put an end to each of these empire-building endeavors". (Giddens 1984, p. 2)

Moreover, he emphasizes that these perspectives or "empires" of social science "have often taken to be epistemological, whereas they are in fact also ontological" (Giddens 1984, p. 2). The perspectives or intellectual "empires" in question (1984, cf. p. 1) are functionalism (including systems theory), structuralism (in the sense of Levi-Strauss), and hermeneutics including other forms of interpretive sociology. For the sake of shorthand, the following will refer to both as "structuralist-functional" or "positivist-functionalist" research approaches when comparing them with hermeneutics and critical types of research. This is justified because Giddens (1984, p. 1) points to "some notable similarities" between functionalism and structuralism that relate to the broader concept of positivism: "Both tend to express a naturalist standpoint, and both are inclined towards objectivism". This is not to deny marked differences that exist between functionalism and structuralism. For the sake of clarity it should also be noted that ST does not explicitly consider all forms of positivism, in particular it does not discuss rationalism (typical for the modeling of human action as in economics and the management sciences) and certain inductive empirical research streams such as Perrow's theory of bureaucratic forms.

Giddens presents ST as a way of thinking about social phenomena. It can therefore be compared to other social theories such as Etzioni's "Active Society" (1968), Parsons' "Social System" (1971), Luhmann's "Soziale Systems" (1987) or Habermas' TCA. All of these theories can be used in two ways. One is to guide research in the field. Typically structuration theory has been used in field research to guide data collection, analysis or interpretation of results. That means structuration theory typically has been applied to analyze and describe phenomena in the research domain understood to consist of collective structures, human agents and behaviors (social processes) connecting agents and structures. The second way is to apply a social theory to the literature of research domain for reinterpretation and organization of research, for example as Lyytinen and Ngwenyama (1992) have applied ST to the definition of the nature of CSCW research.

In this paper, we apply ST in the second manner. This is similar to how Ives, Hamilton and Davis' 1980 framework was applied to classify dissertation research, which is similar to the way in which Hirschheim, Klein and Lyytinen (1996) applied concepts from the TCA to classify the research literature on ISD. That is, the domain to which the concepts of ST will be applied does not consist of the social phenomena in the field, but of the descriptions of these phenomena in the past research literature. This means that ST is applied at a meta-level to classify the IS literature by its topics, where topic categories are derived from ST. The IS literature is, of course, the principal product of IS research consisting primarily of the publications in the fields recognized conferences, journals and research monographs. One may question if such an approach is promising. Are there reasons to believe that ST is sufficiently comprehensive to cover if not all topics, then at least a sufficiently large and well-defined core segment of topics?

We believe such reasons can be found in the ways by which ST has influenced IS research directly, which is, of course only a subset of all IS research. Ever since Barley's (1986) classical study of how IT provides opportunities for social restructuring, ST has been applied to a wide variety of social phenomena. This has been possible, because intrinsic to ST design is the claim that it is a comprehensive theory of human and social phenomena. This means that ST is concerned with all types of structures, processes, modalities, and human agency in society. Moreover, it has been shown in much prior research, that ST can also be applied to the level of organizations, groups and other types of social entities, such as networks. Therefore we formulated the heuristic research hypothesis that it should be possible to use ST for classifying the descriptions found in a wide variety of social and cultural research as long as such research has focused on some important aspects of social structure, process, or human agency. This should be true regardless of whether the research directly relied on Giddens' ST or some other theoretical basis. If ST's intrinsic claim to comprehensive coverage of social phenomena is justified, then it should be possible to link most kinds of social research to it – admittedly more or less perfectly. The key requirement is only that some aspects of structure, process, agency, or a combination of these three play a substantial role in the research reported.

Prima facie evidence for the fruitfulness of this heuristic hypothesis is that Giddens himself relates ST to many classical and recent social

theories including Max Weber, Parsons, Bourdieu, Foucault, Gadamer, and Habermas. Using the last author as an example, the correspondence of the major themes discussed is striking even though the language and approach of both authors is very different. Noting such correspondences is not meant to blur over important differences between the TCA and ST, such as those surface when comparing the treatment of social structures. Rather it is merely to illustrate our claim that principal correspondences exist with a sufficient level of detail so that research using other theoretical bases different from ST can be meaningfully linked to the principal concepts of ST. Insofar as such an effort might also reveal differences by leading to some conceptual difficulties, it should deepen our understandings of both ST and the works of competing authors. We shall return to this point in the discussion section.

The claim to comprehensiveness also applies to methodological issues because ST explicitly seeks to bridge some of the major epistemological divides in the cultural-social sciences based disciplines (Giddens 1984, cf. p. XX, XXVII, pp. 1, 213, 327.). Specifically mentioned is the linguistic turn in social theory and the emergence of post-empiricist philosophies of science. These have also surfaced in the methodological debate in IS (e.g. cf. Klein 2004) where they reappear under such labels as qualitative vs. quantitative, positivist vs. interpretive vs. critical research methods. Giddens, somewhat disappointing response to this is to give ontological issues the priority, because "concentration upon epistemological issues draws attention away from the more 'ontological' concerns of social theory and it is these upon which structuration theory primarily concentrates" (1984, p. XX). Again we defer further discussion of such issues until later (cf. the section titled: The discussion of philosophical issues), however, noting in advance that other social theories take a more balanced approach to methodological issues because the two cannot be totally separated.

The above discussion implies existence of at least one important area of IS research that we need to eliminate from consideration in this paper, i.e. research of a purely technical nature. ST's conceptual apparatus is quite limited in capturing physical aspects whether they are objects of nature or human-designed artifacts. With regards to the identity and core properties discussion, in principle it will be interesting to note, what percentage of total IS research published in our major journals is of a purely technical nature focusing on the "IT artifact" (cf. Benbasat

& Zmud 2003; Orlikowski & Iacono, 2001). A preliminary count indicated that only a small amount of the literature is purely technical and its omission from the coding will not render the classification of research uninteresting that has social or cultural implications.

In summary, the preliminary classification scheme proposed in this paper is not intended for the classification of papers on research methods and information technology without consideration of human or cultural-social aspects. The next section discusses how representative examples from the diverse IS research literature can be related to the principle dimensions of Giddens' ST by applying the proposed classification scheme. It begins with a brief introduction to the key concepts of ST on which the classification of the research literature will rely.

Mapping the IS Research Literature to Structuration Theory

This section introduces the most important concepts needed for our purposes and then illustrates how the IS research literature can be linked in the framework of ST. The introduction to ST is limited to recapitulating only short working definitions of the core concepts applied here (cf. Table 1), because ST has already been widely used (cf. Barley, 1986; Barley & Tolbert, 1997; Orlikowski & Robey, 1991, to name just a few). Table 1 provides working definitions for the three principal dimensions of structures, which are at the heart of ST (cf. Giddens, 1984). They are called signification, domination and legitimation. Reflexive monitoring and formation of structures occurs as a result of interactions between the agents and the structures, and in the reproduction of systems of interactions, the agents or actors draw upon the modalities of structuration. These modalities relate the structural properties to the knowledgeable capacities of the actors. Basically the modalities can be thought of as scripts that serve as procedural resources to guide human actions (Barley, 1986; Barley &Tolbert, 1997).

Table 1 – Constituents of ST

Core of ST	Structures are properties of social systems and social systems produce social practices resulting in structuration. *Structures* – rules, reasons or sets of transformation relations *Duality of structures* – Structure is the medium and outcome of the conduct it recursively organizes *Social systems* – reproduced relations between actors and collectivities organized as social practices *Structuration* – conditions governing the continuity or transformation of structures and therefore reproduction of social systems
Primary categories of dimensions	Structures, Modalities, Interactions
Dimensions	*Structures* – Signification, Domination, Legitimation *Modalities* – Interpretive Scheme, Facility, Norm for the three structures, respectively. "What I call the 'modalities' of structuration serve to clarify the main dimensions of the duality of structure in interaction, relating the knowledgeable capacities of agents to structural features. Actors draw upon the modalities of structuration in the reproduction of systems of interaction, by the same token reconstituting their structural properties." (ST, p. 28) *Interactions* – Communication, Power, Sanctions, each of which is related to one of the three structures, respectively.

The process of structuration in general refers to the social processes that involve the interactions between human actors and the structural features of organizations. Structures consist of rules, reasons or sets of transformation relations and resources. These structures exist within social systems as a result of the reproduced relations (that occur and reoccur) between actors and collectivities. Structures can also be described as organized social practices, which are stable over time and occur independently of any specific individual. However, a key proposition of Giddens' work is that structure is both a product of and a constraint on human action. This fundamental proposition of ST is often referred to as the duality of social structures. The principal emphasis of Table 2 in this section is to illustrate how the categories of ST can be applied to classifying IS research articles exhibiting methodological diversity.

Table 2: Illustration of mapping paradigmatically diverse research to ST

	Signification	**Domination**	**Legitimation**
Structures	*Cooper and Zmud (1990)* Task characteristics, Technology characteristics *Elkjaer et al. (1991)* ISD relations where knowledge is decommodified (proposal) *Meso et al. (2005)* Socializing use of mobile ICT vs. Business use of mobile ICT: Usefulness. Ease of use (3) *Orlikowski (1993)* Radical and incremental change factors	*Elkjaer et al. (1991)* ISD purposes and outcomes regulatory and exercising control (existing) *Markus 1983* Distribution of power Resistance *Orlikowski (1991)* Organizational policy enabled by Information System (CASE tool) *Kohli and Kettinger (2004)* Establishment of practices for cost and behavior control	*Orlikowski (1993)* Radical and incremental change factors *Kohli and Kettinger (2004)* Customized web-based information system (techno-structure); professional peer relationships (role structures) and reputation hierarchies conferring legitimacy on changes in managerial control structures. (4)
	Interpretive Scheme	**Facility**	**Norm**
Modalities	*Cooper and Zmud (1990)* Compatibility and system *Elkjaer et al. (1991)* Critical theory approach (1) *Meso et al. (2005)* Educational level, age, gender, perceived reliability (3)	*Elkjaer et al. (1991)* ISD process as a facility (1) *Orlikowski (1991)* Information System as enabler of new types of organizational control *Kohli and Kettinger (2004)* IS as enabling communication of standards for control	*Kohli and Kettinger (2004)* Professional peer norms of medical practice responsive to values of quality of care, demonstrated (clinical) effectiveness and economic cost-benefit efficiency.

	Communication	Power	Sanction
Interactions	*Cooper and Zmud (1990)* Technology diffusion and infusion *Elkjaer et al. (1991)* Enabling relations (proposal) *Orlikowski (1993)* Articulation of needs	*Elkjaer et al. (1991)* Power in ISD (1) *Markus (1983)* Politics *Kohli and Kettinger (2004)* Principal with power	*Orlikowski (1993)* Notifying about changes *Kohli and Kettinger (2004)* "Informating the clan" (p. 380); e.g. peer reviews, incorporation of benchmarks in the system and "panoptic visibility" strengthening "processes of self, as well as, direct managerial control." (p. 369)

Difficulties Encountered when Placing Articles into the Framework of Table 2.

1. Elkjaer et al. (1991) is more descriptive. However, it proposes an ISD approach which is different from the traditional approach where the emphasis is more on control and legitimization. This is one of the few papers trying to capture modality as mediating between interactions and structure change; however little reference can be found to legitimation concerns.
2. Some concepts and factors appear to be falling into both structure and modality e.g., Kohli and Kettinger (2004). IS management wanted to establish structures of control while IS facilitated communication of standards necessary for control.
3. Other grey areas or 'may be ambiguous ones' – usefulness and ease of use: these two are treated as mental structures constructed by users while they may have some interpretation schemes associated with it. However, in absence of explicit mentioning of such schemes in the paper, these are placed under structures.
4. The paper's overall thrust is on legitimizing the messengers – human and technical - and information for improving physicians' cost control while maintaining quality of care. The authors have used action research with two intervention cycles. If the two intervention cycles are taken as the unit of analysis rather than the paper

as a whole, the emphasis of the first intervention is more on domination and the second on gaining legitimacy by appealing to the user's internal group (clan) values and practices.

In order to illustrate the use of ST for this purpose, we selected research articles that differ in the underlying paradigmatic assumptions as Table 3 shows. At least one article from each of the three major research paradigms (functionalist, interpretive, and critical) was included resulting into six papers ultimately selected. In order to test how an article with a theoretical foundation other than ST could be categorized in Table 2, only one article was included one that uses ST as its theoretical foundation.

Table 3: Characterization of the articles selected for classification

Phenomenon Studied	**Research question or conceptual issue (purpose)**	**Theoretical basis and Methodological Approach**	**Prominent characteristics and/or Other comments**
Cooper and Zmud (1990): A diffusion theory approach to IT implementation in an MRP system	Applying the Kwon and Zmud (1987) implementation model to an empirical study of IT application.	Innovationa and diffusion literature on factor analysis of implementation success	Uses a random sample of manufacturing firms. Typical **positivist** research model emphasizing hypothesis testing
Elkjaer et al. (1991): latent effects of participatory ISD	The commodification of expertise in ISD consulting and its discontents for "smooth" IS development	Secondary literature on applying Habermas' discourse theory and Braverman 1974	**Explicitly critical**
Markus (1983): Explanation of resistance to IS implementation	Comparison and evaluation of four alternative theories of resistance	Uses a political variant of interaction theory as a preferred theoretical base	The case study has **interpretive** leanings but no clear indication of its philosophical basis; evaluates multiple theories of resistance with the case study data identifying the political variant as the preferred theory (p. 438)
Meso et al. (2005): Studying the mobile ICT usage behavior in LDC's	"What are the technology acceptance factors that explain the use mobile ICT's by individual end-users in sub-Saharan Africa" (p. 121)	TAM and uses structural equation modeling	**Positivist**. While perceptions of end-users regarding the usability of ICT's are listed there is no observations on the cognitive difficulties and processes which users cope with the hermeneutic task of making sense of the new technology and incorporating it into their life worlds.

Orlikowski (1993): Experiences of a consulting (SCC) and a petrochemical firm (PCC) with adoption of CASE tools over time.	To identify the critical elements that shape organizational changes as a result of CASE tool introduction with paying attention to issues of stake-holders intentions, actions and the processes and the context surrounding IT deployment.	Grounded theory approach (Glaser and Strauss) and uses interviewing, case documentation, and participant observation for data collection.	Distinguishes between the incremental and radical types of innovations to propose a process framework of organizational change related to CASE tools. GT approach with **interpretive** stance
Orlikowski (1991): Effect of introducing IT on the nature and role of organizational control mechanisms	Examine the possible consequences of internal and external control mechanisms and other organizational impacts of deploying IT in work processes	Structuration theory using the same case study as in the previous one (Orlikowski 1993)	While the design of the case study did not indicate any critical intentions of the researcher, its conclusions contribute to critical research by stating that IT reinforced rather than transformed the status quo and did not stimulate new organizational forms. **Interpretive and critical aspects.**
Kohli and Kettinger (2004): Organizational control through IS	Examine the effect of IS when the principal does not possess legitimacy to impose conformance.	Agency theory's use of information systems for control. Action research	Uses agency theory as an a priori research framework and attempts to replicate previous research. (1) Through action research the authors produce possible explanations for the inability to replicate. **Positivistic bias**

(1) "…this study began as a replication of previous research in the context of physicians (i.e., IS induced behavioral and outcome transparency of an agent's work will result in higher control for the principal, as per agency theory and Zuboff's informating)." (Kohli & Kettinger., 2004, p. 386)

In order to place the articles in the appropriate cells of Table 2, they had to be interpreted from the perspective of ST regardless of whether their research used ST as theoretical foundation or not. This interpretation made the assumption underlying Barley's (1986) research, namely IT applications in organizations and society provide opportunities for structuration. This should be true irrespective of the researcher's epistemological and ontological assumptions. Therefore, it should be possible to identify the features of structuration in the main concepts and findings of the research reported in all the articles selected. With this in mind, we analyzed the concepts and findings of the papers in the light of these meaning ST's central propositions. Then we placed the article in the appropriate cells of the structuration framework as shown in Ta-

ble 2. Because a single article can address more than one aspect of ST, it is possible that the article can be placed in more than one cell of table 2. This is based on the heuristic assumption that most papers can only address a limited number of the aspects covered in ST.

The placement of articles into Table 2 amounts to using the core concepts of ST as "codes" in the general sense of Ryan and Bernard (2000, p. 769), i.e. specific articles are assigned to selected concepts from ST. The process followed was not that of GT where codes are highly emergent, but it does have similarities with stage (1) of the constant comparison method of coding as introduced in the Glaser and Strauss (1999) version of Grounded Theory (GT). Of course, we are coding articles and not original field data. In the following quote, a collection of articles (as in Table 3) is looked upon as the data and a single research article is an "incident":

> "The analyst starts by coding each incident in his data into as many category of analysis as possible as categories emerge or as data emerge as data emerge that fit an existing category." (Glaser & Strauss, 1999, p. 105)

In our case, neither data nor categories are emergent. We treat representative segments of the article as data, a single article as an incident and the meanings of the prefixed categories are those of ST. At a later stage, we plan to find subcategories for the core concepts of ST, for example by associating scripts with the signification modality. In future research, the results of a comprehensive coding of the IS research literature could yield insights into the strengths and limits of ST as a general underpinning for IS research.

Because the core concepts of ST are of a global nature referring to fundamental (macro) characteristics of social systems the coding of articles requires that we apply them to the concrete circumstances of specific research papers, which are often at a more detailed level analysis than ST. This cannot be done mechanically, but depends on the coder's ability to bridge the typical gaps of meanings between abstract concept and their instantiations. Because of the abstract nature and inherent ambiguities of ST's principal constructs, using them to classify a specific research contribution is fraught with difficulties, which need to be bridged with guided interpretations. We followed the steps given below to classify the articles.

The first step is to abstract from each article the summaries as shown in Table 3. Step 2 is to use the summary of each article for mapping its contents to Table 2. Of course, the summaries are used only as a memory aid to the coding; they should be interpreted along with any other available information from the article, i.e. its findings, methods, results, to determine whether its main focus is on one of the three dimensions of IS or on one of the structurational aspects (structure, modality, interaction). It is best to start with one of the following considerations, whichever is the easiest to recognize in the particular article to be coded:

- Concrete research tends to focus on one of the two "ends" of ST' duality. It will either give priority to structural aspects or the interaction aspect. To determine an article's structurational aspect, it should be helpful to examine the strength and weaknesses (bias) of its methodological and theoretical foundation. What ST calls "modality" is closely associated with the structure concept – this is one of the obvious ambiguities in ST. Research focusing on modalities would have to investigate the agent's cognitive resources ("scripts", skills) or their use of specific resources. While this is possible in principle, it will be rare for two reasons. First it is intrinsically difficult to observe and hence to collect data on it; second because the notion of modality is very unique to ST, it is unlikely that other researchers will focus on modality unless they seek to apply ST directly. Barley and Tolbert (1997) recognize the first difficulty when they write: "…. Historical and archival material will rarely contain the detailed data necessary for documenting the link between every acts and the creation of an institution. Thus it is likely that most investigations seeking to link actions and institutions will focus on the process by which the existing institutions are maintained and modified.(p. 100)"

- It is unlikely that an article will pay equal attention to all three dimensions of ST (signification, domination and legitimation). These three dimensions indicate fundamental social orientations, i.e. sense-making, giving or receiving orders and feelings of right or wrong (or social acceptance and disapproval). At the agents' interaction level, these would be apparent by prevalent motivational-intentional directions, which a research article ascribes to the social actors in the field. For example, does a particular study focus on

> the cognitive capacities of actors in problem solving (signification and interpretive schemes in decision making) or the motivation of complying with accepted policies (legitimation) or the formation of policies and resistance to them (domination)? One would expect that the basic research question along with the researcher's theoretical basis and the kind of data collected would help to determine on which of three orientations in the field the researchers have focused primarily. Again, it is possible that some researchers have paid attention to more than one of these three dimensions, but the heuristic expectation is that one or at most two would be primary.

Looking at the first entry of Table 1, Markus' (1983) research question immediately points us to ST's domination dimension. Looking for potential counterevidence to this, in the main text we find only minor comments on signification and legitimation. Therefore, we can proceed to scan the article contents from the perspective whether its main emphasis is on structure, modality or interaction. Again referring to the summary in Table 3, it is striking that this particular article is one of the rare examples for research evaluating alternative theoretical basis. From this evaluation, "interaction" theory emerges as the author's preferred theoretical foundation for the case study. This theory is close to ST, because it focuses the analyst on both characteristics of human agency and structural attributes such as power distribution or features of technology. Therefore, we find evidence in the article that it covers both power uses (e.g. the observations "hidden inducements to participation", "data fudging" cf. p. 435) and structural aspects like power distribution, centralized control of corporate accountants vs. autonomy of divisional accountants with the structural aspects receiving the most attention. Only minor comments are made on modality, e.g. that the FIS was intended to serve as a tool for financial accounting and "the analysis of managerial-oriented profit data" (p. 440). Therefore, the outcome of this classification is that this article primarily contributes to understanding how IS affects structures of domination and power interactions.

A contrasting example is Meso, Musa, and Mbarika (2005). While the phenomenon studied points to "behavior" could be taken as an indication of modality and interaction, a closer look at the research question reveals immediately that most of the success factors are structural in nature. In addition, the research methods used (closed end question-

naire with Likert types scale for quantitative analysis) are more suitable to identify structural features than interaction patterns. While "cultural influences" are one of the models external variables (p. 122), their definition treats them as "beliefs, norms and values among other cultural influences", which are fixed and as such "impact how the individual uses mobile ICT". (p. 126). How the impacts operate as legitimating forces are not considered, neither are phenomena of power distribution or use nor the structurational feedback from using ICT on changing cultural patterns and influences. Therefore, we classified the article as primarily contributing to structures of signification, i.e. what kind of structural characteristics such as education, age, gender, cultural influences, accessibility and reliability of technology affect ("constrain or enable" in the sense of ST) mobile IT uses for business and social purposes. There appear to be no considerations of mobile technology as a modality in this particular research model.

Discussion of Selected Philosophical Issues

Philosophical issues and objections to using ST as a general frame of reference for categorizing the IS literature may arise from two lines of arguments. First, it is widely accepted that all comprehensive social theories make epistemological and ontological assumptions. This raises the question which fundamental (paradigmatic) assumptions underlie ST and how ST can escape the dilemma of doing justice to classifying research literature with epistemological and ontological assumptions that possibly are in contradiction to those of ST. Related to this issue is the observation that when ST is compared to other social theories (such as Bourdieu 1979, Etzioni 1968 or Habermas 1984, 1987), in some part it lacks detail and in other parts it appears incomplete altogether. It is incomplete, because it has hardly any constructs relating to the physical world beyond the human agents subjective and social worlds. The principal exception occurs in the treatment of the modalities of power (cf. Gidden, 1984, allocative vs. authoritative resources, p. 256).This observation raises the issue whether ST is better suited to classifying all types of IS (or management) research than other social theories. As already noted, ST is not the only attempt to bridge the major divisions in the social and cultural sciences. The problem was clearly recognized as early as 1967 (Habermas, 1967/1988).

A second line of attack may come from those who, based on Burrell and Morgan (1979), have argued that trying to synthesize across differ-

ent paradigms is like "mixing apples and oranges" resulting in a conceptual muddle that no longer does justice to any of the basic positions that were the starting for the synthesis. These thorny issues cannot be treated comprehensively here. However, we can signal our awareness of them and communicate the principle position taken in this paper.

On the Assumptions and Completeness of ST: The Case of Critical Management Research

Giddens himself takes up the question of having discussed differing "threads" or a "variety of forms of social research" that "is not possible to draw together under single heading" (1984, p. 327). Unfortunately, he unnecessarily limits his stimulating comments to the "traditional debate between 'qualitative' and 'quantitative' methods in social research, when in fact his treatment is of a broader nature (pp. 328-354). In order to indicate how ST could be adapted to the issues pertinent to the approach taken here, not by abandoning but by extending Giddens' own conceptual foundations, the following takes up just one question: how can ST accommodate research that is building on the tenets of a critical research philosophy (paradigm) as outlined in Deetz (2000) and McGrawth (2005, with comments by Avgerou, 2005, and Walsham, 2005). Critical research is a good example to make the point that ST, with modifications and further synthesis of other theoretical constructs such as Actor Network Theory (Atkinson & Brooks, 2003) could, indeed, provide a conceptual roof to bring together if not all, so still a significant core not only of IS research, but also of management research in other disciplines, which is an important point to be taken up in the conclusions. It is not necessary to make the same argument explicit for the hermeneutic-phenomenological lines of research, because Giddens himself has already done this: "All social research presumes a hermeneutic moment, but the presumption may remain latent, … because researcher and research inhabit a common cultural milieu" (p. 328). Because ST has already sketched the connections to hermeneutics, it should easily be possible to add more detail to them when needed depending on the requirements of specific research programs (e.g. along the lines proposed in Monod & Klein, 2005).

In short, "the most important feature that distinguishes critical research is that it engages with questions of an overtly political or moral nature. … The way power is implicated in the development of claims to truth has held a central position in critical theory" Avgerou (2005, p. 106).

This, of course, has implications for research focus that critical researchers tend to prefer, e.g. power, ideology and other communicative distortions, socially disadvantaged groups. Beside "research focus", Walsham (2005) offers three more criteria to characterize critical research: motivation, choice of theory, and influencing others. One of the preferred critical theories along with Foucault and Bourdieu has been Habermas' TCA. So how do the two, ST and TCA, relate to each other?

TCA offers noticeably more detail on human agency than ST, but it is weaker than ST in clarifying how individual (or collective) social agency and the institutional framework relate to each other. TCA attempts to capture this with the system – lifeworld distinction (for introduction cf. Klein & Minh, 2004). Apart from that, ST's three core categories find their equivalent in TCA. They can therefore serve as principal gateways to link research publications guided by these two theoretical lenses (cf. Exhibit 1 given below)

Exhibit 1: Illustration of links between ST and TCA

For the purpose of illustration, we select TCA's principal category: communicative action. Habermas extensive treatment of "communicative action" (CA) including discursive turns when conversations run into difficulties with misunderstandings or controversial claims corresponds very closely to ST's characterization of the nature of human agency with the concepts of "reflexive monitoring of action", "rationalization of action", which in turn make use of "practical and discursive consciousness". In fact, it would be possible to demonstrate with detailed quotes that "practical consciousness" takes up the same issues as TCA treats under normal (undisturbed) communicative action and discursive consciousness deals with the issue of maintaining mutual understanding and agreement when regular interaction takes runs into difficulties. The similarities are particularly apparent whenever Giddens (1984) analyses transcripts of communicative interactions (cf. the sentencing exchange between a public defender, a district attorney and a judge, p. 330, for a particularly informative and short example). Similar arguments can be made with respect to the treatment of normatively regulated action and legitimation at the center of which are the roles of norms in human agency and the exercise of power (strategic action in the TCA).

One important difference is that there is no direct equivalent of the 3-world ontology, which TCA associates with CA plus the lifeworld construct. Another difference is that TCA treats other actions types as modification of CA, thereby capturing their mutual dependence, where ST treats S-D-L as analytical categories on the same level. These different conceptual strategies do not stand in the way of classifying research.

In a similar way, TCA's concepts of communicative and normatively regulated interactions would relate to Giddens use of knowledge and norms in the modalities of human agency in communication and sanction. Habermas' claims to power in strategic action find their equivalent in Giddens' treatment of domination. However, there appears to be no direct equivalent of human agency directed towards inanimate objects (instrumental action). The consequence of this is that ST cannot directly talk about the IT artifact, which has become an important influence in every one's lifeworld. One can also make a good argument that fundamental or radical critique and change of social order finds a less prominent position in ST than in Bourdieu or the TCA (cf. Giddens, 1984, pp. 228, 244, 256). Others have noted this as well (cf. Atkinson & Brooks, 2003). This does not mean that ST could not be extended to recognize the critical research perspective more explicitly, for example especially by building on Giddens' weak analysis of the intellectual influence of Foucault and the second generation of the Frankfurt school (cf. Giddens, 1984, p. 256). Another philosophical aspect to be considered when using ST across multiple paradigms is the issue of incommensurability.

The Commensurability Issue

Even though ST does not explicitly spell out its epistemological and ontological assumptions, it is easy to see that it is closest to hermeneutics. This is clear from the references to which it gives prominence, but also from explicit comments (e.g. cf. Giddens, 1984, p. 330). In contrast, its relationship to the "real world" is primarily functionalist (p. 330) and for the most part limited to dealing with the reification of social structures in terms of Blau (cf. Giddens, 1984, p. 213). It lacks the phenomenological connections to a broader treatment of the importance of lifeworld in meaning creation and sensemaking. However, because of the later Wittgenstein (cf. his Philosophical Investigations, not the "Tractatus"), Winch and Gadamer, it would not be inconsistent with the overall frame of reference to add phenomenological insights to the ST frame of reference. With that in mind, no incommensurability with the critical paradigm would seem to exist.

If incommensurability issues are a concern, they were seeded into ST from the start with integrating functionalist-positivist views of social reality and hermeneutic-constructivist epistemology. This is most apparent in Giddens' confusing definition of multiple social structure

concepts. At the core of ST, there appears to be a virtual structure concept:

> "Structure, as recursively organized set of rules and resources is out of space and time, saved in its instantiations and co-ordination as memory traces, and is marked by an absence of the 'subject'." (Giddens, 1984, p. 25)

This definition is confusing, because Giddens also insists to:

> "distinguish 'structure' as a generic term from 'structures' in the plural and both from the 'structural properties of social systems'." (p. 23).

This conceptual muddling is necessary to accommodate both the social construction of structure in people's minds, but independently of any specific individual and the (functionalist) conception of 'structure' as:

> "… the more enduring aspects of social systems" … "giving 'solidity' across time and space. (p. 23-24)

In light of these contradictory definitions, it cannot surprise that many readers have difficulties interpreting what Giddens exactly has in mind with the concept of structure and associated modalities as is obvious from the observation that separate articles have devoted to clarifying this issue (cf. Barley, 1986; Barley & Tolbert, 1997; in comparison, ST exposition of human agency is fraught with far fewer difficulties). Nevertheless, philosophically we can defend Giddens' multiple structure definitions by explaining in which way the incommensurability issue has been misinterpreted if not overstated in the past. The key point that Burrell and Morgan (1979) – and Kuhn (1970) - failed to take into account is that ontological incommensurability does not necessarily prevent "discursive commensurability", i.e. the ability to talk about related notions, their commonalities and differences. This idea is illustrated with the example of "time" in the following paragraph:

> Whereas the (ontological) notion of time may have incommensurable (radically different) meanings in the works of Newton, Einstein and Heidegger (in Being and Time, 1962), they still do point to the same phenomenon with which all humans have experiences of various forms in their lifeworlds, i.e. from being short of time to the long-term process of aging and death. Therefore it is possible to have a meaningful discourse about these meanings drawing an all three frames of reference. This

> kind of discourse is productive to enrich our understanding of the possible meanings of time in ways reaching beyond the limited life experiences of any single person.

In the sense of discursive commensurability, it is certainly possible to talk about structure and do research about it in ways that transcends the frames of reference of the functionalist-positivist, structuralist (in the sense of Levi-Strauss), hermeneutic-phenomenological and critical research approaches and philosophies even though ontological structure may mean very different kind of things in the differing theoretical lenses. As long as one keeps these differences in mind, these different uses of the structure concept should be coded under a common category, maybe with a distinguishing qualifier, because the different research approaches complement each other. They all can contribute to enriching the meaning of the structure concept. If some of these meanings turn out to be incompatible, the coding will help to surface conflicts about which meanings should take priority. Hopefully such conflicts will provoke a discussion about the relative fruitfulness of alternative views on structure and this may help to refine definitions bringing about better understandings of the limited scope, to which conflicting definitions apply.

Similar considerations would also apply to the definition of the IT artifact. The current situation is characterized by a trichotomy of defining IS as a technical system, as a formalized language system replacing ordinary language communications and as an emergent interaction system between the behavioral and technological subsystems (Hirschheim, Klein, & Lyytinen, 1995; Lee, 1999, 2001). The implications of these definitions for what constitutes "good" IS research are very different. Yet if the extensive literature employing these definitions were coded together, this might lead to very fruitful insights and clarifying discussions. It might turn out that more than one IS meaning could be accommodated within the ST framework. For example, IS might be a modality of signification and power; it might also be a structural concept with relatively enduring, time invariant properties that could empirically be captured using some of the constructs of Orlikowski and Iacono (2001). In Orlikowski and Iacono (2001), the major ways of conceptualizing IT are summarized from the literature into five major categories: tool views, proxy views, ensemble views, computational views and nominal views. In Hirschheim and Klein (1996) we have summarized the fundamental weakness of most of these views. One of

the important benefits of a good coding system is to surface such differences for wider consideration.

Conclusions

The foregoing discussion provides some reasons to believe that a categorization scheme whose core is derived from ST, could succeed in categorizing a substantial cross-section of the IS research literature in a new and interesting way. The new classification is based on concepts with specific social theory semantics that apply to a wide range of human issues, but especially those relating to the use and social effects of IT artifacts in an organizational or societal context. Therefore, it is suitable to represent the use side of IS development and use.

A major benefit of the proposed substantive, cross-paradigm classification of key journal articles is that it would reveal under-researched areas of the use side of IS change by the sheer frequencies of how the total number of articles is distributed among the classification cells. For example, it could turn out that studies dealing with legitimation, social control and alienation issues are under-researched. Revealing such imbalances could then help to formulate research priorities leading to a more effective allocation of existing research resources for studying the user side. It could also help to obtain additional resources by showing the need for investigating definable user issues and by attracting new graduate students interested in these issues.

Complementary to the classification of single publications, the proposed scheme can also be applied to the categorization of underlying theories (e.g. TAM, HCI theories etc.). Ranking these theories on a scale of being more or less suited for investigating use issues, could also be a future valuable contribution. Theory ranking is an important, because theory often determines the research goal and strongly influences to what extent the use side is considered as part of the research design or ignored as an important research goal. In addition, under the assumption that methodology and theory can be independent from each other, the relationship of different methodologies with various theories with more or less use orientation should be investigated. This could lead to insights on whether certain research methods are dominant with a given theory and which research methods are more or less suited or at least "popular" with use side oriented research.

Besides helping to refocus existing research results on the user side of ISD, the proposed substance-oriented classification scheme also has wider implications for improving communication between diverse research communities. This could be a major benefit internal to the IS discipline, because the research literature on one specific substantive social issues (such as user alienation or resistance) would be grouped together by the proposed integrative classification scheme whereas it is now separated by the paradigmatic divides. This is an essential tool for overcoming some of the fragmentation in the field, whose dysfunctional consequences were identified in Hirschheim and Klein (2003). It would also indirectly demonstrate the feasibility and desirability of multi-method research, the paucity of which has been deplored by others (Mingers 2001a, 2001b). This in turn could give new inspirations to research using alternative methods (e.g. Creswell, 2003; Ngwenyama & Lee, 1997; Walsham, 2005).

Assuming that these ideas find reasonable support, we propose to undertake a major coding effort classifying the IS literature in several major journals beginning with their foundation dates in the 90's (Information Systems Research 1991; Information & Organization 1991) and papers from all the ICIS proceedings because they have the longest unbroken historical record. Note that, MISQ has a longer history than 1980, the starting year for ICIS. However, it has gone through several major reorganizations since its original foundation at the U. of Minnesota in the seventies and thereby changed its identity. We have not decided on the exact year from which MISQ should be included. Such an effort could strengthen the integration and cohesion of IS research and facilitate more interaction among different schools of thought in the IS research community. We anticipate that applying the basic ideas of the proposed classification strategy to a wider base of literature will require further clarification of how to relate specific IS research contributions to ST. This in turn is likely to prompt some modification and amendments of its frame reference. Atkinson and Brooks (2003) have already opened up a research approach to this by combining ST with Actor Network Theory, which can be taken further.

This internal benefit might also extend to stakeholders external to IS, but within academia, who have some familiarity with Giddens from their own work, e.g. the organization sciences and marketing. Using a trans-disciplinary research categorization holds the promise to build better bridges between IS research and some of its sister disciplines in

Business Administration. This is not to say that ST is unique in this regard, but it has less of a bias than other theories, which either lean towards positivist-functionalist (e.g. Williamson, 1981, 1985, TAM, information richness theory) or critical positions (Bourdieu, 1979, and Habermas' TCA); therefore, ST might be more readily adopted. Of course this is a two-way street: if other disciplines start to use the same or similar categories, IS research could more readily find and absorb their research approaches and results in making the whole academic enterprise in the applied social sciences stronger (cf. Galliers, 2003).

We also believe that coding a representative portion of the historical research archives in terms of substantive social theory concepts is likely to provide a good factual base for the so-called identity and core properties discussion by visibly demonstrating to the research community how its IS research directions have changed since the foundation of the first IS publication outlets. King and Lyytinen (2006) have undertaken to document this debate in a forth-coming monograph. They grouped the past literature into two major categories: Part I: The nature and specificity of IS research domain; Part II The identity, legitimacy and the future of the discipline. The book also will include reactions of all the authors to the prior debate. Most of the articles in question are referenced in Lyytinen and King (2004). Rather than beginning with speculations what should be our identity in the future, we could look at our collective work from a long-term perspective and discuss where we have come from and what our "center" (cf. King and Lyytinen 2006) has been in the last three decades. Based on this, we can then reflect on how we should proceed forward depending on our perceptions of the current challenges and opportunities that we need to address in order to continue to thrive in the future as a growing academic discipline. As an important by-product, a social theory based coding of a representative portion of the historical research archives could also reveal if the user side of ISD ever was a core concern (as it might have been during the so-called user participation debate). In this context, we should then ask which priority should be given to user side issues in the future.

References

Alvesson, M., & Deetz, S. (2000). *Doing critical management research*. Thousand Oaks: CA: Sage Publications.

Avgerou, C. (2005). Doing critical research in information systems: Some further thoughts. *Information Systems Journal*, *15*, 103-109.

Atkinson, C., & Brooks, L. (2003). StructurANTion: A theoretical framework for integrating human and IS research and development. *Proceedings of Ninth Americas Conference on Information Systems*, pp. 2895-2902.

Barki, H., Rivard, S., & Talbot, J. (1988). An information systems keyword classification scheme. *MIS Quarterly*, *12*(2), 299-322.

Barley, S. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly*, *31*, pp. 78-108.

Barley, S., & Tolbert, P. (1997). Institutionalization and structuration: Studying the links between action and institution. *Organization Studies*, *18*(1), 93-117.

Belcher, L. W., & Watson, H. J. (1993). Assessing the value of Conoco's EIS. *MIS Quarterly*, *17*(3), 239-251.

Benbasat, I., & Zmud, R. (2003). The identity crisis within the IS discipline: Defining and communicating the discipline's core properties. *MIS Quarterly*, *27*(2), 183-194.

Bourdieu, P. (1990). *The logic of practice.* Stanford, CA: Stanford University Press.

Bourdieu, P. (1979). *Outline of a theory of practice.* Cambridge Univeristy Press

Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organizational analysis.* London: Heinemann.

Cooper, R., & Zmud, R. (1990). Information technology implementation research: A technological diffusion approach. *Management Science*, *36*(2), 123-139.

Creswell, J. W. (1998). *Qualitative inquiry and research design.* Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2003). *Research design qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.

Deetz, S. (1994). The future of the discipline: The challenges, the research, and the social contribution. In S. Deetz (Ed.), *Communication Yearbook 17*, Newbury Park, CA: Sage.

Deetz, S. (1996). Describing differences in approaches to organization science: Rethinking Burrell and Morgan and their legacy. *Organization Science*, *7*(2), 191-208.

Deetz, S. (2000). Putting the community into organizational science: Exploring the construction of knowledge claims. *Organization Science*, *11*(6), 732-738.

Elkjaer, B., Flensburg, P., Mouritsen, J., & Willmott, H. (1991). The commodification of expertise: The case of systems development consulting. *Accounting, Management, & Information*, *1*(2), 139-156.

Etzioni, A. (1968). *The Active Society: A theory of societal and political processes*. New York: Free Press.

Foucault, M. (1970). *The Archaeology of Knowledge and the discourse on language*. New York: Pantheon Books.

Galliers R. (2003). Change as crisis of growth? Towards a transdisciplinary view of information systems as a field of study. *Journal of the Association of for Information Systems*, *4*(6), 337-351.

Giddens, A. (1984). *The constitution of society*. Berkeley, CA: University of California Press.

Glaser, B., & Strauss, A. (1999). *The discovery of Grounded Theory: Strategies for qualitative research*. New York: Aldine de Gruyter.

Habermas, J. (1972). *Knowledge and human interests*. London: Heinemann.

Habermas, J. (1984). *The theory of communicative action: Reason and the rationalization of society* (Vol I). Boston, MA: Beacon Press.

Habermas, J. (1987). *The theory of communicative action: The critique of functionalist reason* (Vol II). Boston, MA: Beacon Press.

Habermas, J. (1988). *Zur Logik der Sozialwissenschaften* [On the logic of the social sciences], (S. W. Nicholsen & J. A. Stark, Trans.) Cambridge, MA: MIT Press. (Original work published in 1967.)

Heidegger, M. (1962). *Being and time*. Oxford: Blackwell.

Heidegger, M. (1978). The question concerning technology. In D. F. Krell (Ed.), *Martin Heidegger: Basic writings* (pp. 283-317). London, Henley: Routledge & Kegan Paul.

Hirschheim, R., & Klein, H. K. (1989). Four paradigms of information systems development. *Communications of the ACM*, *32*(10), 1199-1216.

Hirschheim, R., & Klein, H. K. (2003). Crisis in the IS field? A critical reflection on the state of the discipline. *Journal of AIS*, *4*(5), 237-293.

Hirschheim, R., Klein, H. K., & Lyytinen, K. (1995). *Information systems development and data modeling: conceptual and philosophical foundations*. Cambridge UK: Cambridge University Press.

Hirschheim, R., Klein, H. K., & Lyytinen, K. (1996). Exploring the intellectual structures of information systems development: A social action theoretic analysis. *Accounting, Management, & Information Technology*, *6*(1/2), 1-64.

Husserl, E (1970). *The crisis of European sciences and transcendental phenomenology: Introduction to phenomenological philosophy* (D. Carr, Trans.). Evanston, IL: Northwestern University Press.

Introna, L. D. (1994). Being, technology and progress: A critique of information technology. *Proceedings of IFIP WG8.2 Working Conference*, University of Michigan, August 13-15.

Ives, B., Hamilton, S., & Davis, G. (1980). A framework for research in computer-based management information systems. *Management Science*, *26*(9), 910-934

Joshi, K. (1991). A model of users' perspective on change: The case of information systems technology implementation. *MIS Quarterly*, *15*(2), 229-242.

King, J., & Lyytinen, K. (2006). *Disciplining the discipline: the fate of IS discourse during the turn of the millennium*. J. Wiley, Unpublished.

Klein, H. K (2004): Seeking the new and the critical in critical realism: Déjà vu? *Information and Organization*, 14, 123-144.

Klein, H. K., & Minh, H. (2004). The Critical Social Theory of Jürgen Habermas and its implications for is research [Invited research monograph chapter]. In J. Mingers & L. Willcocks (Eds.), *Social theory and philosophy for information systems* (pp. 157-237). J. Wiley.

Kohli**,** R., & Kettinger, W. J. (2004). Informating the clan: Controlling physicians' costs and outcomes. *MIS Quarterly*, *28*(3), 363-394.

Kuhn, T. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago: University of Chicago Press.

Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS Quarterly, 29*(3), 461-491.

Lee, A. (1999). The MIS field, the publication process, and the future course of MIS Quarterly. *MIS Quarterly, 23*(1), v-xi.

Lee, A. (2001). Challenges to qualitative researchers in information systems. In Trauth (Ed.), *Qualitative Research in IS: Issues and Trends* (pp. 240-270). Hershey: PA: Idea Group.

Luhmann, N. (1987). *Soziale Systeme.* Frankfurt: Suhrkamp.

Lyytinen, K., & King, J. (2004). Nothing at the center? Academic legitimacy in the information systems field. *Journal of Association for Information Systems, 5*(6), 220-245.

Lyytinen, K., & Ngwenyama, O. (1992). What does computer support for cooperative work mean? A structural analysis of computer supported work. *Accounting, Management and Information Technologies*, *2*(1), 19-37.

Markus, L. (1983). Power, politics, and MIS implementation. *Communications of the ACM*, *26*(6), 430-444.

McGrath, K. (2005). Doing critical research in information systems: A case of theory and practice not informing each other. *Information Systems Journal*, *15*, 85-101.

Meso, P., Musa, P., & Mbarika, V. (2005). Towards a model of consumer use of mobile information and communication technology in LDCs: The case of sub-Saharan Africa. *Information Systems Journal*, *15*, 119-149.

Mingers, J. C. (2001a). Combining IS research methods: Towards a pluralist methodology. *Information Systems Research, 12*(3), 240–259.

Mingers, J. C. (2001b). The paucity of multimethod research. *Information Systems Journal, 13*(3), 233–249.

Monod, E., & Klein, H. K. (2005a). From e-heritage to interpretive archaeology systems (ias): A research framework for requirements specifications of ICT in cultural heritage. *European Conference of Information Systems*, Regensburg, May 26-28, 2005.

Monod, E., & Klein, H. K. (2005b). A phenomenological evaluation framework for cultural heritage interpretation: from e-HS to Heidegger's historicity. *Americas Conference on Information Systems*, 11 Aug. 2005 Omaha.

Ngwenyama, O., & Lee, A. (1997). Communication richness in electronic mail: Critical social theory and the contextuality of meaning. *MIS Quarterly*, *21*(2), 145-168.

Orlikowski, W. (1991). Integrated information environment or matrix of control? The contradictory implications of information technology. *Accounting, Management, & Information* (renamed Information and Organization), *1*(1), 9-42.

Orlikowski, W. (1993). CASE tools as organizational change: Investigating incremental and radical changes in systems development. *MIS Quarterly*, *17*(3), 309-340.

Orlikowski, W., & Baroudi, J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, *2*(1), 1-28.

Orlikowski, W., & Iacono, S. (2001). Desperately seeking the 'IT' in IT research- A call to theorizing the IT artifact. *Information Systems Research*, June, 121-134

Orlikowski, W., & Robey, D. (1991). Information technology and the structuring of organizations. *Information Systems Research*, *2*(1), 1-28.

Parsons, T. (1971). *The system of modern societies*. Englewood, CA: Prentice-Hall.

Ritzer, G. (1991). *Metatheorizing in sociology*. Lexington Books.

Ryan, G. W., & Bernard, H. R. (2000). Data management and analysis methods In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 769-802). Sage Publications.

Schutz, A., & Luckman, T. (1983). *The structures of the life-world*, *Volumes I & II*. Evanston, IL; Northwestern University Press.

Schultze, U., & Leidner, D. (2002). Studying knowledge management in information systems research: Discourses and Theoretical Assumptions. *MIS Quarterly, 26*(3), 213-242.

Walsham, G. (2005). Learning about being critical. *Information Systems Journal*, *15*, 111-117.

Williamson, O. E. (1981). The modern corporation: Origin, evolution, attributes. *Journal of Economic Literature, 19*(December), 1537-1568.

Williamson, O. E. (1985). *The economic institutions of capitalism*. New York, NY: Free Press.

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