

A STRUCTURATIONIST REVIEW OF KNOWLEDGE MANAGEMENT THEORIES

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Abstract

Recognizing that knowledge processes are social processes, and assuming that the theories considered within are commensurable, this paper proposes Giddens' structuration theory as a basis for comparing knowledge management theories to identify common themes within the discipline. The discovery of common themes is a step toward the identification of any dominant orthodoxy within the knowledge management discipline. Representative, contemporary knowledge management theories are identified from the literature and compared against the principal themes of structuration theory. Preliminary findings suggest much commonality across the theories evaluated and promise from a lower level of analysis.

Keywords: Knowledge management, structuration theory

Introduction

As a domain, knowledge management is grappling with a problem similar to that faced by sociologists prior to the development of structuration theory by Anthony Giddens (1979). Within organizations, knowledge and knowledge processes are seen simultaneously as the manipulation of knowledge objects (e.g., Davenport and Prusak 1998; Grant 1996; Orna 1999) and the outcome of emergent social processes (e.g., Snowden 2002). This reflexive interplay between the objective and subjective, knowledge and knowledge processes, structure and action, is a central theme in structuration theory (ST). When Nonaka (1994) reviewed his original work on organizational knowledge creation, he and Toyama (2003) briefly discussed the recursive nature of his SECI¹ model and how this, and the concepts of tacit and explicit knowledge, resonated with Giddens' theory. Whereas recursion was a central theme in Nonaka's theory, it did not feature prominently in subsequent KM theory development. This prompted the authors to reflect on the following: Are there common themes in extant knowledge management (KM) theory? Also, given the knowledge management discipline has no meta-theoretical equivalent, could structuration theory be used as an initial comparative basis for drawing out these themes? These questions subsequently motivated the authors to explore whether contemporary knowledge management theories exhibit similar themes to those found in Giddens' structuration theory.

In making such a comparison between theories, the authors assume commensurability across knowledge management theories, and between the concepts in ST and those similar concepts found in selected KM theories.²

¹SECI refers to the four modes of knowledge conversion in Nonaka's model: socialization, externalization, combination, and internalization.

²This point will be further addressed in the "Discussion" section.

This paper first presents an explanation of structuration theory followed by a review of literature in which structuration theory has been applied in the KM domain. In pursuing the above research question, this paper discusses a central assumption that knowledge processes are social processes and, as such, theory describing knowledge processes may exhibit similar themes as those in structuration theory, a core meta-theory of sociology. After describing the method for selecting contemporary KM theories, the paper then assesses the extent to which these selected theories exhibit structurationist themes. The paper concludes that structuration theory is useful for illustrating some of the common themes in KM theories. Given the existence of these structurationist themes, it raises the important issue of what other themes (i.e., themes not addressed by ST) might be common within contemporary KM theory.³ How might we go about determining these themes to better understand whether there is a dominant orthodoxy underpinning extant KM theory?

The authors address these issues by suggesting future analysis based on Burrell and Morgan's (1979) meta-theoretical framework. Such analysis would partially address the issue of commensurability across KM theories through an examination of their assumptions related to ontology, epistemology, human nature, and methodology. Combining this examination with Burrell and Morgan's philosophical dimensions, radical change versus regulation, and including a time dimension, would provide a comparative sociological view of the knowledge management discipline illustrating the existence of existing and developing meta-theoretical foundations.

This study contributes to the KM domain by illustrating some common themes in KM theory using a broad sociological theory, structuration theory, as a first step toward distilling knowledge management's ontological foundations.

Structuration Theory

Giddens (1979) saw structuration theory as an attempt to dispel division within the social sciences between those who consider social phenomena as determined by the influence of *objective* social structures (determinism) and others who see social phenomena as products of human *agents* as they subjectively interpret the world (voluntarism). Giddens' conception of structuration theory purports "a duality of structure which relates to the fundamentally **recursive** character of social life, and expresses the mutual dependence of structure and agency" (1979, p. 69). In other words, the agents within a social system are both influenced by the structural elements of that system, and recursively reproduce those structural elements through interaction between agents. Giddens views social structure as being drawn upon by human agents to constrain (rules) or enable (resources) interaction, while simultaneously the actions of actors in social contexts serve to produce (create or change), and reproduce (homeostasis) the social structure. A founding principle of Giddens' theory is that "every social actor knows a great deal about the conditions of reproduction of the society of which he or she is a member" (1979, p. 5). This principle is also found in Nonaka's (1994) concept of knowledge redundancy, a necessary requirement for social interaction and organizational knowledge creation.

Social systems, such as knowledge-based organizations, are comprised of day-to-day social interactions involving *situated activities* of human agents existing in time-space, and are constituted by regular, reproduced relations of *interdependence* between either individual agents or a collective group. Giddens also refers to this as *recurrent social practices*. This recursive nature of social life can be expressed in the mutual dependence of structure and agency. Structural properties of social systems are both "the medium and outcome of practices constituting those systems" (Giddens 1979, p. 69). Institutions are a product of human agency but are an "outcome of action only in so far as they are also involved recursively as the medium of its production" (p. 95).

In structuration theory, structure refers to *patterns* of social relationships and only exists as structural properties. These structural properties exist virtually as rules and resources that in social reproduction bind time (Giddens 1979, p. 63) and result in enduring practices in social systems (reproduced relations between actors or groups, organized as regular social practices that occur in time and space). To regard structure as a *virtual order* implies recognizing the existence of (1) knowledge—as memory traces—of how things are to be done (said, written) on the part of social actors; (2) social practices organized through the recursive mobilization of that knowledge; and (3) capabilities that the production of those social practices presupposes (Giddens 1979, p. 64; see also Becker et al. 2002).

Action, or agency, refers to a continuous flow of conduct: a "stream of causal interventions between corporate beings in the ongoing process of events in the world" (Giddens 1979, p. 55). A feature of action is that at any temporal junction, an agent could

³See Figure 3 presented later in this paper.

have acted otherwise. This flow of conduct, which constitutes the everyday activity of human agents, therefore, can be interrupted by the reflexive moment of attention called upon in discourse.

Giddens references three moments of **reflexivity**: (1) *reflexive monitoring of conduct*, which describes the “intentional/purposive character of human behavior, emphasizing ‘intentionality’ as process.” It involves drawing upon the physical, social, and temporal context to sustain accountability (i.e., the actor can account for their conduct); (2) *reflexive monitoring of human actors* involves human accountability—an actor’s accounts for their conduct which draws upon matching stocks of knowledge, which is drawn upon in the production and reproduction of their action; and (3) *reflexive monitoring of behavior*, which operates against the background of the rationalization of action. Rationalization of action is the capability of a human agent to explain why they act the way they do through reasons for conduct. This is a normal characteristic of social agent behavior and is the basis upon which their competence is judged by others.

Giddens uses what he calls a *stratification model* of personality in his attempt to reconcile the philosophical opposition between determinism and voluntarism in the study of social behavior. This stratification model of personality has three components: the unconscious, practical consciousness, and discursive consciousness (Giddens 1979). Giddens introduced the concept of *practical consciousness* to describe the “non-discursive, but not unconscious, knowledge of social institutions (1979, p. 24). Practical consciousness comprises tacit stocks of knowledge which actors draw upon in the constitution of social activity . *Discursive consciousness*, on the other hand, involves knowledge that actors are able to express on the level of discourse. The similarity of discursive and practical consciousness to Polanyi’s (1969) dichotomous, epistemological dimensions of tacit and explicit knowledge has been noted by several researchers including Nonaka and Toyama (2003), Walsham (2004), and Rouleau (2002).

The reflexive monitoring of action includes both the behavior of the actors and the setting of interaction. Reflexive monitoring can be seen as a way in which human actors justify their actions with reasons that can be understood by others present in the interaction. Reflexivity is comprised of the practical consciousness of monitoring conduct, accountability, and behavior and the discursive conscious of being able to rationalize actions explicitly, as Giddens states, “the reflexive monitoring of action draws upon and reproduces forms of tacit and discursively available knowledge” (1979, p. 128).

The **communication of meaning**, the **operation of power relations**, and the **enactment of normative sanctions** occur simultaneously and in an integrated fashion in social practices and interaction. Actors draw upon what Giddens refers to as modalities in the production of social interaction. These modalities are interpretative schemes used in the communication of meaning, facilities used in the exercise of power relations, and norms applied to the sanction of social behavior. The modalities are not only the factors of social production but also its media and output. Guiding interaction are structural properties, the shared or redundant knowledge of how one interacts within that social system. These structural properties are called **signification**, **domination**, and **legitimation**. Structuration theory had its beginnings in the 1970s and in 1984 Giddens presented his “dimensions of duality” diagram (see Figure 1).

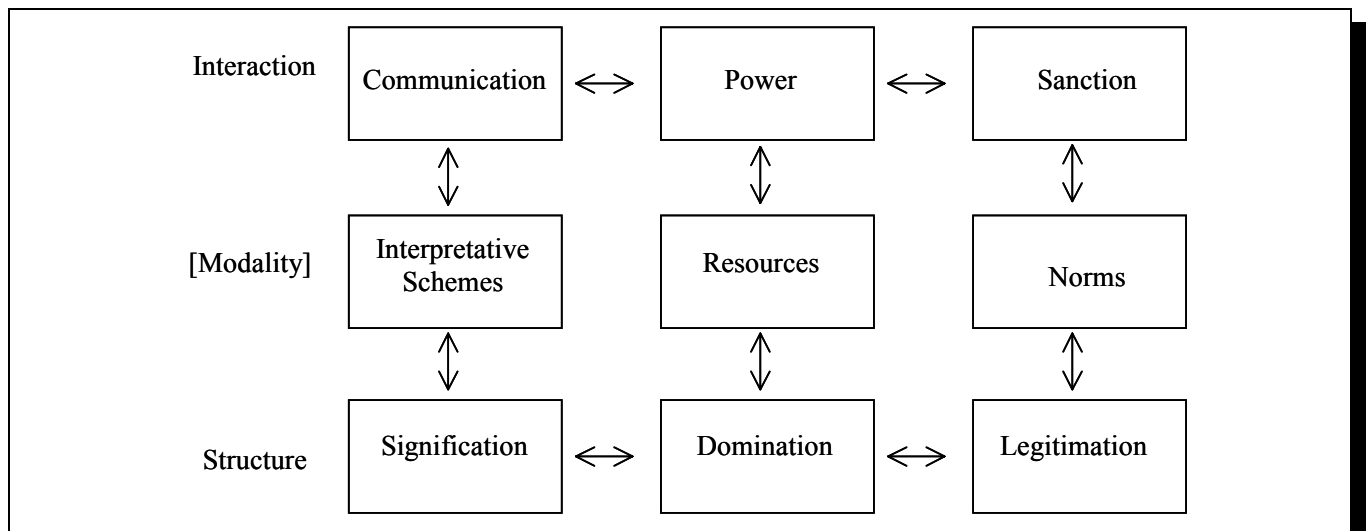


Figure 1. Dimensions of Duality (Adapted from Giddens 1984)

This diagram illustrates the mediatory nature of the modalities (interpretative schemes, resources, and norms) between interaction and structure. Solomon (2000) explains the three dimensions as (1) transfer of meaning through interpretative schemes and communicative acts (signification); (2) exercise of control through resources and acts of power (domination); and (3) presentation of values and goals through norms and acts of sanction (legitimation). The key essence of structuration is the duality of structure in which resources and rules constrain actions, and actions in turn influence structures by maintaining or altering them (Solomon 2000).

Giddens uses the term *integration* defined as “regularized ties, interchanges or reciprocity of practices between actors or collectivities” and refers to the degree of interdependence of action (or “systemness”) associated with system reproduction (1984, p. 76). He distinguishes two types of integration: (1) social integration, reciprocity between actors (level of face-to-face interaction), and (2) system integration, reciprocity between collectivities (level of relations between social systems/collectivities). Social integration is fundamental to the systemness of society as a whole (occurring through reflexive monitoring and rationalization of action), while system integration is the chief beginning of the social level through reproduction of institutions in the duality of structure. This links diminutive characteristics of everyday behavior to attributes of more inclusive social systems.

In summary, from structuration theory, important themes for understanding social processes are reflexivity, recursion, and the three dimensions of duality: power↔domination, communication↔signification, and legitimation↔sanction.

Structuration Theory in Knowledge Management Research

While structuration theory has been regularly used in information systems research (Orlikowski 1992), the application of structuration theory to knowledge management-related research is comparatively sparse. Consequently, there is a lack of tradition and accumulation of knowledge in the structural view of knowledge and knowledge management, and to date the attempts to adopt structuration theory lack systematic treatment. Nevertheless, the literature in which structuration theory has been adopted as a whole provides strong argument for adopting structuration theory as a suitable comparative framework for KM theories. The literature, reviewed below, serves to illustrate that (1) knowledge processes are social processes and (2) the key themes of structuration theory are useful for understanding knowledge processes and hence KM theories.

Knowledge Processes Are Social Processes

The conceptualization of knowledge processes as social processes in KM-related literature is most prevalent in the organizational learning literature. Berends et al. (2003, p. 1036) define organizational learning as “the vehicle for utilizing past experiences, adapting to environmental changes and enabling future options” and draw inspiration from such fields as psychology and management science. Duncan and Weiss (1979) see organizational learning more simply as an increase in, or development of, organizational knowledge. Overall, the organizational knowledge base emerges out of the process of exchange, evaluation, and integration of knowledge. Learning is a social process, one that is extra-individual, comprised of the interaction of individuals and not their isolated behavior (Duncan and Weiss 1979). Berends et al. note that a major problem in current organizational learning analysis is an inadequate account of the individual’s role in organizational learning. Organizational learning is an inherently social process and thus requires grounding in social theory.

Berends et al. identify structuration theory as a prime starting point to draw links between individuals and organizational learning because (1) the relationship between individuals and the collective is at the heart of structuration theory; (2) actors’ knowledgeability⁴ has precedence; (3) Giddens’ structuration addresses the interplay of cognition, power, economic resources, and norms; and, (4) it sketches a dynamic picture of social reality.

Like Giddens, Berends et al. believe that structure is a resource for interaction in the sense that individuals or actors do not construct social reality from scratch but draw upon preexisting structural elements in their actions. Existing rules and resources make human actions possible, but in turn human action is constrained by existing structures, which elicits that structure as both enabling and constraining (Berends et al. 2003). To draw upon preexisting rules and resources, actors must be knowledgeable.

⁴Knowledgeability refers to the knowledge individuals have of their circumstances, of their actions, and of the rules they follow.

Some of this knowledge is propositional in character but most of it is carried in what Giddens calls practical consciousness, which refers to what actors believe about their context and the conditions of their actions but are unable to express discursively (Berends et al. 2003). Actors are not slaves of existing structures; they have the power to act otherwise, which implies the interactions of knowledgeable actors contain within them the seeds of change.

Through a case study into knowledge practices within a small firm, Berends et al. found that an “increase of knowledge that is applicable in practices could not be realized outside the context of those practices.” They also found that knowledge developed via a diverse range of practices, executed by a range of persons and stretched over time and space, supporting their claim that knowledge is a social practice. This finding also supports Wenger’s (1998) notion of how knowledge is developed within, and stewarded by, communities of practice.

Smoliar (2003) believes that a work environment is a rich collection of social interactions. He is a proponent of interaction management, believing that KM is about the management of people, whose work depends on what they know, rather than the management of knowledge itself. He uses Giddens’ structuration theory to argue that KM must move beyond simplistic models of information exchange and into the realm of fully leveraging social interaction within organizations to enterprise advantage.

Magalhaes (1996) considers organizational learning, organizational knowledge, and organizational memory through three major poles of influence: the individual view, the social view and the critical, and alternative views. Based on the social constructivist approach within the social view, which is heavily driven by Giddens’ theory of social systems as modes produced and reproduced by the activities of actors drawing upon rules and resources, Magalhaes ascertains that it is impossible to separate the *subjective dimension* of an individual from reality’s *objective dimension*. In other words, structure is not external to individuals but, when instantiated in social practices, is internal. Thus, he argues that a social view—structuration theory in particular—cannot be absent from any theoretical framework for dealing with organizational issues such as memory, learning, and knowledge.

Some KM and organizational structuration studies also encompassed information systems.⁵ These studies include Stillman and Stoecker’s (2004) action research project into Melbourne community-based organizations. Giddens’ axioms are adopted to propose that practice of community technology in community networks is both the medium and outcome of values that people bring into the artifacts of information and communication technologies. They posit that structuration theory offers a framework to understand how practices of knowledge and action recurrently transmit within formal and informal communities with reference to collaboration, human involvement and interaction, and the guidance of change.

Importance of Key Structurationist Themes in Knowledge Management Theories

Adopting structuration theory, Becker et al. (2002) view organizations as social systems, patterns of reproduced social practices brought forth by knowledgeable agents. They place particular emphasis on the structure of signification, suggesting that at the heart of any interaction is mutual knowledge, and at the core of mutual knowledge are interpretative schemes, through which a universe of shared meaning is produced and sustained in interaction. The context-free dimension of signification, communication, and interpretative schemes, creates recursively connected processes of knowledge generation and knowledge use. From this perspective, they suggest that an organization cannot “know” anything; organizational knowledge is individual knowledge socially embedded within so-called transactive knowledge systems.

Bonifacio et al. (2002) see large organizations, such as companies and universities, typically structured into components that need to operate with a high degree of autonomy yet also require coordination. Using a structurationist view, they purport that technology architectures shape organizational forms, and organizational forms in turn affect the appropriation of technology. Knowledge in social form is affected by and affects technological architecture; KM systems, therefore, should be designed for consistency with distributed social forms in which organizational knowledge is created. They believe that “knowledge is intrinsically distributed, embedded and localized within the context of informal communities” (p. 6).

This idea has strong precedent within the work of Yoo et al. (1999) who, in accordance with Giddens, explain that human actors are not only constrained by social structures such as culture and information systems but also creatively construct social systems in which they live, in turn constraining their future actions. This implies that users of, say, KM systems creatively shape the

⁵Note that this treatment has not included the work initiated by Orlikowski (1992) and DeSanctis and Poole (1994) because their derivative duality of technology and adaptive structuration theory (AST), respectively, depart significantly from Giddens’ original work. Future research will address the nexus between the work described herein and their respective work.

technology, based at least in part on the unique characteristics of their culture. Individual users of KM systems, therefore, are not only consumers of objective knowledge stored in the system but also active creators of their own knowledge.

Marshall and Rollinson (2004) share Francis Bacon's maxim that "knowledge sharing is power." They believe that the power-knowledge nexus remains a point of contention with organizational knowledge, the two sides being those for knowledge-as-object codification, and those who emphasize its inseparability from the context of action. Marshall and Rollinson analyzed the delivery of a telephone-exchange software project and demonstrated how central consideration of power yields new insights beyond prior contributions to the study of practice-based organizational learning. One of their foundational concepts is *enactment*, which considers the interplay between power and knowledge including rules, norms and resources, and interacting agents.

To explain the dynamic process of knowledge creation and utilization, Nonaka and Toyama (2003) revisit the SECI process and advance it by incorporating Eastern philosophies and structuration theory. Calling upon Giddens' idea that structuration theory studies the ways in which social systems are produced and reproduced through social interaction, they examine the issue of synthesizing environment and internal resources to demonstrate how knowledge is fashioned through interactions between human agency and social structures. The crux of Nonaka and Toyama's argument is their link between the concepts of knowledge and the dimensions of structuration, with a strong emphasis on dialectic thinking and acting. A focus of attention is the SECI model of knowledge creation, which demonstrates that the recursive interaction between agents and the external environment contributes to knowledge processes when converting tacit to explicit knowledge.

This review of literature supports a number of key beliefs held by the authors: (1) knowledge processes are social processes; (2) knowledge processes and interactions will have mutual knowledge at their core and consequently KM theory describing knowledge interaction should embrace the agency↔structure dimension of duality communication↔signification; (3) knowledge processes are recursive in nature between agency and structure and KM theory should embrace this notion; (4) power and structures of domination are intrinsic to analyzing knowledge processes; (5) culture, as illustrated in the dimension of duality sanction↔legitimation, is a central element in the consideration of any analysis of knowledge processes; and (6) reflexivity is a keystone concept in human behavior within organizations.

Analyzing Existing Knowledge Theories Using Themes from Structuration Theory

The five critical themes of knowledge processes identified from structuration theory serve as a framework in exploring commonality across representative, contemporary KM theory: reflexivity, recursion, power↔domination, communication↔signification, and legitimation↔sanction. We attempt to compare existing KM theories with the proposed themes, with the dual purposes of (1) assessing the extent to which these theories incorporate the five structuration theory themes and, in follow-on work, (2) considering whether these theories might be enhanced if themes not previously considered are incorporated.

Selecting Knowledge Management Theories for Analysis

At this point, the authors point out the truncated literature surveyed for sourcing contemporary KM theory. Future work will broaden this survey.

Our method of identifying knowledge-based theories is an adaptation of the approach proposed by Webster and Watson (2002), which proceeds in three stages. The first stage involves using keywords to query leading journals (and ICIS proceedings) and browsing titles and abstracts of relevant articles. Only publications from 1994 onward were considered, there being widespread agreement that Nonaka's "A Dynamic Theory of Organizational Knowledge Creation" (1994) marked the beginning of the current wave of KM theorizing. Bearing in mind that KM is the generation, representation, storage, transfer, transformation, application, embedding, and protecting of organizational knowledge (adapted from Alavi and Leidner 2001; Hedlund 1994; Pentland 1995), and is closely related to concepts such as organizational learning (March 1991) and organizational memory (Walsh and Ungson 1991), the following keywords were selected as the basis for the literature search: knowledge, knowledge management, organizational learning, organizational memory, and organizational knowledge.⁶

⁶Including permutations of "organizational" such as organisational, organization, and organisation.

Table 1. Articles Found by Keyword

Journal		High Rank	Low Rank	Number	Percent
<i>MIS Quarterly</i>	1	1	1	19	5.6
<i>Communications of the ACM</i>	2	2	4	1	0.3
<i>Information Systems Research</i>	3	2	4	6	1.8
<i>Management Science</i>	4	2	5	36	10.6
<i>Journal of Management Information Systems</i>	5	4	6	18	5.3
<i>Decision Sciences</i>	6	5	8	18	5.3
<i>Harvard Business Review</i>	7	7	9	11	3.2
<i>Organization Science</i>	8	8	15	43	12.6
<i>Decision Support Systems</i>	9	9	13	31	6.2
<i>Sloan Management Review</i>	10	9	13	9	2.6
<i>Information and Management</i>	11	10	20	17	5.0
<i>European Journal of Information Systems</i>	12	11	11	18	5.3
<i>ACM SIGMIS Database</i>	13	14	29	3	0.9
<i>Academy of Management Journal</i>	14	15	17	17	5.0
<i>Information Systems</i>	15	16	16	1	0.3
<i>Administrative Science Quarterly</i>	16	16	21	5	1.5
<i>Communications of the AIS</i>	17	18	18	12	3.5
<i>Academy of Management Review</i>	18	19	22	18	5.3
<i>Interfaces (INFORMS)</i>	19	19	39	2	0.6
<i>Journal of Strategic Information Systems</i>	20	20	29	17	5.0
<i>International Journal of Human-Computer Studies</i>	21	20	44	8	2.4
<i>Proceedings of ICIS</i>		–	–	40	11.8
Total		–	–	340	100.0

Leading journals were determined based on rankings from Mylonopoulos and Theoharakis (2001), Whitman et al. (1999), and Hardgrave and Walstrom (1997). Journals in the top 20 of any ranking were included in the search,⁷ yielding 31 journals, and ultimately 340 articles.⁸ A breakdown of the number of articles by journal is shown in Table 1. Ten journals that did not contribute any articles are not included in Table 1. Surprisingly, 273 of the 340 articles were **not**⁹ directly related to KM as defined earlier (the generation, representation, storage, transfer, transformation, application, embedding, and protecting of organizational knowledge), and thus were excluded, leaving 67 articles.¹⁰

The second stage of the Webster and Watson approach simply involves identifying further relevant articles in the target set of journals, from among the references cited in the core 67 articles. This yielded nine further articles. Finally, a Google Scholar¹¹

⁷It is noted that the three rankings are of quality outlets for Information Systems research, thus include predominantly IS journals, as well as other top-tier management, organization science, and other journals. This focus on IS research outlets was felt justified in that IS accounts for the majority of knowledge management research.

⁸A complete listing is available upon request from the authors.

⁹For instance, numerous articles discussed KM from a purely technological view, such as KM systems (KMS), integrating KM into enterprise systems (ES), or decision support systems (DSS). There were also a number of articles that dealt with the kinds of knowledge that are needed for various organizational activities.

¹⁰A list of which is available upon request.

¹¹Google Scholar was chosen over more traditional sources such as the Social Sciences Citation Index and Web of Science as it indexes conference papers in addition to journal papers. To the best of our knowledge, both Social Sciences Citation Index and Web of Science only index journal papers.

search yielded five articles, for a total of 81.¹² Much repetition was experienced in these latter stages of the search, suggesting we had reached saturation (Webster and Watson 2002).

In the final, third stage of the Webster and Watson approach, two coders independently made a pass on the 81 papers, seeking to identify the salient theories therein. Taking our cue from Lee et al. (2004), for the purposes of this coding activity we defined theory as *all theories, models, and frameworks that are explicitly mentioned in the articles*. There was substantial overlap among the theories referenced in the 81 papers. Having harmonized the theories, we were left with a final set of 18 papers. (The papers are presented in Table 3. Note that where multiple articles were found to reference the same theory, Table 3 includes the first such article in time; in other words, the origin of the theory, at least in the realm of IS research, if not KM research.)

Analysis

Recognizing the difficulty and inherent subjectivity in comparing theories against the themes identified in structuration theory, we adopted an approach that attempts to minimize interpretation by the researchers. The method first involves clearly defining the criteria that would indicate the presence of a theme in the theory (Table 2). We next relied on careful reading of the final 18 papers (representing the final set of 18 theories), searching for the themes. The criteria for each construct are presented in Table 2.

Discussion

Table 3 presents the results of the mapping exercise. Our analysis provides an indication of whether the KM theories, identified in the literature, exhibit themes identified from structuration theory. All theories exhibit the communication of meaning ↔ signification theme. Given the nature of KM, finding that its theory base uniformly includes the concept of communication of meaning ↔ signification and implies the use of interpretative schemes as a resource or restraint in knowledge processes is an expected outcome from this analysis.

Many of the theories also embrace the sanction ↔ legitimation theme from structuration theory. Sanction ↔ legitimation and the use of norms as a resource or restraint are central in the derivation of organizational culture. Most KM theory recognizes culture as a determinant in the flow of knowledge processes.

Of Giddens’ three dimensions of duality, the least referenced in KM theory is the exercise of power relations ↔ domination. Giddens (1984) maintains that power relations are ubiquitous in social processes. It follows that power must be a determinant in the outcomes of knowledge processes. While it is referenced least, it is still implicit in a majority of the KM theories used in this analysis.

Table 2. Descriptions of Structurationist Themes Used in Determining Their Existence in KM Theories	
Communication ↔ Signification	Inclusion of concepts concerning mutual/common knowledge; interpretative schemes; knowledge processes, sharing, creation, and reuse; memory; learning; knowledge structures or repositories.
Sanction ↔ Legitimation:	Inclusion of concepts such as culture; social influence; values; principles; morals and moral codes; ethics; beliefs; traditions; and customs.
Power ↔ Domination	Inclusion of concepts such as power; authority over resources or people; coercion; control; command; management; and dominance.
Recursion	Inclusion of concepts suggesting the recursive interaction between structure and agency as defined by Giddens.
Reflexivity	Inclusion of concepts suggesting self-monitoring of conduct, behavior or actors; intentionality; motivation; accountability; and rationalization of action.

¹²Listing of the 81 available on request.

Table 3. A Mapping of Representative Knowledge Management Theory against Five Structuration Theory Elements

	Rank	Communication	Sanction	Power	Recursiveness	Reflexivity
A Dynamic Theory of Organizational Knowledge Creation (Nonaka 1994)	1	✓	✓		✓	
Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm (Szulanski 1996)	2	✓	✓			✓
The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge Across Organization Subunits (Hansen 1999)	3	✓				
Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues (Alavi and Leidner 2001)	4	✓	✓	✓		
An Organizational Learning Framework: From Intuition to Institution (Crossan et al. 1999)	5	✓	✓		✓	✓
Knowledge Flows Within Multinational Corporations (Gupta and Govindarajan 2000)	6	✓	✓	✓		✓
“It is What One Does”: Why People Participate and Help Others in Electronic Communities of Practice (Wasko and Faraj 2000)	7	✓	✓	✓		✓
Toward a Theory of Knowledge Reuse: Types of Knowledge Reuse Situations and Factors in Reuse Success (Markus 2001)	8	✓	✓			
An Investigation of Factors that Influence the Management of Knowledge in Organizations (Holsapple and Joshi 2000)	9	✓	✓	✓		
The Communal Resource and Information Systems (von Krogh 2002)	10	✓	✓	✓		✓
Network Structure and Knowledge Transfer: The Effects of Cohesion and Range (Reagans and McEvily 2003)	11	✓	✓			✓
Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology (Griffith et al. 2003)	12	✓	✓		✓	
Old is Gold? The Value of Temporal Exploration in the Creation of New Knowledge (Nerkar 2003)	13		✓		✓	✓
Social Capital, Networks, and Knowledge Transfer (Inkpen and Tsang 2005)	14	✓	✓	✓		✓
Does Knowledge Mediate the Effect of Context on Performance? Some Initial Evidence (Droge et al. 2003)	15	✓	✓	✓	✓	✓
Social Capital and Knowledge Creation: Diminishing Returns of the Number and Strength of Exchange Relationships (McFadyen and Cannella 2004)	15	✓		✓		✓
Antecedents of Knowledge Transfer from Consultants to Clients in Enterprise System Implementations (Ko et al. 2005)	15	✓		✓		✓
The Politics of Organizational Learning: Integrating Power into the 4I Framework (Lawrence et al. 2005)	15	✓	✓	✓	✓	✓

Few KM theories exhibited the concept of recursion. In other words, the theories did not explicitly account for or imply the recursive nature of agency and structure that Giddens describes. While a theory may have recognized aspects of subjectivity or objectivity in knowledge and knowledge processes, the interplay between the two was neither accounted for nor explicitly recognized, suggesting that the theories may sit in two different ontological and epistemological groups.

Many theories, however, demonstrated the concept of reflexivity (i.e., recognizing an individual’s capability to reflect on one’s action and adjust their behavior accordingly). Reflexivity is an important element because it recognizes the nexus between the actions, decisions, and behavior of an individual and the cultural, power-related, and cognitive influences on that individual. This is an interesting result, suggesting KM theories adopt a stance that allows for voluntaristic and deterministic influences on action.

The fact that all of the principal structurationist themes are each exhibited or addressed by several KM theories suggests their relevance to KM generally. Thus, together, these KM theories themselves give weight to the importance of the social-process nature of knowledge and knowledge management. Structuration theory provides a comprehensive view of the nature of social processes. It dismisses the gap between the objective and subjective argument in sociology.

As mentioned earlier in the “Introduction,” in doing the mapping, we have assumed that the KM theories are commensurable with one another and with ST.¹³ Further, more detailed investigation of the ontological foundations of the KM theories may reveal that this assumption is too strong. Hence, our results should be interpreted with caution: a tick in the same column, say power, against two theories should only be interpreted as the two theories exhibiting *some* aspects of the power concept that we have *abstracted* from ST. The ticks neither mean that both of the theories have included the concepts of power to an equal extent (both in terms of scope and conception) nor should they be treated as being subsets or supersets of the concept of power in ST.

Another matter arising from this work is: Are there other important themes in KM theory yet to be identified? Might such additional themes suggest extensions to structuration theory or perhaps this is a step toward identifying a dominant orthodoxy within KM? Specifically, our research has opened up a series of questions providing several directions for future research. These questions include:

1. Could one or more existing KM theories be fruitfully extended or enhanced by considering or incorporating one or more of the missing structuration theory themes? For example, could we draw new insights from Nonaka’s theory of knowledge Creation if we consider how the SECI model might be affected by the power structure in an organization? Could we develop a better model that identifies further impediments to knowledge transfer if we incorporate the element of power?
2. How does one address the discussion within the KM community about the subjective↔objective nature of KM?

As a next step in searching for recurrent themes and foundations in KM theory, we propose to address this issue by employing Burrell and Morgan’s (1979) framework to map extant KM theory into paradigm groups.

Using the Burrell and Morgan framework will help surface ontological and epistemological assumptions inherent in extant KM theory and elicit any dominant orthodoxy or paradigms within the discipline. Hirschheim et al. (1995) used Burrell and Morgan’s framework to explore and analyze IS tools and methods to better understand the influence of differing philosophical attitudes in information systems development. Burrell and Morgan’s framework has not been applied in the interdisciplinary field of knowledge management.¹⁴

Burrell and Morgan developed a framework in which to assess the paradigmatic nature of theory in sociology. They conceptualized social science through four sets of assumptions related to ontology, epistemology, human nature, and methodology. In their scheme, for each assumption, there are differing approaches that fall into either the subjective or objective dimension. Their scheme is summarized in Figure 2. In addition to the subjective-objective dimension, Burrell and Morgan used a second dimension, regulation-radical change (order-conflict) to create four paradigms of sociological theory: radical humanist (subjective-radical change), radical structuralist (objective-radical change), interpretive (subjective-regulation), and functionalist (objective-regulation).

Summary and Conclusion

This paper provides a general explanation of structuration theory. It identifies the key themes of structuration theory as being reflexivity, recursion, and the three dimensions of duality: power↔domination, communication↔signification, and legitimation↔sanction. The paper argues that knowledge processes are social processes and suggests that structuration theory is an appropriate sociological meta-theory against which KM theory may be compared. We recognize that our approach is structuration

¹³We would like to acknowledge the important contributions by the reviewers and the associate editor in shaping this paper, especially those who guided us in the ontological aspects.

¹⁴The authors do acknowledge Schultze and Leidner’s (2002) study of KM research in six major IS journals using Deetz’s (1996) taxonomy of discourses in organizational science.

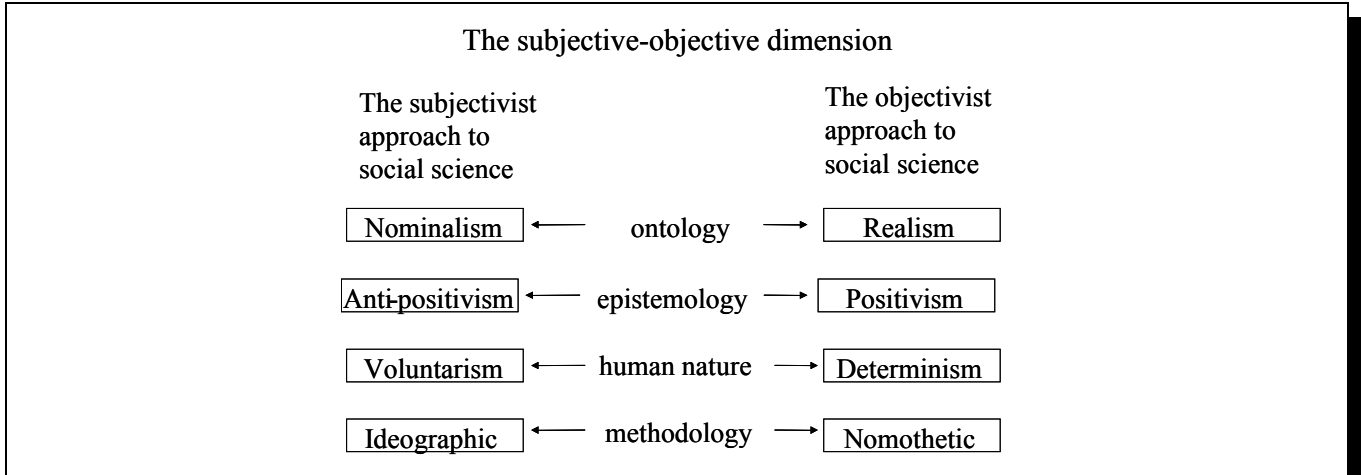


Figure 2. Burrell and Morgan’s Scheme for Analyzing Assumptions About the Nature of Social Science

theory-centric, and that we have not yet considered possible critical themes in existing KM theories for which structuration theory does not account (as shown in Figure 3). Our research continues in this direction.

This research makes two contributions to the field of KM. First, a systematic approach has been applied for the identification and distillation of existing KM theory (and literature). Our research suggests that there are at least 18 distinct, contemporary theories of KM.

Second, we find that most of the listed KM theory addresses in some way at least three of the themes from structuration theory; and that recursion between the objective and the subjective is the theme least addressed. This reflects the notion that KM confronts the same problem faced by sociologists prior to Giddens (i.e., much existing research and theory fails to recognize the duality and recursive integration between the subjective and objective perspectives of knowledge and knowledge processes). Finally we suggest that an appropriate extension of this work is the application of Burrell and Morgan’s framework to uncover any dominant orthodoxy(s) in the knowledge management discipline.

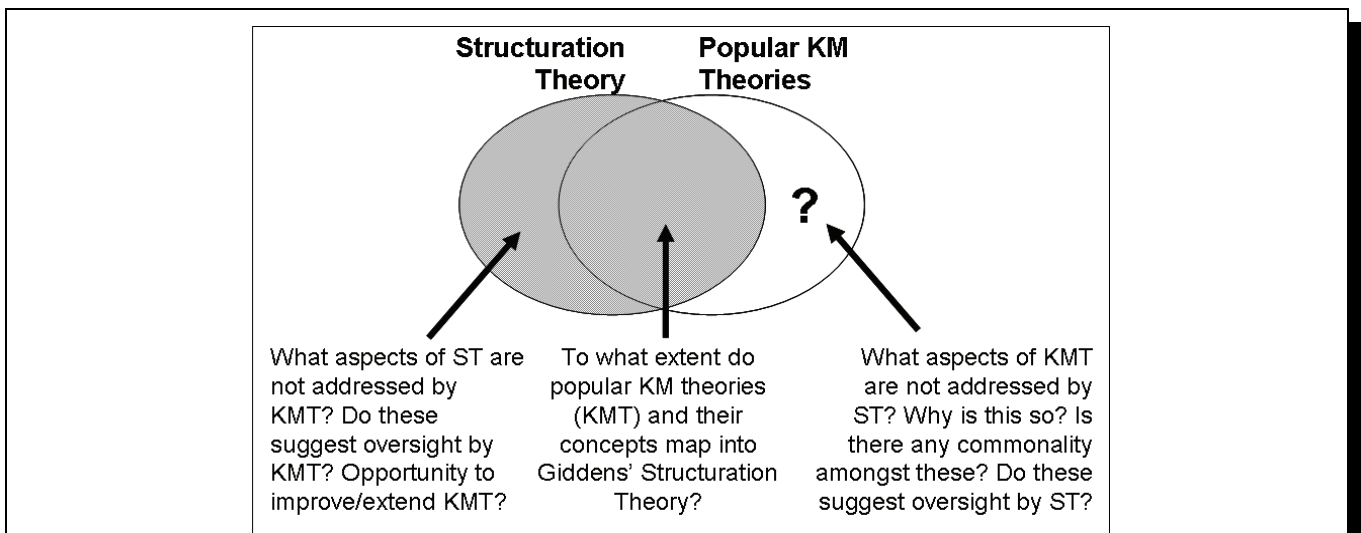


Figure 3. Overlap between Structuration Theory and Knowledge Management Theory

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