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REVIEW ARTICLE

The Spectrum of (*Explacit*) Knowledges in Firms and Nations

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Tacit Knowledge in Organizations
Philippe Baumard
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Introduction

The economic value of knowledge in explaining the growth of Western Europe and North America in the last half-millennia is central to knowledge capitalism.[1] Marx theorized that knowledge is a major factor in production and illustrated how knowledge was constructed (e.g. chemistry) and sold for a price (e.g. patents). The packaging, selling and buying of knowledge for a price is commodification. The commodification of knowledge was already well established in sixteenth century Europe. That mechanism of commodification was accelerated with the founding of America where explicitly formulated knowledge was part of the American concern with formalization as the base for developing expert systems covering huge distances across both time and space.[2]

The American approach to information processing has been exceptional. Beniger[3] traces how the relationship between knowledge and information became obscured so that in the modern, positivist period explicit information became the objective. Military contest provided an impetus to developing software expert systems that contained the utopian image of perfect future control. The early development of computing power—although slow and somewhat prosaic—provided an image of *usable* information. Those developments highlighted and indeed elevated explicit, formalized notions of knowledge as in the use of UNIVAC computers in the Vietnam War. The analytic power of formulaic expert systems and abstract models was highly prized. These also demonstrated the practical use of heuristic knowledge in the form of ratios in order to structure both firms and society.

In the past two decades the commodification of knowledge has quickened and has been qualitatively transformed in a transition that creates a new mode of capitalism.[4] Two decades ago attention was focused on the embodying of explicit knowledge in information technology, in its software and in the patterns discerned from the data warehouses that can now be immediately analyzed. That focus has continued and spawned a whole array of new occupations in firms and new, highly profitable roles for consultancies. The international role of the consulting industry was transformed. These information systems were proclaimed as the new knowledge by the supply industry and

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their claim convinced the post-modern theorist Lyotard[5] that the performativity of knowledge had arrived. This continues under the brand name of 'knowledge management', but was challenged in the mid-1980s by critics proclaiming the obvious neglect of tacit knowledge.

Lucy Suchman's book *Plans and Situated Knowledge*[6] exemplified the massive shift of attention to the role of tacit knowledge and to the existence of communities of practitioners in tacit knowledge without whom capitalism would collapse. Since then social scientists have argued that we should be more interested in 'knowing' and tacit knowledge than in knowledge itself. [7]

However, more recently there has been a growth of attention regarding the notion of a spectrum of knowledges (e.g. aesthetic knowledge) and of combining explicit and tacit in the same framework. Clark[8] refers to these as explacit theories.[9] The best-known example is knowledge creation as formulated by Nonaka and Takeuchi.[10] Baumard, in another attempt at synthesis, builds upon Nonaka and Takeuchi for his theory of corporate recovery. Baumard also claims that 'tacit knowledge in organizations' provides the essential basis for handling corporate turbulence.

Baumard, along with Nonaka and Takeuchi, shares and exemplifies the strong belief that firms contain valuable, yet unknown, tacit knowledge that is being wasted through a lack of understanding. However, two in-depth, longitudinal case studies of strategic innovation in Birmingham, England at Rover and Cadbury suggest a more complex and interesting dynamic.[11] These two very different firms have faced considerable challenges to their strategic directions. Rover possessed extensive tacit knowledge in its occupational communities based in the local industrial district regarded by Marshall as a model of flexible production. However, Rover also needed to exnovate—to remove—these communities of practice in order to survive. Rover needed to acquire new areas of knowledge. Sadly the pace of exnovation and innovation in knowledge was too slow. Cadbury's international success over the past three decades in shifting its marketing strategy is based on a complex process that involved both removing certain mechanisms of corporate governance that protected 'old knowledge' and also removing an array of specific occupational communities. Cadbury has constantly engaged with novel, emerging forms of knowledge about positioning the brand in the major markets, especially the USA. Cadbury's knowledge creation was always different to that of the industrial district of Birmingham, but was inserted into a distinctive social community.

There is considerable anecdotal evidence that suggests existing knowledge, tacit and explicit, can undermine future performance. Recent conferences on knowledge management point to the need for refining the claims about tacit knowledge and for scrutinizing the claims for knowledge creation made by Nonaka and Takeuchi. These conferences implicitly highlight the importance of a spectrum of knowledges. So, does Baumard's robust promotion of tacit knowledge contain the answers to corporate recovery? We shall start by explaining the growing critique of tacit knowledge. We suggest that tacit and explicit knowledge cannot be usefully prized apart—there is explacit knowledge and a spectrum of knowledges. Then we examine Baumard's theory and his '*in-depth*' case studies. Finally we shall suggest that firms can have finite capabilities and operate in zones of maneuver. In short, the claims for tacit knowledge represent heroic assumptions …

Towards a Spectrum of Knowledges: The Limits of Tacit Knowledge

In the contemporary knowledge literature the frequent mention of Penrose[12] and her theory of managerial expertise clearly reveals that knowledge was the missing element in

the seminal account of managerial work by Mintzberg.[13] Yet, there are deep controversies over what is meant by organizational knowledge, by the dynamics of knowledge, their relationship to organizational learning and the role of the wider, national context. This section reviews the themes and issues relevant to the debate around the role of tacit knowledge.

Eight problem areas illustrate the challenge.

First, the dichotomy between explicit knowledge and tacit knowledge has animated four decades of polemic. Exponents of explicit knowledge tend to define their interests as 'knowledge management'. Their metaphors treat knowledge as objects, bricks, granules, as being parceled, chunked, black-boxed, captured and similar. These metaphors emphasize the notion of 'passive knowledge warehouses' (e.g. *Strategic Management Journal*) and tend towards a linear vision of knowledge creation with stage rather than state models. The cognitive dimension is dominant and knowledge is presented as discrete, stable, objectified, embodied and unchanging. Nonaka and Takeuchi argue that attention to explicit knowledge is uniquely Western and especially American. It is technicist, too rationalistic and naively functional. Through the influence of information technology there is an array of metaphors about knowledge as 'mining' and as 'data warehouses' which suggests that all knowledge is useful. Also some consultancies have created the role of 'keeper of the knowledge capital' (e.g. Andersen Consulting[14]).

Promoters of tacit knowledge emphasize that it is intangible, situated and embedded in communities of practice with shared meanings. They highlight the nature of social apprenticeships (e.g. legitimate peripheral participation!) as the means of acquisition. There are many excellent case studies showing how a wide diversity of occupational and professional skills involves learning from other practitioners (e.g. navigating giant aircraft carriers into port). The practice of strategic marketing requires the learning of firm-specific knowledges about the timing of product launches and the like.[15]

The debate between knowledge management (explicit) and organizational learning (tacit) has been in the heartland, but recent reviews of 'knowledge management' suggest that the dichotomy is the problem. The insightful review by Weick and Westley[16] reformulates the controversy and argues that 'managing organization knowledge' and 'organization learning' are two identifiable yet related domains of academic and practical work. For the moment this fusion might be expressed as the plurality, or spectrum, of explacit knowledges.

Second, there is the problem of the temporal dynamics of knowledges in the long-term of several decades and in the shorter period required for corporate recovery: the decade. One of the most important attempts to reformulate the long-term role of knowledge in firms has been associated with the re-interpretation of Schumpeterian long-wave theory by Freeman and colleagues. They contend that there are 40–50 years of waves animated by the commercial exploitation of new technological possibilities. These involve the early creation and later routinization of knowledge coupled with the creative destruction of knowledge whose commercial value is downgraded. For example, the development of software-based expert systems in the current long-wave has ablated whole strata of activity by clerical workers and managers. This can be seen in sectors such as retail banking, where there have been massive changes, especially in the USA. The decade long required for corporate recovery is illustrated by the case studies of Rover and Cadbury, mentioned earlier. The dynamic understanding of knowledge in firms does much to explain why ICI never became an '*awakening giant*' as suggested by Pettigrew.[17] Commercializing ICI's major strength in drugs required demerger.

Survival in chemicals required total transformation of the knowledge assets. These knowledge dynamics are not obviously delivered through time–space snapshots[18] or in compressed and incomplete processual theorizing.[19] So far there is little recognition of the tempo-spatial issues of knowledge and knowing.

Third, the spatial competition between contexts and national systems of innovation appears in national differences in the ownership of knowledge and in capacities to be appropriating rent earning knowledge. For instance, the story of mass production can be read as a very American story, an illustration of American exceptionalism.[20] By way of explaining the importance of the local context, it is worth asking the question 'would Henry Ford have succeeded had he established his factory in the English West Midlands rather than Detroit?' We would argue that this would be unlikely. The founding location possessed distinctive social and institutional properties, which combined to provide key learning experiences into the mastery of mass production. We would argue that such conditions were not present in the English West Midlands.

Fourth, there are too many prescriptive accounts with too little systematic evaluation of concepts against empirical evidence. Organizational knowledge as a domain is casually defined and its relationship to knowledge in the wider context is not made clear.[21] There is a great deal of suggestive and anecdotal material, but few studies of the knowledge found in particular sectors. Yet, rarely mentioned studies of knowledge and social capital[22] applied to baseball[23] and American football[24] reveal an array of knowledges including aesthetic, emotional and intensely dispositional. They also point to an important dynamic around the role of consumption (see below).

Fifth, insufficient attention has been given to the knowledge about and of consumers and of consumption. Organization Studies and Strategic Marketing have been remarkably silent on the subject of consumerism. It is a topic of inquiry that within the academy has little history, despite the visible political economy of signs that is a commonplace part both of corporate and personal life. This gap comes about through assumptions of explicit and tacit knowledge held by consumers but rarely examined or used by organizations, and an inability to recognize the spectrum of knowledges used by consumers in their relationships with organizations. Thus, for example, aesthetic and/or emotional knowledge and social capital may outweigh functional knowledge in choices made by consumers for brands of any kind. This dynamic around the role of consumption has been identified and explored by a few researchers[25] but there is little evidence that it has been understood or used in the creation of knowledge about consumers. The so-called customer-oriented company of the 20th century[26] had little more to do with understanding the spectrum of consumer knowledge than to finding the best fit between products developed and potential customer uptake. Technologies developed in retail banking in recent years may be revolutionary but are often essentially cost-cutting exercises designed to structure consumption along appropriate lines to meet the organizational needs. This has led to inappropriate action taken by organizations (ATM charging) and responses made by consumers which have not been anticipated by the organization.[27] When done without understanding how consumption reacts to those changes in terms of the knowledge and relationships used by consumers, problems can arise as with Marks & Spencer's ill-fated expansion in 1998, as reported by Sir Richard Greenbury in a recent BBC Radio 4 interview. The need to appropriately conceptualize consumer behavior by organizations requires attention to the spectrum of knowledges within the consumption orbit and how those knowledges are used.

Sixth, there is a lack of systematic critique of key contributions, especially of Nonaka and Takeuchi. For example, Nonaka and Takeuchi are both critical of American predispositions to formalize information and explicit knowledge whilst commending

American football as an exemplar of knowledge creation.[28] There are remarkably few attempts to formulate an array of propositions about knowledge.

Seventh, the content of knowledge is rarely examined. Spender's[29] account of 17 propositions frequently found amongst firms in the foundry industry is rare and revealing. Organizational knowledge involves generalizing to subsume particulars under the generic categories: an investment in categories. Thevenot[30] observed that when management as a cadre construct systems of categories for organizing their work they are investing in categories. The investment in categories is mainly taken-for-granted and often unrecognized. This investment in categories is more consequential, he argues, than the investment in buildings and equipment. Firms unwittingly invest in categories and languages as expertise even though they do not know they are doing this. These categories are embedded in proposition like elements that are carried across contexts and used generically as in Bourdieu's notion of habitus as generative rules. The languages are located in 'recurrent action patterns' or 'action routines' and these 'containers' shape the exercise of judgment and discretion in the face of ambiguity (e.g. strategic time reckoning). The emerging consensus is that knowledge is heterogeneous, contested, distributed, partly articulated, inherently complex, ruptured and suffused in asymmetrical power relations.

Eighth, knowledge is also inherently political and hence part of a configuration of conflicting interests. Too little attention has been given to the politics of distributed knowledge and a division of knowledge amongst the major interest groups within and between firms. In fact, Nonaka and Takeuchi are remarkable for their silence on the politicized nature of knowledge. Their account of knowledge could be mistaken for a corporate utopia whereby the sharing of knowledge is 'good' and the 'inevitable' corollary of the 'hypertext' organization. Three nano-seconds in a sociological library give the lie to such a suggestion. Rather, as Clegg[31] notes, power is a master concept to the whole conception of organization. Relating this to organizational knowledge, it is less a case of Bacon's dictum (Knowledge is Power) and more a case of Foucault's conflation (Power/Knowledge). Returning to Nonaka and Takeuchi,[32] it should be patently obvious that their 'quintessential knowledge-creation process', namely, 'when tacit knowledge is converted into explicit knowledge',[33] involves the encroachment into the territory of the vested interests of different groups. For instance, an attempt to 'manage' knowledge[34] in a privatized electricity company led, among other things, to a Schumpeterian creative destruction of the cadre of professional engineers that had dominated the organization for most of its history. In other words, the knowledge management programme prised open the Latourian blackbox: the mystique of what it was that professional engineers did was 'made explicit' and decoupled from the embodied expertise of the engineer. Put simply therefore, knowledge management was far from neutral; its power effects had profound consequences for the members of a professional group.

The eight controversies confirm that the wave of excitement led by the management gurus (e.g. Drucker) has established organizational knowledge as a major priority on the agenda. Does Baumard manage to suggest which cluster of directions might be most fruitfully followed in the next decade?Before we move to the substantive, it is worth noting that Professor Baumard, currently at the University of Aix en Provence in Strategic Marketing, has had considerable 'international experience', having had links with NYU in the United States and UTS in Australia. The rankings on Amazon.com reveal that *Tacit Knowledge in Organizations* is proving to be a popular seller. He is one of the scholars that have attempted to make sense of knowledge in relation to organizations. More specifically, his work is an example of explacit theorizing: he has sought to integrate tacit and explicit knowledge into a single framework. The debt that Baumard

owes to Nonaka is manifest. This is seen no more starkly than in his cartographic attempts to chart the transitions—or to use his term the collisions—of knowledge. Baumard commences the book by drawing a distinction between traditional (cognitive and structural) theories of knowledge and that of Nonaka. He then runs through Nonaka's work, identifying both knowledge transitions (i.e. tacit to explicit) and the knowledge spiral. The issue becomes the creation, application and preservation (but not the destruction) of knowledge. His underlying proposition is that, in the dynamics of knowledge, tacit knowledge is the most important (p. 22). The next chapter introduces his notion of 'Tormented Knowledge'. In short, he produces a discussion of chance events, scenarios that constitute 'puzzling situations', i.e. that are a major challenge to an organization: this is explored through examples such as a tornado hitting Arkansas and the Challenger Space Shuttle disaster. Baumard proceeds to draw a distinction between exogeneous ('in the face of general confusion, (how) people have organized themselves, garnering what knowledge they have and constructing new knowledge', p. 41) and endogenous ('how people can generate disconcerting situations by constructing a reality that then moves beyond their control', p. 41) causes of 'puzzled organizations'. In puzzling situations that are exogeneous, he argues that 'repertories of actions are brought into play which take refuge in the recognizable' (p. 49), while in the case of the endogenous there is a tendency to 'think within the thinkable', i.e. in terms of the institutionalized or the recurrent.

Chapter 3 moves on to addressing types of knowledge; this commences with an account of the epistemology of knowledge before turning more specifically to tacit knowledge. Baumard opens up a distinction between automatic tacit knowledge and intentional tacit knowledge; the latter he describes as being 'conjectural wisdom', i.e. 'it is marked by intention because its purpose is to confer, on whoever uses it, an advantage over their contemporaries' (p. 75). Conjectural wisdom is furtive, discretionary and simultaneous. It spurns idealizations and established representations and is embodied in purpose (see p. 55, Table 3.1). The chapter ends with Baumard questioning how organizations can exploit tacit knowledge, and how organizations can protect and enrich tacit knowledge.

Baumard's thesis is threefold: first, that under conditions of ambiguity (the peak of uncertainty) managers of successful firms re-discover their existing tacit knowledge and gain flexibility to face challenges (p. 22). Second, that most managers rely too much on explicit plans and interpretations and therefore over-manage. Third, tormented knowledge (Chapter 3) and the behavior of puzzling situations as in the distinction between (a) thinking within the thinkable; and (b) thinking within the recognizable.

Chapter 4 is essentially a methodology chapter, covering the usual territory. This sets the scene for the four case studies. He claims that the cases are both varied and exemplary. The cases are dependent upon the theory-laden assumptions, such as, 'research into tacit knowledge is today embryonic' (p. 95). His case studies are Quantas, Indigo, Pechiney and Indosuez. The cases are somewhat light and lacking in detail; more particularly they concentrate on events rather than the knowledge base of organization as enacted through tasks. Each of the organizations are faced with puzzling situations, for instance in the case of Quantas it is the late-1980s and the airline industry is in a general state of crisis, i.e. increased competition, over supply etc. In the case of Quantas and Pechiney, both of the organizations 'exhibited a tendency to privilege explicit knowledge when the disconcerting situation first emerged' (p. 199). In both cases, knowledge was de-institutionalized: that is they moved from an institutionalized explicit knowledge towards practical knowledge contained in communities of practice. The smaller organizations in the study, Indigo and the New York division of Indosuez, dealt

with difficult situations through socialization. In short, Baumard argues that in each of the four cases 'the resolution of an ambiguous situation was inscribed in a community of practice; actors elaborated an informal matrix of relationships with each other; actors developed an attitude for tacit complicity; actors employed repertories of actions which were commonly used within the organization; and, actors referred to and relied upon local collective knowledge' (p. 200). From this position Baumard argues that there is a dialectic between tacit (fluid) and explicit (which he refers to as fossilized) knowledge whereby there are immanent difficulties for explicit knowledge to have a capacity to deal with ambiguity. In contrast, organic organizations making use of tacit knowledge are more able to cope with such situations, especially through the mobilization of communities of practice—something that is viewed as being particularly important. Baumard proceeds to articulate a highly normative list of the obstacles and triggers of ambiguity resolution. Baumard finishes the book by outlining a manifesto for organizations, that, among other things, requires:

> this new architecture (organization) has to be able to privilege the formation of tacit knowledge, and its articulation as close as possible to the organization's strategic preoccupations. We can visualize a flexible, decentralized organization, encouraging horizontal and vertical socialization … to make knowledge explicit is to seek security through stabilization and regularity, whereas to privilege tacit knowledge is to gain pertinence through irregularities (p. 223).

What are we to make of Baumard's thesis? Has he, as he claims, refined central parts of Nonaka's message? This is unlikely. While we do not seek to elevate the work of Nonaka, which in view of our eight points above, that must be read as being problematic. At times he seems to reproduce the latent functionalism of Nonaka, while at other junctures he seems to lapse into a transcendental mysticism in relation to knowledge management. Given the nature of his explacit theorizing, it is unusual that no mention is made of the work of Penrose, or the more recent contributions by Boisot. His celebration of tacit knowledge and his identification of it as being integral to dealing with 'puzzling situations' runs the risk of championing tacitness at the expense of everything else. It is an engagement with the problematic of tacit–explicit knowledge without appearing to offer much in the way of sidestepping the current imbroglio. In particular, his notion of explicit knowledge is somewhat vulgar and does not capture the issues of cultural capital that are key to the use of 'explicit knowledge'. The concentration on unleashing tacit knowledge through communities of practice obscures the constraints of the pre-existing organizational context and it is not clear how it would overcome the adaptation–selection problem.

The challenge for Baumard's thesis is in terms of its performativity. For instance, could an application of his ideas have saved Rover and does it explain Cadbury? What would Baumard's advice to Marks & Spencer be? And, through following it would they become the '*awakening retailer*'?

Notes and References

1. D. Landes, D., The Wealth and Poverty of Nations: Why some are so Rich and some so Poor, Little, Brown and Company, London, 1998.
2. T. Hughes, *American Genesis*, John Hopkins Press, Baltimore, 1990; A. Giddens, *The Consequences of Modernity*, Polity Press, Cambridge, 1990.
3. J. Beniger, *The Control Revolution. Technological and Economic Origins of the Information Society*, Harvard University Press, Cambridge, MA, 1986.

4. S. Lash and J. Urry, *The End of Organised Capitalism*, Polity Press, Cambridge, 1987; S. Lash and J. Urry, *Economies of Signs and Space*, Sage, London, 1994.
5. J.-L. Lyotard, *The Post modern Condition*, translated by G. Bennington and B. Massumi, University of Minneapolis Press, Minneapolis, 1984.
6. L. Suchman, *Plans and Situated Actions. The Problem of Human–Machine Communication*, Cambridge University Press, Cambridge, 1988.
7. F. Blackler, 'Knowledge, knowledge work and organizations: an overview and interpretation', *Organization Studies*, 16, 6, 1995, pp. 1021–46; F. Blackler, 'Knowledge management', *People Management Magazine*, 22 June 2000.
8. P. Clark, *Organisations in Action*, Routledge, London, 2000.
9. M. Boisot, *Information Space: a Framework for Learning in Organizations, Institutions and Culture*, Routledge, London, 1995.
10. I. Nonaka and H. Takeuchi, *The Knowledge Creating Company*, Oxford University Press, New York, 1995.
11. R. Whipp and P. Clark, *Innovation and the Auto Industry*, Frances Pinter, London, 1986; C. Smith, J. Child and M. Rowlinson, *Reshaping Work. Innovation in Work Organisation—The Cadbury Experience*, Cambridge University Press, Cambridge, 1990.
12. E. T. Penrose, The Theory of the Growth of the Firm, Blackwell, Oxford, 1959.
13. H. Mintzberg, *The Nature of Managerial Work*, Harper & Row, New York, 1973.
14. C. Carter, 'Keepers of the knowledge capital: legislating for the new millennium', *Management Decision*, March 2000a.
15. Clark, 2000, *op. cit.*
16. K. Weick and F. Westley, 'Organizational Learning: Affirming an Oxymoron' in S. Clegg, C. Hardy and W. Nord (eds) in *Handbook of Organizational Studies*, Sage, London, 1996, pp. 440–58.
17. A. Pettigrew, *The Awakening Giant. Continuity and Change in ICI*, Blackwell, Oxford, 1985.
18. Boisot, *op. cit.*
19. Pettigrew, *op. cit.*
20. S. M. Lipsett, *American Exceptionalism. A Double Edged Sword*, Norton, New York, 1996.
21. Nonaka and Takeuchi, *op. cit.*
22. P. Bourdieu, *Distinction. A Social Critique of the Judgement of Taste*, Routledge, London, 1998 (first published in English in 1984).
23. D. Holt, 'Does cultural capital structure American consumption?' *Journal of Consumer Research*, 25, 1, June 1998.
24. P. Clark, *Anglo-American Innovation*, Du Gruyter, Berlin, 1987.
25. S. J. Levy, 'Interpreting consumer mythology: a structural approach to consumer behavior', *Journal of Marketing*, 45, Summer 1981, pp. 49–61; D. B. Holt, 'How consumers consume: a typology of consumption practices', *Journal of Consumer Research*, 22, June 1995, pp. 1–16; S. Fournier and J. L. Yao, 'Reviving brand loyalty: a reconceptualization within the framework of consumer–brand relationships', *International Journal of Research in Marketing*, 14, 1997, pp. 451–72.
26. P. Doyle, Brand Equity and the Marketing Professional, *Journal of the Marketing Society*, 1, 1, 1998, pp. 46–49.
27. I. Szmigin and G. Foxall, 'Three forms of innovation resistance: the case of retail payment methods', *Technovation*, 18, 6/7, June/July 1998, pp. 459–68.
28. Clark, 2000, *op. cit.*
29. J. C. Spender, Industry Recipes, 1989.
30. L. Thevenot, 'The investment in forms', *Social Science Information*, 23, 1, 1984, pp. 1–45.
31. S. Clegg, *Frameworks of Power*, Sage, London, 1989.
32. Nonaka and Takeuchi, *op. cit.*
33. *Ibid*, pp. 230–1.
34. C. Carter, *The Strange Death of the Professional Engineer*, University of Leicester working paper, 2000b.