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**Publication Date**

2004-03-01

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March 2004

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This paper was presented at the 3rd Annual MIT/UCI Knowledge and Organizations Conference, Laguna Beach, CA, March 5-7, 2004.



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## A Note on Making Use of Knowledge Management

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A tremendous amount of money and enthusiasm is going into 'knowledge management' (KM). Industry watchers tell us that perhaps 80% of businesses now have explicit KM projects, often expensive (Cabrera *et al.*, 2002; Zack, 1999). Several new trade journals serve the KM practitioner community – including Knowledge Management, KM World, KM News, KM Review, the Journals of Knowledge Management and of Knowledge Management Practice, and the Journal of Intellectual Capital. The academic literature has exploded too – with new handbooks from a range of publishers (Choo *et al.*, 2002; Dierkes *et al.*, 2003; Easterby-Smith *et al.*, 2003; Holsapple, 2003). Butterworth-Heinemann have an entire series devoted to KM e.g. (Despres *et al.*, 2000). Many of the academic journals have produced helpful special KM issues – SMJ, Organization Science, Journal of Management, etc. IBM and the other major consulting firms have 'knowledge management' specialists and new KM marketing organizations (Prusak, 2001; Zack, 2003).

Perhaps we are seeing a remarkable, even unique, convergence of academic and managerial interest, with both communities finding value in each others' KM efforts? Loudly trumpeted KM conferences and much of the literature noted above seems to suggest that KM is a 'silver bullet', the crucial clue to competitive advantage in the 21<sup>st</sup> century. On the other hand, cynics assume KM is just the next management fad, entering a cycle in which it will go the way of expert systems, BPR, and many others (Marren, 2003). What are we to make of KM and the value it has delivered? As is generally the case, there is some truth in both these views, but scarcely enough to give managers a sense of how to prioritize their KM projects against the many others that compete for their attention and the company's funds.

What seems clear is that the literature and conference and consulting discussion is confused, fragmented, and sometimes contradictory. The handbooks mentioned above are remarkable for their heft, breadth, and diversity, positive features, but should probably be faulted for the absence of an overarching framework. Indeed knowledge itself is such a perplexing notion, having puzzled the finest minds for millennia, that the mere idea of some solid and novel definitions of, say, data, information, wisdom, or knowledge seems highly improbable.

Nonetheless this paper seeks to diminish this confusion. The argument has three separate strands. First, I argue the whole concept of managing knowledge is implausible, for that would imply we know what 'knowledge' is. The frequent wholly unsubstantiated claims that it can be now suddenly understood as the 'most important' aspect of the organization merely confuse. We do not really know enough about knowledge to manage it, if by that we imply something like managing our cash or oil resources. The fact that we have recently achieved nodding agreement among ourselves, and managers too, that we are in the Information Age and that knowledge is 'the thing', masks crushingly difficult issues about how to locate, measure, store and transfer this stuff. Indeed the asset metaphor may be the least informative. Thus the field's name is unfortunate at best, at worst profoundly misleading. We have a 'specification problem' as philosophers would call it. My initial point is that the field would be easier to understand if it were called 'knowledge problem management', for once we get beyond the trivial insights of the K-as-asset metaphor the field is actually focused on the problems managers are having with the ways knowledge is being created or used in their firms.

Second, we can see at once there are many different knowledge problems and they are of several fundamentally different types. We have no meta-theory or framework yet from which we can draw these types or in which we can place all the knowledge problems we are experiencing. The field is empirically rather than

theoretically driven. We rely on observation and practice to tell us where knowledge problems arise. We focus on the organizational correlates of market failure. Knowledge problems are organizational knowledge failures. It follows that to understand the literature's fragmentation we would do well to focus on the specific knowledge problem (KP) or failure being addressed by the particular writer's work. Third, if we can create a simple typology of the KPs, that might help us make the literature more useful to managers. It might also give us better insight into the parts of the field that offer value now, and those parts that should offer additional value after further developments have taken place. We might even be able to point out useful directions for KM research.

To illustrate; one important and common knowledge problem (KP) is that the corporation's existing body of knowledge is not sufficiently available to those that need it. Many KM projects focus on this particular KP e.g. (Marchand *et al.*, 2000; Stone, 2003). Information technology offers increasingly cost-effective solutions here, provided the relevant knowledge can be collected, inventoried, and made available to those that need it. A rather different KP is that much of the corporation's knowledge is un-labeled and un-inventoried, especially the 'human capital' (Teece, 2000; Wick, 2001; Wiig, 2002). Discovering and inventorying such hidden knowledge is quite different to moving already codified and inventoried knowledge around. Other projects focus on innovation and creating knowledge in ways that maximize the benefits to the firm. Yet others focus on the problems of establishing ownership to the knowledge found or created, or on extracting value by sharing the knowledge with other firms. There are many KPs of this general type - defined by treating knowledge as 'data', an object which can be created, owned, transferred and possibly bought and sold.

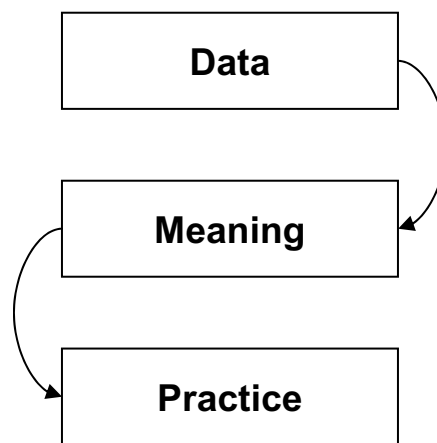
Quite different knowledge problems arise when employees do not know what to make of the data available. There are cries of "What does this mean to us?" or "We are drowning in data and it isn't telling us what we want to know". We see a problem with the data's 'meaning'. It turns out that meaning and its management

are major challenges for all organizations. Meanings generally differ between different organizations. The process of writing the mission statement is normally a major 'meaning management' project, consuming an enormous amount of time and often generating surprising friction. KM consultants often focus on the organization's communications and the sharing of meaning, as in 'shared goals and objectives'. This turns out to be a quite different process than sharing data, as in sharing knowledge about a specific event, production process, or customer.

But much of the buzz about KM alludes to a third type of KP, one that concerns the human skills which cannot be readily inventoried or communicated. Many use the term 'tacit', a term that has generated considerable confusion, especially between those who use it to refer to poorly articulated knowledge (Nonaka *et al.*, 1995) versus those who want to refer to unarticulated practical capabilities (Nelson *et al.*, 1982). The first group is intent on bringing important knowledge under management's control by making it explicit, much as the proponents of Scientific Management advised many decades ago. The second group searches for ways to identify and measure the impact of the organization's un-codifiable knowledge, hoping thereby to foster its creation and application and avoid its inadvertent destruction.

The classic illustration, taken from Polanyi, is that of riding a bicycle. No amount of explanation is sufficient to success, which can only be achieved through practice. Likewise it is not easy to describe how to be a super-salesman, bond-trader, or programmer. Some artistic or 'craft' ability seems required. Many managers believe that much of their organization's most competitively important knowledge is of this practical type and inherently beyond being inventoried as data. As such it cannot be stored, communicated, or applied in the same way as data. The possibility of identifying 'best practices' and extracting further value by transferring them elsewhere raises this kind of KP.

My presentation begins with a discussion of this three-level typology and of the way it can be used to categorize the different kinds of discussion now going on under KM's umbrella. This leads us to the relations between the levels - already suggested above as a kind of 'nesting' in that problems with the data already available sometimes force us to reconsider its meaning. Likewise the notion of 'tacit' allows one to reconsider kinds of practical knowledge which lie forever beyond the realm of meaning as an aspect of cognition. This leads us to Figure 1:



**Figure 1 – Three levels of analysis in the KM field**

Linking the three 'levels' implies analyzable relations between them in spite of their evident epistemological differences. Yet the theories of the firm implied at each level are typically discussed without reference to those at the other levels – and this tendency adds significantly to the confusion in the literature.

At the upper level, the firm can be reasonably described as a 'bundle of resources' or even a 'nexus of contracts'. It presumes knowledge as data, resource-objects to be owned and made sources of value by being applied in a production function or traded across markets. Here we can consider the costs of acquiring knowledge, comparative costings in a transactions cost analysis, and even the non-rivalrous nature of knowledge. At the middle level, the firm is a

pattern or field of meaning, or the process of knowing. We presume shared meaning is what motivates and aligns the activity of the people within the firm towards its goals and so differentiating the firm from those around it – customers, suppliers, competitors and, especially, those in government institutions. At the lower level the firm is a body of practical knowledge or ‘organizational routines’ peculiar to the firm, the key to its identity (Nelson *et al.*, 1982). The notion of ‘communities of practice’ is also much bandied about (Wenger *et al.*, 2002).

At each level there is a different notion of the firm, and of what managers do for it. At the upper level management is about using data to make optimal decisions about the acquisition and disposition of the firm’s assets, both tangible and intangible. The answers lie in the data, objectively, to be teased out using the analytic techniques we teach in Business School. But at the middle level management is about (a) constructing or establishing the firm’s unique pattern of meaning, and (b) ensuring employees share it. These imply quite different, and more significant, managerial contributions. At the same time such meanings are often to be negotiated with other people, so that the intellectual vantage point is one of less than complete control. At the lower level managers are trying to create and select best practices, facilitate their generation, and sometimes spread their application. Here managers may be little more than observers, perhaps able to stifle some practices and support others through their resource allocation decisions. The confusion is that for most managers their firms comprise all of these notions and maybe more. Parsing the KM literature according to these three underlying notions of the firm and the KPs being addressed helps clarify the literature and resolve some of its apparent confusions.

At the same time this we can now add to the range of managerial KPs – defined according to the three types in Figure 1 – by noting those arising in the relationships between the three levels. E.g. for practice to be managed it must be measured. Yet to be measured means to be given meaning – so linking back



up from the lower level to the middle and upper levels. This is completely different matter from making the lower level knowledge explicit and thereby pulling the associated KPs back to the upper level. We know enormous efforts are made in every organization to measure the results of activity which are not well understood. Selling and software programming may be examples. Years of work on 'structured programming' have not adequately eliminated the craft aspects of such production. So managers often try to control programming by structuring its context and motivating the programmers to control their own work rather than by 'deskilling' it and requiring employees to stick to fixed standards and routines designed by production experts (Wood, 1989).

There are many debates about whether corporate work is becoming more craft-like or more routinized, with the bulk of opinion suggesting that management must now find new and better ways of dealing with the 'craft' dimension that is increasingly typical of today's 'knowledge workers' – who also 'take the company's assets home with them in the evening' (Reich, 1992). At the same time we might do well to pay more attention to the debates among the accountants, in particular activity-based accounting and the contrast of 'financial' and 'managerial' accounting practices (Johnson, 1992; Johnson *et al.*, 1987).

The field of knowledge management covers all these topics and more, but has not evolved in a way that makes the differences between them at all clear. Perhaps the most important insight underlying the KM field, typically attributed to Simon, is that management's scarcest resource is its attention. The principal contribution management academics can make to practitioners is not to tell them how to do their jobs - that would be unacceptably arrogant. Rather it is to help managers leverage their talents and competencies by minimizing wasted attention. The KM field is clearly important in this respect. For instance the notion of tacit knowledge is immediately useful even if we cannot be clear about the term for it helps managers appreciate the limits to what a structured data-centered approach can achieve and how certain kinds of delegation to

professionals and those whose experience teaches them directly may be inevitable.

The distinction between data and meaning is useful in helping managers appreciate the need to develop and share meaning, something that cannot be communicated in the way that data is communicated throughout the firm. To direct the organization it is crucial to share meaning, but it is also wasteful to communicate data to other than those whose functional responsibilities demand it. After all, the organization is designed around a division of labor, not around the idea that everyone should know everything. So a discussion of the three level model can help managers towards a better appreciation of (a) the nature and variety of the organization's knowledge activities and problems, and (b) how their attention and priorities might be better allocated.

All this is pretty pedestrian. Indeed it could be done, as it has been for years, without any mention of knowledge – a risky concept. So I believe that real value in the KM approach is that it enables us to see beyond the limits of the program implied above.

The first additional dimension is to consider the generation of organizational knowledge at the same time as its management. Managers need to manage their organizations' learning processes as well as those of communicating, storing, measuring, inventorying and applying the knowledge produced. Note the assumption that knowledge, knowing, and learning differ. The handbooks mentioned above typically include some 'organizational learning' literature – though sometimes this is addressed and summarized separately e.g. (Cohen *et al.*, 1996; Dodgson, 1993). Again it is useful to parse the learning literature along the lines of Figure 1. The formal innovation literature, and the debate about exploration versus exploitation, tends to lie at the knowledge-as-data level (Howard *et al.*, 1992). Economists are naturally interested in sketching an abstract 'economics of learning'. Only when it gets into the 'human factors' does

the literature address the meanings and motivations of the employees (Dodgson *et al.*, 1994; Dougherty, 1992; Leonard-Barton, 1995; Loveridge *et al.*, 1990; Tushman *et al.*, 1997). The management of such learning differs markedly at the three levels, just as does the management of the consequences of successful learning. Again, we can do something useful by clarifying the processes of linking the learning processes at the different levels.

A second additional analytic dimension is that of power, both managerial and organizational, a reminder that we must attend to Francis Bacon's dictum that 'knowledge is power'. The resource-based view is grounded in the perception that the possession of knowledge-as-data becomes strategic when it can be translated into economic power i.e. a rent-stream (or Marshallian quasi-monopoly) (Barney *et al.*, 2001). At the second level power means something quite different, for it relates to management's constrained ability to create, control, and impose meaning. The most fundamental aspect of the employment relation is the employee's agreement to adopt the employer's pattern of meaning – which it is the managers' responsibility to produce. This is a fine concept but turns out to be remarkably contested in practice (Edwards, 1979). An entire sub-field of organizational theorizing deals with the need to exercise power in order to secure agreement over meanings, and with the dangers of revealing the power used to achieve this (March *et al.*, 1958). Finally, at the level of implicit or collective practice, power implies direct control of action rather than of the thought that shapes action, again a quite different matter. Thus the notion of power and its exercise within the organization can be clarified by intelligent parsing using Figure 1.

Managers are also vitally concerned with power relations between their firm and others beyond its boundaries. At the upper level we can see struggles over the possession of knowledge-as-data, firms' reliance on the institutional arrangements for establishing and protecting intellectual property-rights (IPRs) and KPs of appropriation and application (Teece, 2000). Much of the impetus

behind industry lobbying in Washington is the need to influence the power relations at this level. Likewise the problems being addressed by the 'new institutionalism in organizational analysis' relate to power relations at the middle and lower levels as firms are obliged to interface their patterns of meaning and activity with those of power-holding outsiders (Powell *et al.*, 1991). Only power produces 'isomorphism'.

In summary, I believe KM is far from being a fad, but it is in jeopardy because it is seriously mis-construed. It is better understood as a discussion about how managers might respond to a variety of knowledge-based problems or knowledge failures. Once these are parsed into three broad categories – data, meaning, and practice – the options are clearer.

At the same time we can see what has attracted so much attention. Prusak, intimately involved in KM's recent growth and IBM's Knowledge Management Institute, argues that KM has come to the fore because of (a) advances in IT, (b) globalization, and (c) greater theoretical understanding of the economics of knowledge (Prusak, 2001). As we consider Figure 1 it might also be that today's managers no longer accept the pre-suppositions that have shaped business school curricula for so long: that appropriate data is freely available, so that KPs at the upper level can be ignored, and that action is so effectively controlled by decisions at the middle level that implementation issues and KPs at the lower level can be ignored. This dismissal by assumption of the KPs at the top and bottom levels of Figure 1 pushed the bulk of the business school's 'analytic action' into the decision-making activity at the middle level – and left many managers behind, wondering why their practice was so little supported by the academics' theorizing. In spite of Simon's well-appreciated critique of rationality, we have not been overly successful in moving the analysis to other levels and thereby paying appropriate attention to managers' other responsibilities and modes of operation. KM gives us new leverage in this respect.

Finally, as is argued centrally in one of the more insightful KM books (Amin *et al.*, 2004), there is the growing need to address the dynamics within which firms, employees and markets all adapt and evolve. Managers know well that they are embedded in shifting fields of power, meaning, and activity. The whole impetus behind the organizational learning analysis is not merely that organizations learn, rather it is that the firm might be able to change itself. There is little in the management literature that moves us beyond direction (planned change) or equilibration as modes of change. Again, by parsing the literature of organizational change, we can get greater clarity. Fortunately there is a great deal more to be said about KM, which creates the possibility of bringing academics and practitioners together into a much more fruitful relationship.

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