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# Knowledge Production and Management in the 21st Century

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## 1 Introduction

The study of knowledge has been a central subject matter for philosophy and epistemology since Plato. Leading management thinkers such as Drucker (1968,1993) Fransman (1994) suggest we are entering a 'knowledge society' which the acquisition and application of knowledge will become key competitive within factors in the production process. Davenport and Prusak (1998 p.5) offer a working definition of knowledge:

> *'Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms'.*

McLuhan (1964) and Drucker (1968) foresaw the future value of information and knowledge. Knowledge and information are a valuable component of a company's intellectual capital and a knowledge economy, driving business value – a shift towards sense and respond rather than produce and sell. Knowledge is potentially a primary source of competitive advantage and essential to the capacity that an organisation and its people have to act effectively. Knowledge is not data or information but can be seen as 'added value': information combined with values, experience, intuition and judgement residing in the individual. These qualities can be used to create new ideas, insights and interpretations that can be applied to information use and decision- making. Spender (1996) suggests that a knowledge-based theory of the firm emphasises the dynamic aspects of a firm in contrast to the neo-classical emphasis on static equilibrium and focuses on the knowledge process in innovation. There is a strong connection between knowledge creation and innovation. The literature offers no single recipe for 'innovation' but fall into two groups; those that see invention as separate from the process of innovation, and those that see invention as an integral part of the process of innovation. I will use the latter view as I regard knowledge production as integral to both invention and innovation. The knowledge infrastructure of an organisation will therefore reflect the degree of innovative activity.

Wheatley (1992) suggests 'innovation is fostered by information gathered from new connections; from insights gained by journeys into other disciplines or places; from active, collegial networks and fluid, open boundaries. Innovation arises from ongoing circles of exchange, where information is not just accumulated or stored but created. Knowledge is generated anew from connections that weren't there before' (p.113).

Knowledge is an intellectual asset, it is invisible and intangible and thus unmeasurable. Knowledge is information within peoples' minds: without a knowing self-aware person there is no knowledge. If we accept knowledge to be socially constructed then, like culture, it emerges through interaction existing only in a highly abstract form. Knowledge is thus seen in terms of cognitive, situational, experiential and emotional factors. There is a need, in the paradigm shift from the mechanistic treatment of knowledge to the organic, to find the simple rules that govern behaviour in a complex environment, to enable people to acquire and transmit knowledge effectively

Knowledge management is a term with many meanings: it includes deliberate efforts to maximise an organisations performance through creating, sharing and leveraging knowledge and experience from internal and external sources (Hildreth et al 1999). According to Eriksson & Tittanen (2000) what is meant by knowledge today is still influenced by logical positivism and empiricism – the message being that knowledge concerns facts that can be 1) verbally asserted. 2) empirically examined, and 3) proved by formal methods. However Sveiby (1997), Miller (1999) and others have argued that value does not lie in stored information but in the knowledge created from it and that only humans can provide a context for, and make sense of, information.

Nonaka and Takeuchi (1995), Takeuchi (1998), Nonaka, Toyama and Konno (2000), Teece et al (1997) suggest that knowledge creation is the key factor for sustaining a company's competitive advantage. The Knowledge Creating Company (Nonaka and Takeuchi 1995) is often quoted in knowledge management although it does not specifically deal with knowledge management. It is about changing organisations by means of the presentation and representation of knowledge. Nonaka et al seek to understand the nature of knowledge from a pluralistic epistemological perspective.

Nonaka et al assume that knowledge is created through the conversion between tacit and explicit knowledge making it possible to convey these different types of knowledge on an individual level. A choice of frames (which endow meaning) and metaphors (which can provoke new images) within an organisation can be determinative of what value added knowledge can be extracted and absorbed from the 'environment'.

'Ba' describes the social, mental and physical spaces that encourage and activate the flow of tacit knowledge. Knowledge creation occurs in a continuous spiral (through a process called 'SECI') each process building on the other. Both redundancy (shared knowledge and experience) and variety (controlled chaos) are essential stimulants. Knowledge creation is seen as a dynamic group process of seeking meaning and testing beliefs – sharing tacit knowledge is a social process. Knowledge conversion is a social process between individuals as well as individuals and an organisation. But in a strict sense only individuals create knowledge. Knowledge creation should therefore be understood as a process that organisationally amplifies the knowledge created by individuals and crystallises it as part of the organisations knowledge network. Nonaka admits the Japanese (group) approach has shortcomings – it focuses on the figurative and symbolic, rather than the documented analytical approach, making tacit knowledge harder to communicate widely or quickly.

Teamwork or groupwork, collaborative or co-operative work is defined here as people working together to achieve agreed goals (outcomes, end products). A group is a set of people who have certain interests or skills who, in agreeing to certain rules, interact and work together to achieve the agreed goals. Nonaka & Takeuchi (1995) present a convivial view of teamwork. A rose-tinted view perhaps of people trusting, nurturing, caring and sharing their knowledge easily and freely. According to Kling (1991) social life is rarely convivially ambivalent. In practice many working relationships can be based not just on co-operation, conviviality, commitment, co-ordination and collaboration but also a mixture of these traits with conflict, competition, caution, control, coercion and combat. Nonaka & Takeuchi (1995) agree knowledge (creation) cannot be managed and value experience, judgement, commitment, ideals, and way of life of employees as a source of knowledge. Knowledge is about commitment and beliefs – it is a function of a particular stance,

perspective or intention as much about ideals as ideas. Stable social structures within an organisation that lead to conformity may inhibit radical innovation by repressing individual deviance, which often contributes to new ideas (Lam 1999).

*1.2 New Modes of Knowledge Production.*

The convergence of science, technology and business under Mode 2 (Gibbons et al 1994) represents a breakdown of clearly demarcated boundaries. Industry structures are no longer 'givens', leading to boundaryless organisations based on complex networks, collaboration and action learning. According to Gibbons et al (1994) the exchange of information between scientific institutions and the commercial community is increasing through networking. Communication occurs, for example, through conferences, personal contacts, draft papers and discussions. This is the result of the explosion in information and communication technologies (ICT's), stimulating and facilitating collaboration (networks and clusters) not just between scientists per.se. but bringing in other disciplines and combining them in new dynamic (problem solving on the hoof) transdisciplinary, decentralised activities ('hi-tech' industries like nano-technology and bio-genetics). The overarching strategic objective of a network is to adapt to complexity and achieve a fit between core capabilities, complementary assets and learning opportunities. There are multiple definitions of networks in the literature, ranging from canonical organisations with structured ruled networks to any group of individuals who come to interact. As Nohria (1992) comments

> *'Anyone reading through what purports to the network literature will readily perceive the analogy between it and a terminological jungle in which any newcomer may plant a tree' ( Nohria 1992 p.3)*

[See Robertson and Langlois (1995) for a discussion of 'Third Italy' (high vertical and horizontally specialised networks), 'Chandelerian' (vertical, close networks) and 'Marshallian' (loose networks and firm clusters). See Saxenian (1991) for the 'Silicon Valley' type network, Castells (1996) for social networks, Powell et al (1996) for learning networks in biotechnology and Jones et al (1999) for an overview of innovation networks]. For our purposes 'network' here is defined as two or more individuals communicating in an innovation (knowledge exchange) process.

The UK National Technology and Foresight Programme (www.foresight.gov.uk) incorporates 'Link', the aim of which is to help industry exploit scientific developments and make scientists aware of industrial needs by enhanced interfaces between higher Education, industry, the Research Councils and other research establishments. Strategic co-operation, facilitated by the Foresight and Link programmes, allows company's access to the science base, especially in the biological and medical fields, which have forged strong links with the relative science-based industries. Within the new networks, as research progresses, the 'membership' changes and expertise is difficult to define. However, the organisation and communication framework persists as a matrix, to allow new groups and networks to form, dedicated to new problems. This creates nodes in a web that extends globally, where knowledge is not treated as a commodity but as an exchange, creating new forms of specialised knowledge (Gibbons et al 1994).

New (Mode 2) knowledge production, and the search for economic pay-offs, is exerting pressure on institutionalised research to change (Ziman 1994) especially within Universities and government laboratories. According to Gibbons et al (1994) researchers are less firmly institutionalised as people come together in temporary teams and networks, which may dissolve when the problem has been resolved. The resulting mosaic will be complex and tracking will be difficult for evaluators, especially in defining the boundaries between research and the environment.

Tidd, Bessant and Pavitt's (1997) definition of innovation is 'a process of turning opportunity into new ideas and putting these into widely used practice'

An innovation model for the 21st Century could be based on Mode 2 knowledge production and a social constructionist approach. Gibbons et al (1994, p160) suggest

> *'It is people in their fungibility, multicompetence and capacity to connect with others that are the critical resource' requiring an understanding of knowledge production and exchange.' Ergo 'The best innovation policy is on two legs'*
> *This view is supported by the European Report on Science and Technology Indicators 1994 (EUR15897):*
> *'Science & Technology Policies form the framework of public action with regard to the production, dissemination and adoption of new knowledge and know-how by companies, universities, public research centres and agencies and more widely by society as a whole'*
> *- a market based, people oriented approach, connecting institutions with society rather than above it.*

> *Gibbons et al. explore major changes in the way knowledge is produced. Their thesis suggests:*
> *'That the parallel expansion in the number of potential knowledge producers on the supply side and the expansion of the requirement of specialist knowledge on the demand side are creating conditions for the emergence of a new mode of knowledge production' (p13).*

Uhlin et al (2000) suggest that a hybrid research culture is emerging under Mode 2, which points to 'the role of knowledge in innovation and co-operation amongst human actors across multiple sites, who are the repositories of this multiple competent knowledge'. Dodgson (2000) suggests that managers can play a role in encouraging the flow of ideas and personnel between Mode 1 & 2. Hybridisation reflects the need to accomplish tasks at the boundaries and in the spaces between systems and subsystems (Gibbons 1994). Interdisciplinarity and new alliances between industry, academia and government and multiple collaborations between companies has led to an increase in the permeability of knowledge. Matusik and Hill (1998) point out that researchers have given little attention to knowledge issues involving malleable firm boundaries, which are increasingly the norm.

Large companies such as Xerox and MBP continue their own 'management research into work practices, using transdisciplinary approaches. Company universities are well established. Could this be a threat to academic researchers? Huff (2000) suggests that business schools that remain in Mode 1 will have to prove their relevance as Mode 2 market driven production is adopted by industry and more forward thinking business schools . Huff remarks that business schools must worry about insufficient scale and scope, when compared with the institutions hosting Mode 2 innovations, further suggesting a 'Mode 1.5' approach to redress the limitations of both modes of knowledge production, where issues of importance will;

> *'rise from practice and will be defined in conversation with those in practice, but other insights should be solicited and integrated. The relevant data will come primarily, but not entirely, from practice. Academic skills will be useful in developing definitions, comparing data across organizational settings, and suggesting generalizable frameworks for further sensemaking. Conversation is not expected to terminate in one round of investigation. The 'circle' is actually more of a spiral that generates its own further agenda' Huff (2000, p.288)*

Huffs' conclusions are that public support for Mode 1 (science) in business schools will continue to decline whilst competition increases in the 'private' sector and that business schools cannot excel at Mode 2 production of knowledge about practical problems except in niche areas. Mode 2 knowledge production has led to changes in practice not just in the natural sciences but also the social sciences. Society is defined from a much more complex representation than in previous times.

*1.3 Innovation and Learning*

Innovation and learning within hypercompetition (D'Aveni 1994) will be the central rationale of new management paradigms. As traditional boundaries merge it may become increasingly difficult to predict the optimum business model. However it is clear that different kinds of information may be necessary upon which to make sound business decisions and that the traditional organisational and management models may not apply to the emerging complex relationships between disciplines and practitioners. A mismatch between organisational capabilities and environmental demands has resulted in crisis. Crisis is a precondition for the emergence of a new theory or model (Kuhn 1972).

> *'A twenty – first – century organisation can be described as a global, flexible, horizontal, focused, externally networked and non-linear labyrinth regularly undergoing configural transmutations with the goal of achieving dynamic equilibrium' Hitt (1997, p.218)*

Contempory managerialism can be seen as a populist position where life is seen as merely complicated, although linear (refusing to accept the nature of complexity), where everything is manageable (Uhlin et al 2000), where the quest is for uncertainty reduction.

Multiple technological innovations, shortened product life cycles and rapidly changing markets are forcing the pace of paradigm shifts in management. In trying to make the future fit the paradigms of the past, and relying on old captured knowledge, companies may fail to understand changes in business direction and be overtaken by the plethora of new businesses, free of old baggage and utilising an out-of-box adaptive strategy. The problems faced in managing knowledge, within transdisciplinary teams, will spread, for example, in the growth of biotechnology - leading to increasingly permeable organisational boundaries.

Management today is also defined from a much more complex representation than in previous times. Different approaches, away from linear, to non-linear and the complex are required to deal with a hyper-competitive multidisciplinary environment, which contains new organisational forms (mirrored in increasing networks and collaborations between the public and private sector). Gibbon's et al's advanced systemic approach describes the properties of a complex network society where a hyper-complex communication network produces socially distributed knowledge. They suggest that systems thinking is outdated, taking an anti-reductionist position. This may pose problems for researchers in that if non-linear complex social networks are impossible to explain (by their very constitution) then it will be impossible to understand, describe and ultimately manage them. Organisational knowledge structures, because of networking, collaborations etc. are likely to become more complex over time.

As Senge (1990) comments, complex systems are 'unfiguroutable' but it may be possible to enhance our mastery by opening the 'black-box' of complexity. More than one approach is possible in the same situation. The primary goal is to generate ideas and new perspectives rather than search for one definitive truth. Harvey & Reeds (in Uhlin et al 2000) also call for a choice from a plurality of methods based on Ray Bhaskars realist ontology, the method that best fits the ontological contours of the problem. Calls for pluralistic multi-methodological and transdisciplinary approaches are not a post-modern phenomenon. This tradition goes back through Richard Rorty, William James, Lyotard, Aristotle et al and is clear in Gibbon's approach. 'Soft' methodologies match well the needs of contemporary Mode 2 management research. Two features of Mode 2 in particular re-enforce this fit. First, transdisciplinary research is less likely to be based on the existing, highly developed theoretical frameworks from bounded disciplinary traditions, which tend to characterise Mode 1.

Second Mode 2 emphasises tacit knowledge , which has not yet been codified, written down and stored. Changes in the location of knowledge production as identified by Gibbons et al raises a number of questions concerning its management, the changing role of science and its practical applications. Management is faced with a new set of challenges shown by Savage (p101) –

- To move beyond the fragmentation of industrial era companies.
- To maintain accountability in flat, dynamic networks.
- To support focusing and co-ordination of multiple cross-functional task teams.
- To build into the organisation the capacity for continual learning and quick market responsiveness.

An understanding of the dynamics (structures, sources, production, validation and application) of knowledge processes may enhance an organisations ability to learn and adapt in today's hypercompetitive environment, Attending to the processes that give rise to the production and integration of socially constructed knowledge may be the key to rapid innovation. Knowledge production includes insights and new ideas created by the interaction of communities of interest (IBM 2000), or communities of practice (Lave & Wenger 1991). The identification of communities of practice within business environments, and an analysis of their methods of knowledge production may shed new light on innovation through knowledge networks. Traditional management analyses, planning and control need to change to facilitating the success of communities of practice (COPs).

*1.4 Communities of Practice*

Sociologists of science emphasise the socially constructed nature of even the most sophisticated experiment-based science (Latour and Woolgar 1986, Latour 1987, Knorr-Cetina 1981). Nonaka and Takeuchi (1995) suggest knowledge can be seen as justified true belief. A person justifies the truthfulness of her/his beliefs based on observations of the world where these observations in turn depend on a unique viewpoint, personal sensibility and individual experience. Nonaka and Takeuchi (1995) argue that Western philosophy has been characterised by the separation of the knowing subject (person) from the known object (world). This has manifested in a focus on explicit knowledge and learning as something performed by the mind, ignoring the tacit dimension. This 'Cartesian split' has had a profound influence on Western science including social science, economics, management and organisational theory. Lam (1999) analyses the interaction of learning and innovative

capabilities of firms at the individual, organisational and societal levels. She suggests the 'professional' model representing 'bureaucracy' inhibits innovation. Further the 'bureaucratic' model representing 'machine bureaucracy' has little capacity to innovate. Lam posits two alternative models, the 'occupational community', which supports the 'operating adhocracy' and the 'organisational' model, which supports the 'J-form organisation'. Although these two models share structural commonalities they differ in the nature of the relationship between the individual and the organisation. Lam suggests that the 'occupational community' fosters and sustains the organisations innovative capability and the 'organisational community' has a unique capability to generate continuous and incremental innovation. Both of these communities recognise the importance of tacit knowledge for the generation of learning and innovation and can be recognised as 'communities of practice'. Lave & Wenger (1991) define a community of practice as 'a set of relations among personal activity, and world, over time and in relation with other tangential and overlapping communities of practice'.

Lave and Wenger (1991) seek to overcome Cartesian dualism using constructs such as 'persons in activity' and the 'person in the world' seeing what is learnt as the know-how gained through personal experience and learning by doing, which is a trial and error process. Much contempory learning theory tends to emphasise the value of abstract knowledge over actual practice and separate learning from working and learners from workers (Brown & Duguid 1991). Brown and Duguid argue that working, learning and innovating must be linked, in theory and in practice, to thrive collectively. This must be done more closely, more realistically and more reflectively than is generally the case at present. Traditional management analyses, planning and control need to change to facilitating the success of communities of practice (COPs)

COPs are recognised sources of technical and organisational innovation and learning, connecting islands of knowledge and fostering cross-functional and cross-divisional knowledge sharing through collaboration – built on non-management. The 'community' sets its own goals, membership, boundaries, member recognition ; based on personal relationships, reciprocity and the production of collective goods (knowledge). Members may have high status within 'their' organisation, but have to earn status within a COP. This suggests that COPs cannot be managed. Managers

may ultimately disappear, while the communities manage themselves, or managers may take on a role of 'facilitator' or 'evangelist'. Lave (1988) and Lave and Wenger (1991) have rejected mechanistic linear knowledge transfer models as isolating knowledge from practice. Their view of learning is one of social construction, where knowledge is put back into contexts in which it has meaning. Understanding is constructed in-situ and ensuing learning is deeply connected to the conditions in which it is learned. Brown & Duguid (1991) argue that through their constant adaptation to changing membership and changing circumstances, evolving COPs are significant sites of innovation. The conventional descriptions of work mask not only the way people actually work, but also mask the significant learning and innovation generated in informal COPSs.

*1.4 Best Methods*

Learning is defined here as; any (more or less) permanent change of behavior, which is the result of experience; the acquisition of knowledge, information, values, beliefs, norms and behavior (where values, beliefs and norms are dependent on culture). However as learning produces new knowledge, which is the basis of innovation, and it has been shown that learning and knowledge are a socio-cultural phenomena then researchers need to 'walk the walk' and 'talk the talk' of ordinary people in situ. I suggest that transdisciplinary approaches using multi-methodologies will be helpful in understanding complex social and cultural situations. The terminology used in various disciplines is often not adequate for interdisciplinary discussion and even less adequate communicating with members of a COP (or COPs). A common language must develop and researchers' findings communicated in plain English. The most intelligent academics communicate even the most complex, abstract concepts in a manner a person of 'average intelligence' can understand and researchers should aspire to this.

Social and psychological conditioning (experience) has an important effect upon what we believe, what we conclude (our theory) and what we accept (our beliefs), which equates to a social-psychological process of learning. Easterby-Smith et al (1998) question whether organisational learning an objective/technical process or are humanistic /political (including power) perspectives more suitable? Feyerabends' answer would be 'anything goes'.

Observations are not entirely free from the influence of theories (Kuhn 1962, Feyerabend 1978)- hence the theoryladenness of observation. Even Seemingly simple observations may hide 'natural interpretations' (Feyerabend 1978). Feyerabends' concept of incommensurability states that no theories, that are genuinely different, can be meaningfully compared with each other. Theories give meaning to facts not vice versa, this forces us to think about each theory in its own terms. Feyerabend was an advocate of epistemological anarchy, by which he means that the methods and thinking appropriate for progress in one area may not be the right methods for another. Feyerabend (1982) ultimately aligned himself with a form of social constructionism emphasizing that the 'world' is not singular but plural.. Feyerabend supports the view that science is more than the mere translation of statements and its social and cultural components make it not really that different from other activities. Feyerabend answered the question about what the rules are for scientific progress – anything goes, no method should be ruled out if it works. This is similar to Glaser & Strauss' view that anybody can create their own theory so long as they start from reality, calling for a multiplicity of theories (Alvesson & Skoldberg 2000)

It has been suggested that different theoretical frameworks are incommensurable. However it could be argued that multiple perspectives may be a source of creativity . Kuhn (1997) argues that a full translation between rival paradigms is impossible, plus the fact that advocates of different paradigms often subscribe to different methodological standards and have non-identical sets of cognitive values. Gioa & Pitre (1990) suggest that whilst the central tenets of each paradigm are incommensurable the paradigm boundaries are permeable. Established researchers may find it impossible to convert to different or multiple methods, theories and philosophical approaches. It may be difficult for young researchers to go against the established orthodoxy, which governs the 'accepted' methods and subsequent rewards.

*1.6 Extensions to Feyerabends' argument*

> *'Even the simplest perception is not only performed pre-categorically by the physiological apparatus – it is just as determined by previous experience through what has been handed down and through what has been learned as by what has been anticipated through the horizon of expectations'. Habermas (1974 p.199)*

> *'Human action arises from the sense that people make of different situations rather than as a direct response from external stimuli'. Easterby- Smith et al (1991p24)*

> *'Individual creativity is a function of antecedent conditions (e.g. past reinforcement history ,biographical variables) cognitive style and ability (divergent thinking, ideational fluency) personality factors (self esteem, locus of control) relevant knowledge ,motivation (social facilitation, social rewards) and contextual influences (physical environment, task and time constraints) Woodman et al (1993p 294,296)*

Ergo the social cultural factors that influence sensory experience (constructivism). The world and reality are not objective and exterior but are socially constructed and given meaning by people. Therefore the organisation as a unit of analysis is questionable (Brown and Duguid 1991). Rather than using the scientific method based on positivism researchers should try and understand the different constructions and meanings that people place upon their experience, rather than search for external causes and fundamental laws to explain an individuals behavior. Von Hayek (1948) notes that individuals hold different cognitive mental models and therefore hold different knowledge about reality. This knowledge 'by its nature cannot enter into statistics, and therefore cannot be conveyed to any central authority (p80). Knowledge that cannot be explicitly stated requires interpretation or sharing versus interpretational communication. The interpretive or naturalistic, qualitative or constructivist critique suggests that positivism is inappropriate and unhelpful for the human world where subjective and objective meanings are socially constructed and negotiated and multiple realities are the essential nature of human society. Sociologists of science emphasise the socially constructed nature of even the most sophisticated experiment based science (Latour 1987, Knorr-Cettina 1981).

Much contemporary learning theory tends to emphasise the value of abstract knowledge over actual practice and separate learning from working and learners from workers (Brown and Duguid 1991) Brown and Duguid argue that working, learning and innovating must be linked in theory and in practise, to thrive collectively. This must be done more closely more realistically and more reflectively than is generally the case at present.

*1.7 Management and Research*

Our ontological assumptions affect our epistemology, which in turn affects our methodological assumptions. A methodology cannot be chosen arbitrarily since each methodology brings it with epistemological and ontological assumptions. Young (1993) suggests that a plurality of paradigms should be accepted as society is so complex: 'the choice of where boundaries of theory are to be set is a matter of research interest and research capacity more than underlying ontology at hand'. In management there are a number of competing paradigms (sometimes referred to as metaphors or frames of reference) Clarke and Clegg (2000) refer to two opposing camps amongst academics –the 'paradigm police', who seek a single unifying approach to research, and the 'paradigm warriors' who reject a single paradigm and embrace diverse views. Any theory of knowledge presupposes knowledge of the conditions in which knowledge takes place, which leads to an inevitable circulatory of epistemological and therefore methodological issues. Workers are often perceived as performing their jobs as described by their formal jobs descriptions. Argyris and Schon (1974) would argue that evidence from everyday practice shows the opposite. Tranfield & Starkey (1998) suggest that the American belief in universal laws has overly influenced management research. In their paper they show how management research is a 'soft' science.

> *In much qualitative management research, important ontological (what counts for reality) and epistemological (how knowledge of that reality may be established) issues are often artfully avoided, taken for granted or ignored.' Partington (2000, p91)*

Tashakkor (quoted in Goles & Hirschheim) et al call for pragmatism-researchers should use 'whatever philosophical and / or methodological approach that works best for the particular research program under study' with the emphasis on what works rather than truth / reality. Goles draws a parallel between pragmatism and the scientific realism of Bhaskhar. Pragmatism provides a philosophical basis grounded in pluralism as a way to counter the traditional dichotimistic warfare between competing paradigms. This is not an 'anything goes' approach . Pragmatism has been described as an antitheoretical philosophy, which implies sticking as closely to practical empirical reality (Alvesson et al 2000). Pragmatism does recognise the importance of theory to explain or predict phenomena but subjects theories to the test and practice of time, to determine its value or usefulness. Pragmatism provides a

solution to the need for an increased coordination of research and practice. Industry does not require abstract theories but immediately useful knowledge.

Future research will have to provide a linkage between facts and theories and reconcile the approaches that focus on the individual as the prime mover in society, and the approaches that examine social and cultural systems as functional wholes.

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