A New Taxonomy Of Knowledge Management Theory: The Turn To Knowledge As Constituted In Social Action

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ABSTRACT:

This article offers a new taxonomy of KM theory which will enable the practitioner to more readily identify theories of interest. Theory is classified on two bisecting continua: knowledge as object vs. knowledge as social action, and the unit of analysis' focus on organizational knowledge vs. personal knowledge. A trend towards a more ecological view of knowledge as social action is shown. Secondly, the paper focuses on the most influential theory in the domain of KM – the dynamic theory of the knowledge creating firm, contrasting this dominance with the concerted criticism to which it is subject. A fresh approach to the study, practice and theorizing of KM is offered as an alternative, building on existing work.

Keywords: *Taxonomy, Knowledge management, Social action, Organizational knowledge, Personal knowledge*

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1. Introduction

From any perspective, the Knowledge Management (KM) landscape is a complex one, not least in the diverse definitions of knowledge itself (e.g., Grant, 1996; Quintane et al*.,* 2011; Tsoukas and Vladimirou, 2001; Spender, 2002; Crane 2012). This state of affairs undoubtedly impacts on many of the other debates in KM: the definition of KM (Bouthillier and Shearer, 2002), ethical issues associated with the management of knowledge (Gourlay, 2006), the commodification and reification of knowledge (Smith, 2005), reportedly high failure rates (Virtanen, 2011), the question of how to measure knowledge (Spender), whether knowledge is personal or organizational, or both, and cultural specificity (Despres and Chauvel, 2002). All of these issues have implications for research and practice. However, if the definition of knowledge is the hostage of such considerable debate (e.g., Quintane et al.; Bhatt, 2001; Grant and Qureshi, 2006), what of KM theories? Nonaka and Takeuchi are widely credited as the progenitors of modern organisational KM through their profoundly influential book, "*The Knowledge Creating Company,"* published in 1995 (e.g., Umemoto, 2002; Grant, 2007; Virtanen, 2011; Tsoukas, 2011), yet this has come in for some considerable criticism (e.g., Gourlay).

This paper presents a new taxonomy of KM theory, with some of the leading theories critically reviewed within its context. The discussion particularly focuses on the most influential theory in the KM field, and the criticism in which it is steeped. A fresh approach to the study, practice and theorising of KM is offered, which, as will be shown, extends the current trend for a more ecological perspective of KM.

2. Attempting To Rationalise The Theoretical Landscape

KM's spectrum of theory is broad, divergent and complex. For instance, in his review of 160 KM frameworks and theories, Heisig (2009), while finding commonalities amongst some KM success factors, finds no such consensus over the nature of knowledge. Despres and Chauvel (2002) count 72 different KM theories, reporting scant agreement over the nature of knowledge, but a broad consensus that people are the cornerstone of KM with most treating knowledge work as social action. It is proposed here that KM theory can be organised into the bisecting continua of

organizational knowledge vs. personal knowledge (epistemology), and knowledge as object vs. knowledge as social action (ontology). (See figure 1). Interestingly, Spender (2002) proposes a similar formula when he argues that the KM field can be split into two distinct domains: knowledge as object versus a rejection of reification and the transformation properties of knowledge.

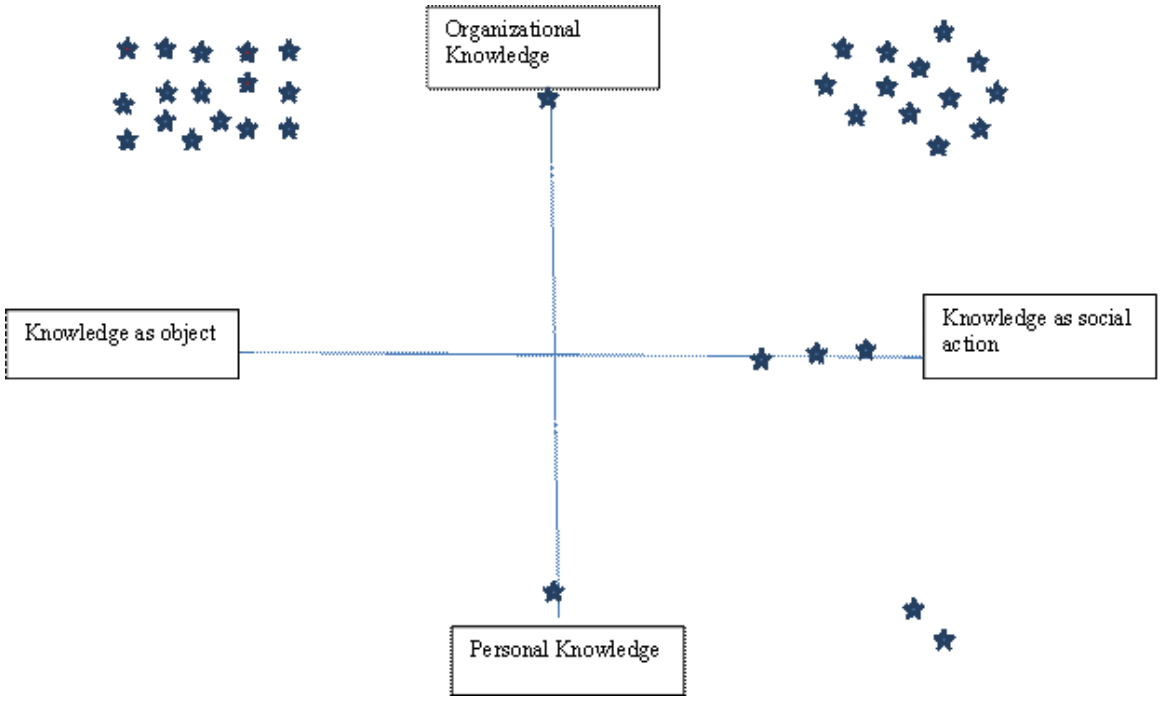

Figure 1: A Taxonomy Of KM Theory - Each 'Star' On The Axes Represents A Theory Or Framework.

The theories and frameworks to which Figure 1 refers are detailed in Table 1. This table shows the detail of the source for Figure 1, with all theories shown chronologically to elicit any developing

trends. Since the earliest 1990s, theory has largely attended to organizational knowledge, according to this sampling. But, at the same time, there have been two clearly demarked camps – those who posit knowledge as accomplished in social action, and those who take a reductive approach. So while Nonaka and his colleagues' theory (e.g., Nonaka and Takeuchi, 1995) has, beyond doubt, proved the most influential and best known, there has been a persistent voice offering a radically different perspective.

Table 1: Specifies The Source For Figure 1.

*Nonaka's 1991 and 1994 papers are included as one because they are more or less the same work.

The 'B' in brackets indicates that the selected classification is borderline.

Authors (Year)	Main Focus	Focus on Organization	Focus on Personal	Objectifying	Social Action
Nonaka (1991, 1994)*	The knowledge creating company	X		X	
Blackler (1993)	Organizations as Activity Systems	X			X
Blackler (1995)	Activity Theory and 'Knowing'	X			X
Nonaka & Takeuchi (1995)	The knowledge creating company	X		X	
Nonaka et al (1996)	Technology in support of the knowledge creating company	X		X	
Quinn *et al.* (1996)	Managing Professional Intellect	X		X	
Leonard & Straus (1997)	Creative Abrasion	X (B)			X (B)
Kleiner & Roth (1997)	Learning Histories	X			X (B)
Nonaka & Konno (1998)	The concept of 'Ba' as the foundation for	X		X	

	knowledge creation				
Brown & Duguid (1999)	Architecture for Organizational Knowledge	X			X (B)
Cook & Brown (1999)	Generative Dance between Organizational Knowledge and Organizational Knowing	X			X
Wenger (2000)	Communities of Practice and Social Learning Systems	X			X
Markus (2001)	Theory of Knowledge Re-use	X		X	
Tsoukas & Vladimirou (2001)	Organizational Knowledge	X	X		X
Earl (2001)	'Schools' of Knowledge Management	X		X	
Bhatt (2001)	Knowledge management as an interaction between technologies, techniques and people.	X		X	
Choo (2002)	Organizational Knowing	X		X	
Boisot (2002)	'I-Space': creating and sharing knowledge	X	X		X

Grant (2002)	Knowledge Based View of the Firm		X	X (B)	X(B)
Leonard & Sensiper (2002)	Tacit Knowledge and Innovation: the 'Innovation Funnel' theory	X			X (B)
Thompson & Walsham (2004)	Context as an inseparable art of Knowing	X			X
Gourlay (2006)	Knowing How and Knowing That	X			X
Lytras & Pouloudi (2006)	Framework for Knowledge Management from the Learning perspective	X		X	X
Leonard (2007)	Transferring tacit knowledge within organizations	X		X	
Prusak & Weiss (2007)	Importance of social groups	X			X (B)
Lee & Lan (2007)	Conversational Collaboration and Pillars of Collaborative Intelligence	X			X (B)
Ichijo (2007)	Knowledge enablers	X		X	
Buchel (2007)	Creation and transfer of tacit knowledge within organizations.	X		X	
Nonaka & Toyama (2007)	Theory of the knowledge-creating	X		X	

	firm				
Weber (2007)	A new framework to address failure factors in repository-based knowledge management initiatives.	X		X	
Ehin (2008)	Un-managing Knowledge Workers	X		X	
Guzman (2009)	Practical Knowledge – a framework		X		X
Burford *et al.* (2011)	The Practice-based Theory of Knowledge	X			X
Jakubik (2011)	Framework for Knowledge Creation: Becoming to Know	X	X		X
Rai (2011)	Integrative framework for organizational knowledge management and organizational culture.	X		X	
Tsoukas (2011)	Phenomenological Framework for Tacit Knowledge		X		X

The sampling of KM theory (36 in total) on which this taxonomy is based is by no means exhaustive. A slight majority of theories are located along the 'knowledge as social action' axis (18, two of which are credited to Blackler, 1993, 1995), which is in fact consistent with Despres and Chauvel's (2002) findings. But in the present viewpoint, these are split based on their primary focus on personal or organizational knowledge, with a number showing a bilateral focus. This contrasts with Despres and Chauvel's finding that theory, in the main, denies the existence of

organizational knowledge. The group of theories occupying the knowledge as object space (17, five of which are credited to work by Nonaka and his colleagues: e.g., Nonaka and Takeuchi, 1995) are all largely focused on organizational knowledge – which is logical. If a theory posits knowledge as an object, it seems reasonable to conclude that, in this theoretical landscape, knowledge is seen as an object (asset) of the *organization*.

It is important to draw attention to the subjective nature of this categorization of theory. The object/social action classification is based on how authors treat the subject of their theorising – in some cases (e.g., Blackler, 1993, 1995; Gourlay, 2006), the author expressly states the nature of knowledge as being social action, while with others, it is more an interpretive choice based on the descriptive and action language used to describe knowledge and how it is managed. On the Organization / Personal classification, the interpretation is more straight-forward: is the theory /framework more focused on one or the other, or is it focused on both – *as units of analysis*? Admittedly, a different researcher may arrive at a different interpretation.

3. Knowledge As Social Action

3.1. The 'Personal' As The Unit Of Analysis

A strong advocate of a focus on personal knowledge is Grant (1996, 2002), making a clear reference to personal knowledge as the 'unit of analysis', while criticising theories which subscribe entirely to organizational knowledge. In his take on the 'knowledge-based view of the firm', Grant proposes that a firm's purpose is to coordinate teams of specialists so that they can integrate their knowledge to generate new products and services. In this model, the goal is not knowledge transfer, but knowledge integration, although this is arguably splitting hairs.

The knowledge-based view of the firm is often interpreted as a theoretical position (e.g., Guzman, 2009), but Grant (2002) himself questions this. None-the-less, according to Grant, it is the knowledge constitutive of persons that is the valued asset, and that this can only be leveraged by integration through team-work. By implication, Grant reifies knowledge as the object of integration mechanisms: rules and directives, sequencing, routines, group problem solving and decision making. There is also a strong implication of the commodification of knowledge: "(K)knowledge is the overwhelmingly important productive resource in terms of market value..." (p 136). Yet, if one were to set aside those particular references, Grant is also arguably positing knowledge as social action in his emphasis on social integration practices.

3.2. Against An Epistemology Of Possession

In this project, Grant (2002) invokes the discourse of possession, an approach which Cook and Brown (1999) take issue with. While Cook and Brown's theory firmly rests on the notion of 'knowing' as social action, their focus is more on the organization. They argue that the notion of personal knowledge is limiting because it emphasises one type of knowledge (explicit) above the other (tacit), resulting in a growing literature where "…there typically remains an expressed or implied tendency to treat knowledge as being essentially of one kind," (p 382). Side-stepping the 'traditional epistemology of possession', Cook and Brown argue instead for a view of knowledge as a tool of knowing: "knowing is an aspect of our interaction with the social and physical world, and that the interplay of knowledge and knowing can generate new knowledge and ways of knowing," (p 381). Cook and Brown call this interaction the 'generative dance', casting it as the source of all innovation. In this sense, knowledge is not only used in, but also grounded in action. Consequently, they argue for greater attention to what knowledge work is done – in other words, practice. They arguably soften their case, however, by proposing that the epistemologies of possession and practice, whilst completely separate, are not incompatible: but, it is not clear why Cook and Brown should want to introduce a radically new proposal while clinging on to the traditionalist view. None-the-less, there are synergies between their notion of knowing as action in social contexts and the ideas proposed by, for instance, Tsoukas and Vladimirou (2001), and Blackler (1993, 1995).

There are two other points of interest to draw from Cook and Brown's (1999) work: their criticism of the traditional scientific view of knowledge as something which must be sought, found and articulated – in other words, knowledge as object - and their strong disagreement with the proposal that tacit knowledge can be converted to explicit, and vice versa. This avowal in particular marks this theory as opposition to the influential theory of the knowledge creating firm (e.g., Nonaka, 1991, 1994), although Cook and Brown offer no direct criticism of the latter.

3.3. Knowledge As Practice Contrasted With Knowledge As Possession

Cook and Brown's (1999) framework can be compared and contrasted with that proposed by Guzman (2009), whose theory is located in the 'personal knowledge / knowledge as social action' quadrant. He investigates the nature of practical knowledge, drawing attention to the two polarised positions evident in the literature: practical knowledge (1) held in people's heads contrasted with that (2) situated in practice. Similarly to Cook and Brown*'s* treatment of the epistemologies of possession and practice, Guzman reasons that the two positions are not mutually exclusive. Based on his review of the literature, he offers a new theory with the aim of clarifying the confusing diversity of opinion: "(T)the view that knowledge (rules, for example) necessarily needs interpretation to be applied, and therefore users are the ones who determine when and how to use rules…further supports the complementary character of cognitive (mental) and practice dimensions," (p 87). According to this view, knowledge is seen as a multidimensional concept which can be personal, situated and socially constructed at the same time.

Another important feature of Guzman's (2009) proposal is that he treats dimensions of practical knowledge as 'fuzzy' – they are not clear-cut categories, but rather form a continuum. His aim is to explicate the various 'quadrants' of practical knowledge, linking these to learning strategies. By road-mapping the type of practical knowledge that is to be shared or transferred between persons, the most effective learning approach can be selected and applied. Guzman's theory of practical knowledge has considerable weight and rational validity, but it is not clear if the theory has been empirically tested.

3.4. A Joint Focus: Personal And Organizational Knowledge

Other theories which follow the notion of 'knowledge as social action' include Boisot's (2002) 'I-Space' theory of knowledge creation. Like Guzman (2009), Boisot emphasises the role of social learning as the foundation of knowledge creation, arguing that people do not share knowledge, rather they share *information* which becomes knowledge once internalised to the individual. In Boisot's model, knowledge is highly personal, and relies on shared repertoires between individuals to reach common understandings, which thesis has resonance with Searle's (1969) notion of shared rules in speech acts. Thus his theory has a joint focus both on the personal and the organizational aspects of knowledge. Although using different terminology, the theory is also consistent with the ideas proposed by Tsoukas and Vladimirou (2001), and Cook and Brown (1999), for instance. A divergent theme is Boisot's leaning towards a cognitive understanding of knowledge: "(T)the articulation of knowledge, in effect, calls for two kinds of cognitive efforts: abstraction and codification," (p 68).

3.5. Knowledge, Activity Theory And Activity Systems

Frank Blackler is responsible for some of the most insightful work in the field of KM – and some of the least recognised or understood. Blackler's (1993) '*Knowledge and the theory of organizations'* is based on a modified version of Activity Theory and, similarly to Boisot (2002), he emphasises the central role of social learning. Activity Theory was originally proposed by Vygotsky, working in the tradition of Psychology, and subsequently developed by Engestrom (1987: as cited in Blackler, 1993). This focuses on the material actions and communications processes of persons, constituting these as the focus of study of human activity. The contexts of actions are located within 'activity systems': "…the theory of organizations as activity systems

offers an antidote to simplistic interpretations of the nature of individual knowledge and action, and organizational cultures and competencies," (1993: p 882).

Developing on these ideas, and in proposing that people construct themselves in action as a historically evolving process, Blackler (1993, 1995) is advocating a constructivist approach, as distinct from a positivist or rational-cognitive approach. Consequently, he views knowledge as performative. He is highly critical of the mainstream rational-cognitive approaches to KM, particularly in their reification of knowledge, and their assumption of the rationality of both organization and individual. There is a considerable body of evidence within the discipline of Psychology which supports the inherent irrationality of the human being (e.g., Chater and Oaksford, 2001). Interestingly, Selznick (1948), in his '*Foundations of the theory of organization,"* formulates the organization as a co-operative system of rational action which is at risk from the 'indiscipline' or irrationality of its participants!

Blackler also emphasises the importance of language: "(L)language is the archetypal communal activity, integral to the enactment of practical actions," (1995: p 1039). Accordingly, the lens of research, practice and analysis should be on the activity systems in which knowledge is socially done: knowledge as mediated (e.g., through language), situated (in context), provisional (constantly developing) and contested (the subject of power relations).

Unfortunately Blackler's (1993, 1995) work has been largely over-looked or even misunderstood. However there is recently an apparent shift in popularity towards knowledge as social action and an increasing emphasis on language (e.g., Lee and Lan, 2007). (In the sampling of theories investigated here, since 2008, there are twice as many 'social action' based theories as there are knowledge as object-based theories.)

Blackler's work stands as an early advocate for what could be described as a post-modernist approach to KM and, in this, his ideas have considerable synergy with later theorists such as Tsoukas (2011).

3.6. The Phenomenological Perspective

While Tsoukas and Vladimirou (2001)'s theory is interpreted as sitting on the 'fence' between both organizational and personal knowledge, at the social action end of the taxonomy axis, Tsoukas's later '*phenomenological view of tacit knowledge'* (2011) quite clearly has a focus on personal knowledge. Tsoukas' ideas are grounded in and derivative of those theorised by Polanyi. In his 1962 work, '*Personal Knowledge: towards a post-critical philosophy'* Polanyi offers a detailed and reasoned argument for turning away from the traditional view and practice of the exact sciences - the pursuit of objective knowledge and scientific detachment. Instead he argues for the importance of the scientist – the 'knower' – in the act of discovery and validation of scientific knowledge. Accordingly, the scientist brings to his scientific practice his own skills, commitment and experiences which must necessarily form part of the science. Using Polanyi's arguments, Tsoukas criticises the modern movement towards the de-contextualization of knowledge. Arguing for a phenomenological conceptualisation of tacit knowledge, Tsoukas, as does Polanyi, insists that explicit knowledge cannot exist without the tacit. This personal co-efficient factor suggests that "(K)knowing something, then, is always a contextual issue and fundamentally connected to action…" (Tsoukas: p 521). Synergies with the earlier work of Guzman (2009), Cook and Brown (1999), and Blackler (1993, 1995) are clear.

3.7. 'Knowing How' And 'Knowing That'

Similarly to Blackler (1995) and Tsoukas (2011), Gourlay (2006) is a strong critic of Nonaka's (1994) theory of the knowledge creating firm. He steps aside from the mainstream's general acceptance of the tacit and explicit components of knowledge, instead offering an explanation based on the concepts of 'knowing how' and 'knowing that'. In this paradigm, 'knowing how' is rooted in and characteristic of everyday life, some of which is not capable of articulation, whereas

'knowing that' emerges from the processes of reflecting and theorizing. A further important distinction is his view of these concepts as behaviours. He reasons, then, that to manage knowledge, one must do so indirectly by managing behaviour which, as he warns, raises a whole new raft of issues and the potential to destroy that which one seeks to control. Note the synergies with the ideas proposed by, for instance, Tousakas, through the emphasis on knowing as behaviour, which connects knowledge – knowing something – to action.

3.8. An Architecture For Organizational Knowledge

Moving more towards the organizational end of the knowledge as social action axis, Brown and Duguid (1999) place communities of practice at the heart of their proposed architecture for organizational knowledge: "(T)the hard work of organizing knowledge is a critical aspect of what firms and other organizations do," (p 28). Thus, knowledge is mostly collective, and successful communities of practice are generally informal. However, their architecture is largely dominated by themes of command and control. Note, for instance, Brown and Duguid's emphasis on the 'organizing' work of firms compared to Grant's (1996, 2002) thesis that the organization exists to foster an environment in which individuals can integrate their personal knowledge with that of others. Contrastingly, Brown and Duguid see the organization as the *means* of knowledge generation. Accordingly, organizational knowledge is more important than personal knowledge – the sum is greater than its parts (Brown and Duguid). Their framework is largely about inter-firm communications and the establishment of human, technological and process-based conduits through which team knowledge can be shared amongst other teams.

3.9. Creative Abrasion

Leonard and Sensiper (2002) also pursue the notion of people sharing knowledge in group work. Their *Theory of Creative Abrasion* frames the different backgrounds, skills, experiences, and understood social norms that individuals have as the factors which generate the melting pot of innovation. In an earlier work, Leonard and Strauss (1997) refer to this as different styles of human thinking. In this implied chaotic environment, people will challenge each other, leading to an abrasion of different ideas, which in turn give rise to new ones: "…hearing a very different perspective challenges the mindset of those in the majority sufficiently that they will search beyond what initially appears to be an obvious solution," (p 489). Moreover, for Leonard and Sensiper it is the tacit dimension of an individual's knowledge which formulates them as valuable contributors to group work and innovation, as it is this kind of knowledge which is learned through lengthy practice, and which is inaccessible from explicit means of communication. Whilst neither the work of Leonard and Sensiper, nor Leonard and Straus makes any explicit reference to 'knowledge as social action', they can be interpreted as presenting such a case through their emphasis on people interaction.

As a basic idea, this is not entirely divorced from the concepts of social learning advocated by Blackler (1993, 1995) and Boisot (2002), and is consistent with Brown and Duguid's (1999) communities of practice. What places this particular theory on the organization end of the organization vs. personal knowledge continuum is the very clear focus on the organization – in this case, teams of workers – as the unit of analysis. In fact, Leonard and Sensiper (2002) cast the individual as problematic through their preference for hoarding their tacit knowledge, and their reluctance to share knowledge because of a fear of failure, or of looking foolish. A further interesting point to draw is their acknowledgment of the need for a cross-disciplinary approach to understanding knowledge and innovation: "(C)clearly, many different fields of inquiry are relevant, including ones as diverse as design, cognitive psychology, group dynamics and information technology," (p 495). As their theory necessarily relies on the linguistic social interaction of persons, it is interesting that the authors omit the more linguistics orientated scientific disciplines from their list. None-the-less, this thesis has echoes of Peter Drucker's (1988) visionary piece on the future organization as largely comprising teams of specialists coming together to perform specific projects

4. Knowledge Reified As Object

4.1. The Dynamic Creation Of Organizational Knowledge

At the other end of the object vs. social action spectrum, the majority of theories which deliberately, or by implication, reify knowledge largely cluster around a focus on organizational knowledge. Nonaka and his colleagues' theory of the knowledge creating firm dominates the field (e.g., Nonaka, 1991; Nonaka, 1994; Nonaka and Toyama, 2007; Nonaka et al*.,* 1994; Nonaka et al*.,* 1996; Nonaka and Kono, 1998), and it is to this theory that special attention is given here. At the heart of this theory is the SECI model, which explains knowledge creation as the outcome of a dynamic interaction between subjectivities and objectivities. Accordingly, new knowledge is created in a spiral of interaction between the processes of socialization, externalisation (explicit knowledge), combination and internalisation (tacit knowledge). The theory is located at the 'knowledge as object' end of the axis because of its central tenet that tacit knowledge can and should be converted to explicit knowledge in the fashion proposed by the SECI model. Ironically, while Nonaka and his co-workers emphasise the importance of tacit knowledge, the central feature of their theory – the conversion of the tacit to the explicit – implies a devaluation of tacit knowledge in that the tacit is shown to be only useful if transformed to the explicit (Virtanen, 2011).

The idea that new knowledge can be generated in this dynamic interaction, and which process is fertilised and promoted in the socially-engineered environment of 'Ba' (Nonaka and Konno, 1998), has been the target of considerable criticism (e.g. Gourlay, 2006, Thompson and Walsham, 2004). Blackler (1995), one of the earliest critics, singles the theory out as being 'rather traditional', and is critical of its reductionist treatment of knowledge. Grant arguably hands out a veiled warning against theories such as this for its focus on organizational knowledge*:* "(T)aking the organization as the unit of analysis not only runs the risk of reification, but, by defining rules, procedures, conventions, and norms as knowledge fails to direct attention to the mechanisms through which this 'organizational knowledge' is created through the interactions of individuals, and offers little guidance as to how managers can influence these processes," (1996: p 113).

While Despres and Chauvel (2002) condemn such theories for being too prescriptive, representing little more than the shuffling of ideas back and forth in structures and systems, Thompson and Walsham attest that "…his [Nonaka's] view of all such knowledges as objects to pass between these different stages, has contributed to a sense that the focus of knowledge management systems […] should be to 'externalize' and 'combine' tacit forms of knowledge," (2004: p 726). This, Thompson and Walsham argue, leads to contradiction because:

> *"…the meaning of any objective 'knowledge' will always remain the subjective product of the person in whose mind this is constituted, always relationally defined, and therefore does not transfer easily to others in a form which may be operationalized to the benefit of the organization,"* (Italics, authors' own: p 726).

As if to add credence to this argument, Virtanen's (2011) review of the literature concludes that most Information and Communications Technology focused KM initiatives aim to convert tacit to explicit knowledge, reporting that they mostly fail. The implied necessity of removing context from (tacit) knowledge embodied in the knowledge creating firm theory is also heavily criticised by Despres and Chauvel who argue that without context, knowledge is meaningless: "…meaning does not exist in the phenomena themselves," (p 90).

4.2. Cracks In The 'SECI' Engine

As well as being criticised for its focus on the organization (at the expense of the individual), coupled with the reification and de-contextualisation of knowledge, this particular theory is censured for its ambiguity on the one hand, and implicit distinction between knowledge and learning on the other (Gourlay, 2006; Blackler, 1995). Many psychologists and educationalists

might disagree with the proposal that: "(T)taken by itself, learning has rather limited, static connotations whereas organizational knowledge creation is a more wide-ranging and dynamic concept," (Nonaka, 1994: p 34).

Gourlay (2006) points to the 'cracks in the engine' of the SECI model, arguing that this is more a theory of managerial decision-making than one of knowledge creation. For instance, Gourlay's interpretation of the evidence used to support the veracity of the theory suggests that "(I)it is difficult to accept these statements as evidence of anything other than the managers' beliefs about how they got ideas for new products," (p 1418).

4.3. Misinterpretation And Misrepresentation

Perhaps most problematically is the suggestion that Nonaka and his colleagues have misinterpreted and misrepresented the works of Michael Polanyi (Gourlay, 2006; Virtanen, 2011; Tsoukas, 2011; Grant and Qureshi, 2006; Grant, 2007), in what Tsoukas refers to as the 'great misunderstanding'. As the core foundation of the theory draws from Polanyi's work on the nature of knowledge, this is a significant issue. The primary sticking point is over the nature of tacit knowledge. Polanyi (1962) proposes that all knowledge is personal, involves judgement, and contains a tacit element, which is often difficult if not impossible to articulate. According to Tsoukas, this establishes the contextual and action-orientated nature of knowing. However, Nonaka's interpretation is slightly – but crucially – different: "Polanyi classified knowledge into two categories. 'Explicit' or codified knowledge refers to knowledge that is transmittable in formal, systematic language. On the other hand, 'tacit' knowledge has a personal quality which makes it hard to formalize and communicate," (1994: p 16).

In analysing Nonaka's interpretation of the works of Polanyi, Tsoukas concludes: "(T)to treat practical [tacit] knowledge as having a precisely definable content, which is initially located in the head of the practitioner and then 'translated' into explicit knowledge, is to reduce what is known to what is representable, thus impoverishing the notion of practical knowledge," (2011: p 525). In other words, while Nonaka and his colleagues (e.g., Nonaka and Takeuchi, 1995) draw on the works of Polanyi (1962), their interpretation and representation of it – particularly the nature of tacit knowledge, and its potential for conversion to explicit knowledge – is arguably misrepresentative.

A related issue has been highlighted by Grant (2007): he suggests that many researchers in the KM field who refer to Polanyi have not actually read the source material, but instead, rely on others' interpretation. This, combined with a less than critical approach to the work of Nonaka and his colleagues, suggests Grant, is one of the underpinning reasons for KM's lack of success.

Nonaka (1994) makes reference to the works of two other leading and influential theorists: Argyris and Schon's (1978: as cited in Nonaka) Double Loop Learning in Organizations, and Anderson's *'Architecture of Cognition,"* (1983: as cited in Nonaka). In both instances, it can be shown that Nonaka misrepresents these works. Argyris' (1977) theory of Double Loop Learning (DLL) is concerned with the goal of senior management continuously challenging an organization's policies, procedures, visions, objectives – people's internal theories of action - and so on in order to ensure progress and development, and the avoidance or correction of error. Without this, Argyris argues, firms will remain in a status quo and will eventually be overcome by others. Argyris points to the difficulties in implementing DLL but, fortunately, according to Nonaka, it is 'built in' to his theory of the knowledge creating firm. In reality, the *only* synergy between Nonaka's theory and the theory of DLL is Nonaka's parole that managers should challenge what employees know. However, Argyris is primarily talking about organizational learning as a process of detecting and correcting error, while Nonaka is talking about knowledge in people's heads. Arguably, then, DLL is not 'built in' to the theory of the knowledge creating firm.

Nonaka (1994) draws on a 1983 version of Anderson's ACT Model, however Anderson's later 1996 version suffices for the purpose here. In Anderson's model, declarative memory (which Nonaka equates to explicit knowledge) is a schema like structure encoding a small bundle of knowledge, whereas procedural memory (or tacit knowledge) is applied automatically, is tied to context and can often not be articulated (Eysenck and Keane, 2001). Anderson proposes that complex cognitions are the result of *interactions* between declarative and procedural knowledge: "(A)all that there is to intelligence is the simple accrual and tuning of many small units of knowledge that in total produce complex cognition. The whole is no more than the sum of its parts, but it has a lot of parts," (1996: p 356). He also posits that production rules, which embody procedural knowledge, can create declarative structures. Note the use of the term 'interactions' (as opposed to 'conversion') to describe the relationship between these two forms of knowledge / memory. Contrastingly, Nonaka states that, in Anderson's theory, declarative knowledge is *converted* into procedural knowledge: "The idea of 'knowledge conversion' may be traced from Anderson's ACT model…" (p 18). Interestingly, according to Eysenck and Keane's interpretation of Anderson's model, skill compilation leads to new skill acquisition, making knowledge a subset of learning, whereas Nonaka offers learning as a subset of knowledge.

Note that both DLL and ACT are absent from subsequent versions of Nonaka's theory (e.g., Nonaka and Toyama, 2007).

4.4. More Troubling Observations Of The Theory Of The Knowledge Creating Firm

Nonaka (1994) describes the 'informal community' as the location of emerging knowledge, a notion also promoted by Brown and Duguid (1999), and that these need to be related to the formal hierarchical structure of the organization. By contrast, Brown and Duguid imply that such a transformation would lose much of the values and benefits of informally organized work groups.

Two further observations concern the temporal and cognitive nature of knowledge. Nonaka (1994) argues that tacit knowledge refers to future events, while explicit knowledge deals with the past, and that only tacit knowledge comprises cognitive elements. There is no evidence for this claim, and arguably, tacit knowledge – even if one takes the view that it is internalised, comprising skills, difficult to articulate, the 'more than we can tell' element of knowledge- could refer to the past as well as the future. Additionally, if, as Polanyi (1962) argues, *all* knowledge contains a tacit element, then it is not logical to propose that explicit knowledge is bereft of cognitive components.

Despite these difficulties, Nonaka's theory continues to dominate the KM theoretical landscape, with numerous other theorists following in its wake in one fashion or another, mainly through an uncritical acceptance and adoption of the tacit/explicit explanation at its heart (e.g., Bhatt, 2001; Rai, 2011).

5. Discussion And Conclusions

In this review of KM theory, the landscape has been shown to be broad, complex, sometimes ambiguous, often confusing. To bring some clarity to this 'sea of theory', it has been shown that theories can be classified into the broad categories of a focus either on personal or organizational knowledge, and an approach to knowledge as either object – on the basis that it can be stored and codified, for instance – or as done in social action.

This classification reveals a significant anomaly in the theoretical literature. On the one hand, the most dominant, influential and much criticised theory, *the Dynamic Theory of the Knowledge Creating firm* (e.g., Nonaka, 1991, 1994), can be located firmly in the category of knowledge as object, with its focus on the organizational level, along with a number of other theories. On the other, there is arguably a trend towards the view of knowledge as social action, but that none of these apparently have the popularity and recognition assigned to the former. Added to this is the perspective that KM has yet to achieve the kind of success that one would expect from a

discipline and practice that concentrates on what is widely seen as an organization's most important asset.

It has also been shown how the KM theoretical literature is often the sparring ring of considerable debate, contradiction and dissent, with accusations of misinterpretation and misrepresentation constituting a rhetorical hall-mark. Part of these issues arguably stem from the substantial assumptions on which many theories rest: that knowledge can be identified as a singular thing or activity; that KM outcomes can be measured in some way; that the tacit can be made explicit and vice versa; that this phenomenon called knowledge resides in people's heads, but that they must be motivated to share it. Others assume that what will work in one culture or organization will work in another; that with the right organizational structure, knowledge can be commanded and controlled; and perhaps, most significantly, that language, communication and social interaction are important, but how is not specified, nor does this location formulate the lens of enquiry

To conclude, if KM is not perceived to have achieved any significant measure of recognised success in practice – as some have argued – then is it not time for a new approach? If it is the case that the most popular theory in the KM field holds, as its central thesis, that tacit knowledge has to be converted to the explicit, with the implied view of knowledge as an object, then the lack of achieved success *also* suggests a new approach is needed. If there is a small but demonstrable trend towards the view of knowledge as constructed in social interaction, along with the implied importance ascribed to language and communication, then is it not logical to turn in this direction, but to take the enterprise much further – to the site of action: language and talk? The analysis of how human actions are accomplished in talk and text, and with what consequences, could represent a fresh perspective and approach to KM. Such studies of discourse are yielding significant results elsewhere in Organization and Management Studies (see Philips and DiDomenico (2009) for a review). As Hardy points out: "(S)such discursive studies are playing a major role in the study of organizations and in shaping some of the key debates that frame organization and management theory" (2001: p 25). Not so much a change of direction then, as a step along the path already identified.

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