Communications of the Association for Information Systems

Volume 14 Article 21

October 2004

Knowledge Management: A Primer

Elayne Coakes
University of Westminster, coakes@wmin.ac.uk

Communications of the Association for Information Systems

KNOWLEDGE MANAGEMENT – A PRIMER

Elayne Coakes
University of Westminster
coakes@wmin.ac.uk

ABSTRACT

Knowledge Management is an expanding field of study. In this paper we clarify and explain some of the terms and concepts that underlie this field. In particular we discuss knowledge and its related philosophies; how the sociotechnical aspects of organizations can assist in knowledge management and how communities of practice can thus be supported; how knowledge can be valued in an organization; and the idea of intellectual capital. We conclude that knowledge management is not an easy 'fix' to an organisation's problems. Implemented well it can increase productivity, improve worker collaboration, and shorten product development times. Implemented badly it may incur significant costs without delivering these benefits.

Keywords: knowledge management, communities of practice, intellectual capital

Editor's Note: This article is intended as a basic primer for those who are not familiar with the ideas now being discussed in knowledge management. This academic field is not yet well established. It is an interdisciplinary topic with many writers and theories intersecting across organisational topic areas. This paper discusses the main areas that are currently under development and points to major resources that can be accessed for further research.

This article should be read in conjunction with the web article on Knowledge Management to be found at www.orsoc.org.uk/about/topic/projects/ kmwebfiles/article1.htm for explanations of basic terms and theory. That paper contains many appendices that expand further on the topics mentioned in the text. [Noted that this paper may be removed by the British Operational Research Society at any time]

Because of the large number of topics covered and to facilitate the use of the paper as a reference, a table of contents follows. After an overview in Section 1, sections are presented in alphabetical order. An alphabetical list of references follows at the end.

I. OVERVIEW OF KNOWLEDGE MANAGEMENT

INTRODUCTION

Evans and Wurster [2000] tell us that every business is now in the information business. Information has become the dominating asset to be manipulated for competitive advantage. Others would argue that it is not information that we need to manage but knowledge - so how do we know whether we are discussing information management or knowledge management? To clarify this difference we put forward the following definition of knowledge management

> *Knowledge management refers to the systematic organisation, planning, scheduling, monitoring and deployment of people, processes, technology and environment … to facilitate …. The creation, retention, sharing, identification, acquisition, utilisation, and measurement of information and new ideas, in order to achieve strategic aims ….*[Lehaney, Clarke, Coakes, and Jack, 2004], p. 3.

Knowledge can also be considered as the way an enterprise can leverage the know how of its employees, trading partners, and outside experts for the benefit of the enterprise [Ackerman, Pipek, and Wulf 2003; Bellaver and Lusa 2001; Choo 1998; Land, Nolas and Urooj 2004; Sussman, Adams and Raho 2002] or the process through which organisations generate value from their intellectual and knowledge-based assets [Santosus and Surmacz 2001].

KNOWLEDGE

Before discussing further the issues of knowledge management it is relevant to attempt to distinguish what knowledge is (Section 1, Appendix 1,). As shown in the definition above, the knowledge management process actually manages information. However, many theorists would argue that (true) knowledge cannot be managed as it is held in the head or minds of people and thus one can manage the human being but not the knowledge that they contain.

In Western philosophy (Section IX) knowledge is seen as abstract, universal, impartial and rational. It is seen as a stand-alone artefact that we can capture in technology and which will be truthful in its essence. This view is evident in the works of the ancient Greek philosophers where, if we look at epistemology (the theory of knowledge, its possibilities, scope and general basis), we find that the concept of knowledge originates with people. Plato and Aristotle for instance, were quite concerned about the nature of knowledge and what distinguishes knowledge from belief. Plato put forward in the *Meno* the idea that correct belief can be turned into knowledge by fixing it through the means of reason or a cause. Aristotle thought that knowledge of a thing involved understanding it in terms of the reasons for it. For Aristotle, the object of the knowledge required a context of explanatory and reason-giving propositions [Honderich 1995]. In modern terms 'to understand' is to be fully aware of not only the meaning of something, but also its implications. In the Random House dictionary [1976] knowledge is defined as being one of four things:

- An acquaintance with facts, truths or principles;
- A familiarity or conversance with a particular subject;
- A fact of state of knowing; the perception of fact or truth; a clear and certain mental apprehension;
- And the body of facts or truths accumulated by humankind over time.
- Interestingly the synonym offered for knowledge is enlightenment.

In comparison, the Feminist philosophy of writers such as Gilligan [1982], see people in a web of relationships that imply that knowledge is interconnected and contextual (and possibly biased).

Boje, Gephart and Thatchenkerry [1996] put this idea in context when they define organisations.

> *"…rather than conceiving of organisations substantively as concrete facilities embedded in artefacts such as policies and buildings, we regard organisations relationally as a concept of social actors that is produced in contextually embedded social discourse and used to interpret the social world. The meaning of organisation thus resides in the contexts and occasions where it is created and used by members rather than in a special fixed substantive form." (p2)*

A third view, one which takes elements of both the masculine (rational) and the feminine (contextual) is however, more predominant in most of the current writings on the topic of knowledge management. This view can perhaps be traced back to the work of Locke in the late 17th century. To Locke, knowledge was the perception of a connection between ideas that can be perceived by the use of reason. When the connection is direct then this is intuitive knowledge. When the connection is indirect and is determined through the utilisation of other ideas and known connections, then the knowledge is demonstrative. We can consider this distinction perhaps to be equivalent to tacit and explicit knowledge, as explicit knowledge is made evident and can be explained. Demonstrative knowledge, as Locke describes it, requires understanding and contextual application. Locke argues that observation and experimentation (experience) will lead to belief and opinion. It is also evident therefore, that demonstrative knowledge will be based on past learning and activities, and will be bounded by one's own ideas and worldview [Honderich 1995]. All of this is echoed in philosophical positions adopted toward the concept of knowledge.

What we find is that our minds follow a certain pattern of thought - we develop knowledge according to our own pre-set formulae or methods. Our experiences give us memories and values which guide and discipline us and therefore set up the conditions within which our minds operate. In fact, it could be said that we use 'dead' memories and values to understand new experience. When we accumulate knowledge there is a conscious choice, or discard, of the knowledge of others.

Knowledge is therefore socially constructed. It is not a stand-alone artefact or universal truth. If knowledge is a social construct, not simply a tool or resource, it will be discovered in a social context (Section X).

EXPLICIT AND TACIT KNOWLEDGE

Explicit knowledge tends to be considered as anything that can be documented, archived or codified. It can be contained within artefacts such as paper or technology. As a result it is able to be shared – e.g., books can be passed on, databases can be consulted, in fact many writers would argue that explicit knowledge is not knowledge at all, but information or data[1]. Tacit knowledge is more difficult to qualify. Tacit knowledge is retained by people in their head, it is the product of their minds' experiences and learning. It can be shared but in a less tangible form. In some cases it can be shared through the use of email and chat-rooms or instant messaging as people tend to use these technologies informally, like a conversation, but mostly it is shared through story-telling (Section XII) and in conversations. It is very difficult to articulate and very difficult to know what you know in a tacit way - as often you only discover your knowledge when you have a need to apply it. Or it may rely on multiple senses to be expressed and thus is learnt by experience - e.g. when making bread by hand, it is the feel of the dough that indicates whether or not it is sufficiently kneaded, and this knowledge relies on touch as well as logical thought (and the sense of smell may also be involved).

[1] Chambers Dictionary [1993] defined data as: *Facts given (quantities, values, names etc) from which other information may be inferred*

Organisations need to know what they know and also to identify where their knowledge gaps lay so that they can be addressed. Explicit knowledge is relatively easy to track and develop, tacit is obviously more difficult to track and develop. Tacit knowledge may also involve more than the logical intelligence aspect of our brains and it may be that tacit knowledge is developed through the application of our multiple intelligences (Section VIII), (everyone uses some of, or a combination of) - logical, linguistic, interpersonal, intrapersonal, musical, spatial, or kinesthetic means to absorb knowledge. So a person who is kinesthetically inclined learns a new assignment easier when he or she has hands-on experience. Linguistically inclined people are skilled with words and learn quicker when reading and writing [Cole 1997; Gray 1994].

FLUID AND STICKY KNOWLEDGE

In an organisation, there are many processes about which employees hold knowledge. This knowledge may be held in a sticky or fluid form.

Lei [1997] argues that the knowledge base that lays the foundation of an organisation's core competence is comprised of easily replaced domain knowledge and the less easily replaced knowledge of how work is carried out. This first form of knowledge can be called fluid knowledge [Coakes, Bradburn and Sugden 2003; and Bradburn and Coakes 2004] because it is capable of flowing around an organisation. Flow can be achieved even more effectively when the organisation's social and technical systems (Section XI) are linked by means of information and communication technologies (ICT).

The second form of knowledge can be characterised as sticky knowledge because it is inseparable from knowing how work is carried out and it is related to the processes undertaken. The signifiers fluid and sticky are more appropriate for this application than the descriptors explicit and tacit [Nonaka and Takeuchi, 1995]. Sticky knowledge is glued onto the experiences of individuals and may remain unarticulated formally, but it is characterised by being difficult to replace [Hildreth, Kimble and Wright 2000]. As Chuang-Tzu says [Watson 1964] "Knowing what it is that man does, he uses the knowledge of what he knows to help out the knowledge of what he doesn't know" (p73). The replacement of such knowledge is problematic because it is not easily surfaced in order for it to be codified, stored, or transmitted. It is cumulative to personal experience and thus unique to the individual's understanding. It resides in the social domain of the organisation's sociotechnical system. Its best form of transfer from individual to individual, tends to be through story-telling and in the practice of communities (Section III).

VIEWS ABOUT KNOWLEDGE MANAGEMENT IN THE ORGANISATION

It is now becoming realised that knowledge management is not a technology-driven 'fix'. Knowledge management begins with the social and cultural elements throughout an organisation. A knowledge management strategy (Section VI) should begin with establishing 'who', 'what' and 'why' initially. 'How' can then be supported by technology once the above characteristics have been established, if technology is required at all. Organisations that establish knowledge management programmes tend to become learning organisations (Section VII).

Knowledge management programmes are not an easy fix. Many have failed (Section II). They should be designed with a specific (organisational) goal in mind. Once established they need constant supervision and revision. Knowledge is not static. To remain as competitive knowledge, it needs to be reviewed and renewed constantly. The organisation's people need to work within a learning organisation and need to be themselves learning and developing skills, competences and general knowledge.

Not all information within an organisation is equally valuable. Individual organisations will need to establish, for their own unique set of circumstances, those knowledge and intellectual assets that are valuable to them and ensure that they are maintained.

Establishing a successful knowledge management programme requires overcoming a number of challenges. Amongst those that have been discussed in the literature is employee buy-in. Here

we should consider the saying 'knowledge is power' as is so often mentioned in this context. Cultural issues will also impact on whether or how knowledge may be shared. Here not only organisational culture (Section IV) but national cultures may need to be considered. What is a suitable programme for a western-based organisation may not be equally applicable for an organisation in the Far East.

It should be noted that a number of journals (Section XV) now publish papers relating to KM and Intellectual Capital (IC) and these should be searched for further discussions on the above topics. A number of authors have also published surveys or have written up case studies of how KM is being implemented in organisations. This paper provides in Section XIV a list of some of the survey articles and a number of case articles are highlighted in Section II.

KNOWLEDGE MANAGEMENT PAYOFF

Why are organisations interested in knowledge management? A number of authors tried to explain the current interest in the topic in terms of bottom-line savings but Santosus and Surmacz [2001] argue that we work in an information-driven economy and value (Section V) is derived, and opportunities uncovered and developed through intellectual assets (also known as Intellectual Capital, (Section V)) rather than physical assets. Yet an effective knowledge management programme can also bring improved efficiency, higher productivity, and increased revenue. Ford [CIO, 2003] adopted an enterprise portal which resulted in increased productivity for the sales staff and reduced mailing costs for distributor materials. Taylor-Woodrow [Coakes, Bradburn and Sugden 2003] increased the efficiency of their information management; provided permanent global availability (24/7) of their information centre; achieved a reduction in paperwork and standard administration costs; reduced access and response time for their project sites and achieved reductions in dissemination of innovation and lead-times. All these gains mean more time is available to be spent on value-adding activities and resulted in on-site productivity improvements through better-informed decision-making.

So we can argue [CIO, 2003] that knowledge workers involved in a knowledge management programme can make faster decisions; improve their efficiency and effectiveness; develop innovative products and thus ultimately improve the organisation's revenue and profit.

CONCLUSIONS

Knowledge management is not an easy 'fix' to an organisation's problems. It should be considered carefully and in a spirit of collaboration and communication with all those affected. Implemented well it can increase productivity, improve worker collaboration and shorten product development times. Implemented badly it may incur significant costs without delivering these benefits.

ACKNOWLEDGEMENT

This paper is an update on an original web article (available on *www.orsoc.org.uk*/about/topic/projects/_kmwebfiles/article1.htm) published by the author and a colleague. The author thanks Gill Sugden who helped create the original web article on which this primer is based; the OR Society (UK) who funded the original work; and Anton Bradburn who worked on creating much of the EndNote database from which the bibliographic references are drawn.

Editor's Note: This article was received on February 27, 2004 and was published on October 31, 2004.

REFERENCES FOR SECTION I

EDITOR'S NOTE: The reference list in this section and in following ones (including the Master List of References IN Appendix I) contains the address of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.

2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.

3. the authors of the Web pages, not CAIS, are responsible for the accuracy of their content.

4. the author of this article, not CAIS, is responsible for the accuracy of the URL and version information.

Ackerman M., Pipek V., and Wulf V., (2003) *Sharing Expertise: Beyond Knowledge Management* Cambridge Ma: MIT Press

Bellaver R.F., and Lusa J.M., (2001) *Knowledge Management Strategy and Technology* Artech House

Boje D.M., Gephart R. P. and Thatchenkerry T.J. (1996) *Postmodern Management and Organisation Theory* Th. Oaks Ca: Sage

Bradburn A., and Coakes E., (2004) Intangible Assets And Social, Intellectual And Cultural Capital: Origins, Functions And Value. F*ourth European Conference on Organizational Knowledge, Learning and Capabilities*. April Innsbruck

CIO (2003) Knowledge Management http://www.cio.com/summaries/entreprise/knowledge/index.html (accessed Feb 2004)

Choo CW., (1998) *The Knowing Organisation: How Organisations Use Information to Construct Meaning, Create Knowledge and Make Decisions* Oxford: Oxford University Press

Coakes, E., Bradburn, A., Sugden, G (2003) 'Managing and Leveraging Knowledge for Organisational Advantage', *KMAC03* (J. Edwards ed.) Birmingham: Aston University July pp54-65

Cole J., (1997) Getting Results - For the Hands-On Manager *Plant Edition* (AMA) Feb (42)2 pp.7-10

Evans P, and Wurster T., (2000) *Blown to Bits* Boston MA: Harvard Business School Press

Gray J.H., and Viens J.T., (1994) The Theory of Multiple Intelligences *National Forum* Winter (74)1 p.22

Hildreth, P., Kimble, C., Wright, P. (2000): Communities of Practice in the Distributed International Environment, *MCB Journal of Knowledge Management*, (4)1 pp. 27-38

Land F., Nolas S-M., and Urooj A., (2004) Knowledge Management: The Darker Side of Knowledge Management, *7th ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technologies.* University of the Aegean, Syros, Greece, 14 to 16 April 2004.

Lei, D.T. (1997): Competence-Building, Technology Fusion and Competitive Advantage: The Key Rules of Organizational Learning and Strategic Alliances, *International Journal of Technology Management*, (14)2-4, pp. 208-237.

Nonaka, I., Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation,* Oxford, Oxford University Press.

Santosus M., and Surmacz J., (2001) The ABCs of Knowledge Management http://www.cio.com/research/knowledge/edit/kmabcs.html Accessed February 1, 2004.

Sussman L., Adams A.J., and Raho L.E., (2002) Organisational Politics: Tactics, Channel and Hierarchical Roles *Journal of Business Ethics* (40) pp. 313-329

Watson, Burton, (1964) *Chuang-Tzu Basic Writings* NY, Columbia University Press.

Wiig K.M. (1998) Perspectives on Introducing Enterprise Knowledge Management in U. Reimer (ed) *Proceedings of the Second International Conference on Practical Aspects of Knowledge Management* (PAKM) 29-30 October, Basel

APPENDIX I TO SECTION I. DICTIONARY DEFINITIONS OF KNOWLEDGE

Chambers [1993]

That which is known. (enlightenment, learning, professional skill, assured belief)

Oxford English Dictionary [1978]

2 main variants - Variant 1 describes 3 applications and 16 meanings; Variant 2 offers 6 meanings

Variant 1.

- senses related to early use of know and the use of the word knowledge as a verb eg to take knowledge of (to recognise, recognition of)
- the fact or condition of knowing
- attribution and combination - such as the knowledge element, the knowledge tree

Variant 2 is often now utilised as acknowledge

Random House Dictionary [1967]

1. acquaintance with facts, truths or principles
2. familiarity or conversance as with a particular subject
3. fact or state of learning; perception of fact or truth; clear and certain mutual apprehension
4. the body of facts or truths accumulated by humankind over time

Synonym = enlightenment

Webster's Unabridged Dictionary [1986]

1. the fact or condition of knowing something with a considerable degree of familiarity gained through experience of, or contact with, or association with
2. acquaintance with, theoretical understanding of, practical understanding of

3. the fact or condition of being cognisant, conscious or aware of
4. the sum total of what is known, the whole body of truth, fact, information, principles or other objects of cognition acquired by mankind

Knowledge is information plus experience, context, interpretation and reflection. Wiig (1998) makes the point that: "Information consists of facts and data organised to characterise a particular situation, condition, challenge or opportunity. Knowledge consists of truths and beliefs, perspectives and concepts, judgements and expectations, methodologies and know-how and is possessed by humans, agents or other active entities and is used … determine what a specific situation means and how to handle it."

II. CASE STUDIES

This Section presents abstracts of knowledge management case studies. Some of the articles deal with broad topics but include case studies within them. Others are pure case study presentations. Some abstracts are from the original articles while others were specially prepared for this tutorial.

The cases are divided into two parts. The first deals with successes. Many more of these are reported in the literature than failures, which are the subject of the second part. It is classically the case that most firms seek to bury their failures and trumpet their successes. The failure section also includes general pieces that deal with failure.

In addition to these case studies, a list of cases available in trade journals and similar sources are presented in Appendix II. The list in Appendix II is representative rather than exhaustive.

SUCCESSES

Baladi, P.,(1999) Knowledge and Competence Management. Ericsson Business Consulting *Business Strategy Review* (10)4 pp.20-28

Abstract: This case study describes a new knowledge management and competence management initiative at Ericsson Business Consulting (EBC). Following a brief review of the background of EBC, the framework of a global business platform is explained. This framework includes the issues of global practices, intellectual capital management, culture change, leadership, common processes, competence management, and knowledge management. The nine learning points to be gained from this review are summarised.

Balasubramanian, P., Nochur, K., Henderson, J.C., Kwan, M.M., (1999) Managing Process Knowledge for Decision Support *Decision Support Systems* (27)1,2 pp145-163

Abstract: Describes the application of *ThoughtFlow*, a software tool designed for facilitating the development of knowledge management systems, to the derivation of the Knowledge Mill framework covering all aspects of the knowledge management process. Sets out a technique for modelling and implementing process knowledge within an organization, focusing on the classification process for generating a goal-oriented modelling schema for capturing and organizing knowledge during decision making processes. Presents a case study involving the application of *ThoughtFlow* to the strategic planning and implementation process within the information technology (IT) department of a large company.

Bresnen M, Edelman L, Newell S, Scarbrough H and Swan J, (2003) Social Practices and the Management of Knowledge in Project Environments, *International Journal of Project Management* (21)3, pp.157-166 April

Abstract: Increasingly, the importance of social aspects of knowledge retention and transfer has been emphasised in the literature on managing knowledge, with the recognition that knowledge is often tacit and situated and embedded within particular social groups and situations. This aspect

has considerable relevance for understanding attempts to manage knowledge in settings where activity and learning are project-based. Knowledge management in such a context faces many challenges, due to the one-off nature of project work and the many resulting discontinuities in methods of organisation and flows of personnel, materials and information. One important consequence is that social processes potentially play an important part in the diffusion and transfer of knowledge and learning. This paper sets out to examine the significance of social factors in enhancing knowledge management capabilities in such an environment, drawing upon case study research from the construction industry. The main finding from the research is that processes of knowledge capture, transfer and learning in project settings rely very heavily upon social patterns, practices and processes in ways which emphasise the value and importance of adopting a community-based approach to managing knowledge.

Dayasindhu N., (2002) Embeddedness, Knowledge Transfer, Industry Clusters and Global Competitiveness: A Case Study of the Indian Software Industry, *Technovation*, (22)9 pp.551- 560. September

Abstract: This paper develops a dynamic theoretical framework for global competitiveness. The framework is used to assess competitiveness of organizations in the Indian software industry. Behavioural drivers of transaction cost economics like trust and experience influence embeddedness that describes the relationships among organizations in an industry cluster. The spiral for knowledge transfer, culture variables and embeddedness influence knowledge transfer. Embeddedness and knowledge transfer are key determinants of industry clusters that lead to global competitiveness. Industry clusters are characterized by external economies, generalized reciprocity and flexible specialization. Generalized reciprocity describes the relations between constituents of an industry cluster that are based on trust. Flexible specialization facilitates the production of a variety of products for specific markets using general purpose resources. Global competitiveness is achieved by increased productivity, focussed direction and increased pace of innovation and growth. The implications of the framework for organizations in the Indian software industry are creating trust and encouraging inter organization relationships. These organizations also need to design processes for tacit knowledge transfer, implement mentoring programs and build general management capabilities.

Davenport, T. H., (1997) *KM at Ernst & Young*

Abstract: case study URL: http://www.bus.utexas.edu/kman/E&Y.htm (Accessed 12 March 2003)

Desouza K.C., (2003) Strategic Contributions of Game Rooms to Knowledge Management: Some Preliminary Insights, *Information & Management*, (41)1 pp.63-74 October

Abstract: Academics and practitioners have stressed the significance of managing knowledge in today's competitive environment. This approach resulted in many efforts to increase knowledge exchange between organizational members. Much work so far has focused on the use of information technology as either a solution or enabler of knowledge management. While information technology enables easy exchange of explicit knowledge, its contribution to sharing tacit knowledge is restricted to connecting individuals via tools, such as e-mail and groupware. This research adds to the literature by reporting on a people-centred perspective for facilitating tacit knowledge exchange. The article describes an in-depth case study carried out to determine the role played by game rooms in the exchange of tacit knowledge.

DeVries, E.J., Brijder, H.G., (2000) Knowledge Management in Hybrid Supply Channels: A Case Study *International Journal of Technology Management,* (20) pp.569-588

Abstract: Examines how information technology-enabled knowledge management contributes to channel management in today's competitive environment. Develops a theoretical framework that characterizes the competitive environment of companies and illustrates the need for hybrid channelling and effective partnering. Discusses the components of the framework: competitive

environment (hybrid channel design); and aspects of knowledge management (data, information, knowledge and learning, knowledge sharing between partners, and IT supported knowledge management). Applies the framework to computer giant IBM, to examine the company's competitive environment, its channel design, its customer relationship management programme and its knowledge sharing activities. Claims the framework to be a good starting point for studying knowledge management in channel management.

Dilnutt R., (2002) Knowledge Management in Practice: Three Contemporary Case Studies *International Journal of Accounting Information Systems* (3)2 pp.75-81 August

Abstract: Knowledge management has become a popular business management discussion topic over the past 5 years. Some of this discussion is no more than hype - generated by software product vendors and consulting houses. However, there is a compelling value proposition holding that the intellectual capital of most organisations can be better managed to create internal efficiencies and external business opportunities. This paper discusses 3 knowledge management initiatives recently undertaken in the Asia Pacific region that delivered business improvement with quantifiable benefits and demonstrable outcomes. 2 of these cases involve major Australian - based financial institutions, whilst the 3rd relates to a government treasury organisation.

Forza C and Salvador F., (2002) Managing for Variety in the Order Acquisition and Fulfilment Process: The Contribution of Product Configuration Systems, *International Journal of Production Economics*, (76)1, pp 87-98. 1 March

Abstract: Flexible production is not enough to offer the customer variety without compromising company profitability. In conditions of product proliferation, in fact, the order acquisition and fulfilment process can turn out to be a serious bottleneck, as the multiplication of the product features induces an exponential growth in the volume of information exchanged between the firm sales organisation and its customer base. Furthermore, this information has to be fed back in appropriate formats to manufacturing, with the risk of errors and delays due to the variability and complexity of product information. This study, through the discussion of a case example, reports the first results from research on a class of information systems that support the order acquisition and fulfilment process in high product variety environments, called product configuration systems. The research indicates that the implementation of a product configuration system significantly contributed to increase the effectiveness and efficiency with which the studied company translates the customer's needs into product documentation. Moreover, the benefits pertaining to product configuration systems stretch beyond operational performance, as it offers the company a way to incorporate into organisational memory product knowledge otherwise retained by individual employees. However, the introduction of a product configuration system may require significant and potentially painful changes in the way the order acquisition and fulfilment activities are organised, and necessitate a high initial investment in terms of man-hours

Hellstrom T., Kemlin P. & Malmquist U., (2000) Knowledge and Competence at Ericsson: Decentralization and Organizational Fit *Journal of Knowledge Management* (4)2 pp.99-110

Abstract: Case study, Swedish telecoms, opportunities and pitfalls

Hildreth P., Kimble C., Wright P., (2000) Communities of Practice in the Distributed International Environment *Journal of Knowledge Management* (4)1, pp.27-38

Abstract: Modern commercial organisations are facing pressures which have caused them to lose personnel. When they lose people, they also lose their knowledge. This paper looks at an area where KM does not offer sufficient support, that is, the sharing of knowledge that is not easy to articulate. The focus in this paper is on communities of practice in commercial organisations.

See article details later under Communities of Practice.

Hinton C.M., (2002) Towards a Pattern Language for Information-Centred Business Change, *International Journal of Information Management* (22)5 pp.325-341 October

Abstract: Business change is one of the most conspicuous and most pervasive features of organisational life. However, there has been very little consideration of business change in itself, rather the emphasis has been on studying the outcomes of this change. This paper focuses on a subset of business change that is centred on the information flows of the organisation and is stimulated by catalysts and enablers which induce such changes. Furthermore, change is recognised in a generic sense as either internal or external to an organisation. A conceptual framework is offered which expresses the relationship between the various elements of information-centred business change (ICBC). In order to capture this model of change a language of patterns is suggested which makes it possible to identify change in different contexts and fashion an appropriate organizational response. Patterns are advantageous as they have the potential to identify areas of change which are repetitious, and therefore, lend themselves to the communication of best practice. This research offers a template for such patterns and applies this concept to four case study organizations. The results of this application suggest that patterns offer a way of recognizing under which circumstances different interventions are most appropriate. However, the study suggests that their application is limited. Whilst patterns facilitate the codification and transfer of knowledge, ICBC depends on social interpretation, so much of this meaning is lost when transferred between contexts.

Karlsen T, Silseth P.R., Benito G.R.G. and Welch L.S., (2003) Knowledge, Internationalization of the Firm, and Inward-Outward Connections, Industrial Marketing Management (32)5 pp.385-396 July

Abstract: Even though outward operations such as exports and foreign investment have received most of the attention so far, the internationalization of businesses also includes activities that are inwardly oriented. Inward activities like purchases of machinery, the procurement of raw materials and semi finished goods provide opportunities for building relations with foreign actors. They also offer opportunities to learn about foreign trade techniques and ways of using various operation modes, and by active use of such knowledge companies should be in a better position to start or extend outward foreign operations. This paper presents a case study of the Norwegian company Moelven Industrier ASA and its operations in the Russian market. It shows that the creation and utilization of knowledge through inward-outward connections face many obstacles and that, in Moelven's case, the full potential of such connections was seldom realized.

Knight, D.J., (1999) Performance Measures for Increasing Intellectual Capital *Strategy and Leadership* (27)2 pp.22-27

Abstract: A three-level framework is introduced to help companies become knowledge-based and revise their performance measures to measure and leverage intellectual capital. The first two levels give information to support the business case for knowledge management (KM). The third level, expanding on Kaplan and Norton's Balanced Scorecard approach, shows how the Balanced Performance Measurement System (BPMS) can give performance indicators for translation into strategic action. A case study illustrates the BPMS model in action.

Liebowitz, J. et al., (2000) Knowledge Audit *Knowledge and Process Management* (7)1 pp.3-10

Abstract: The concept of the knowledge audit is introduced. The knowledge audit is often viewed as a three strand process: business needs assessment; cultural assessment; and examination of what knowledge is needed, available, missing, applied and contained. The third of these strands is focused upon and a case study of Revisions Behavioural Health Systems in the United States is presented. A knowledge audit instrument and its application in the company is reviewed.

Littlefield D., (1999) Anything Goes *People Management* (5)6 pp.46-48 25 March

Abstract: GEC's organisation for learning - Dunchurch Mgt College owned by GEC. Case study

Malik K., (2001) Knowledge Transfer at BICC Cables *Business Strategy Review* (12)3 pp46-52

Abstract: Case study in high tech companies, project leaders importance of listening as well as communication

Masoulas V., (1998) Organizational Requirements Definition for Intellectual Capital Management *International Journal of Technology Management* (16)1- 3, pp126- 143

Massey A.P., Montoya-Weiss M.M., and Holcom K., (2001) Re-Engineering the Customer Relationship: Leveraging Knowledge Assets at IBM, *Decision Support Systems* (32)2 pp.155-170 December

Newell S., Huang J.C., Galliers R.D. and Pan S.L., (2003) Implementing Enterprise Resource Planning and Knowledge Management Systems in Tandem: Fostering Efficiency and Innovation Complementarity, *Information and Organization*, (13)1 pp.25-52 Jan

Abstract: This paper examines the simultaneous implementation within a single organization of two contemporary managerial information systems--Enterprise Resource Planning (ERP) and Knowledge Management (KM). Exploring their simultaneous deployment within an organization provides an opportunity to examine the resulting interactions and impacts. More specifically, we examine their combined influence on improving organizational efficiency and flexibility, two outcomes which traditional organizational theory suggests are incompatible. Through an interpretative case study, the research confirms that: (1) the two systems can be implemented in tandem to good effect; (2) complementarity between the two systems is possible, although this is not an automatic outcome, it has to be fostered. This complementarity is analyzed in relation to the four mechanisms (namely partitioning, enrichment, metaroutines and switching) proposed by Adler, Goldoftas and Levine [1999] as vital for the simultaneous development of organizational efficiency and flexibility.

Pan, S. L. Scarbrough, H., (1999) Knowledge Management in Practice: An Exploratory Case Study *Technology Analysis & Strategic Management* (11)3 pp359-374

Reich B.H. and Kaarst-Brown M.L., (2003) Creating Social and Intellectual Capital through IT Career Transitions, *The Journal of Strategic Information Systems* 12 2 pp91-109 July

Abstract: Many organizations must continuously innovate with information technology (IT) to maintain their competitive position. This paper illustrates how the Clarica Life Insurance Company created a stream of business-enabling IT innovations after more than 70 career transitions of IT people into line business positions.

Sieloff C.G., (1999) "If only HP Knew what HP knows": The Roots of Knowledge Management at Hewlett-Packard *Journal of Knowledge Management* (3)1 pp.47-53

Abstract: While the term "knowledge management" is relatively new, many of the concepts have deep historical roots. Hewlett-Packard's strong culture and traditional business practices established an environment that encouraged innovation and the sharing of knowledge throughout the company. However, the reliance on local and informal approaches eventually became a weakness when the company had to deal with rapid growth and increased competitive pressures. The growing gap between the potential and actual value of HP's collective intellectual assets was reflected in a widely quoted management complaint from the 1980s, "If only HP knew what HP knows." However, the need for more explicit and deliberate strategies for managing knowledge has only recently become clear, as the disruptive technology of the Internet and the World Wide Web triggered an explosion in the availability of information and knowledge, but did nothing to expand our limited attention capacity.

As Knowledge Management Program Manager at Hewlett-Packard Co, (HP), the author discusses the traditional approach to knowledge management at HP. Changes introduced in the late 1980s and early 1990s contributed to a more systematic and formal knowledge capturing and

sharing process developing. The Internet and World Wide Web have led to an overwhelming abundance of information that can be turned into knowledge, and managing this flow so that it is filtered for meaning and importance has become vital. Future directions for knowledge management in HP are briefly considered.

Smith, A.C., (1999) The Learning Organization Ten Years On: a Case Study *The Learning Organisation* (6)5 p. 8

Abstract: Although a useful article about learning organisations using the example of the Canadian Imperial Bank of Commerce (CIBC) circa 10 years ago (1992), with which the author was involved, this is not an article dealing with KM. The author sees the term learning organisation as a metaphor for organisational change. Draws on the literature of Learning Organisations (LO) to provide several definitions of the concept.

Wiig, K., Odem, P., (1999) Benchmarking Unveils Emerging Knowledge Management Strategies *Benchmarking: An International Journal*, (6)3 pp.202-212

Abstract: Explores how organizations incorporate various knowledge management approaches into their businesses through an analysis of the findings of a benchmarking study of leading US organizations, and supported by case study examples from several companies including Arthur Anderson, Price Waterhouse, Skandia and Texas Instruments.

Zack MH., (1999) Managing Codified Knowledge *Sloan Management Review* (40)4 pp.45-58.

Abstract: It is suggested that while knowledge management is gaining wider acceptance, few organisations are fully capable of developing and leveraging critical organisational knowledge to improve their performance. After describing the characteristics of explicit knowledge, a process for leveraging an organisation's codified knowledge, described as a knowledge management architecture, is presented. This architecture is used to derive two fundamental and complementary approaches, each of which is illustrated by a case study. The key issues and applications are discussed.

FAILURES

Baum J.A.C. and Silverman B.S., (2004), Picking Winners or Building Them? Alliance, Intellectual, and Human Capital as Selection Criteria in Venture Financing and Performance of Biotechnology Start-Ups, *Journal of Business Venturing* (19)3 pp.411-436 May

Abstract: In the entrepreneurial setting, financial intermediaries such as venture capital firms (VCs) are perhaps the dominant source of selection shaping the environment within which new ventures evolve. VCs affect selection both by acting as a "scout" able to identify future potential and as a "coach" that can help realize it. Despite the large literature on the role of VCs in encouraging start-ups, it is generally taken for granted that VCs are expert scouts and coaches, and so the ways in which VCs actually enhance start-up performance are not well understood. In this study, we examine whether VCs' emphasize picking winners or building them by comparing the effects of start-ups' alliance, intellectual, and human capital characteristics on VCs decisions to finance them with the effects of the same characteristics on future start-up performance. Our findings point to a joint logic that combines the roles: VCs finance start-ups that have strong technology, but are at risk of failure in the short run, and so in need of management expertise. Our findings thus support the belief in VC expertise, but only to a point. VCs also appear to make a common attribution error overemphasizing start-ups' human capital when making their investment decisions.

Kautto-Koivula, K.,(1998) The Pitfalls of Knowledge *Information Strategy* (3)6, pp.26-28

Abstract: Reports the lessons that Nokia learned from the experience of developing knowledge and learning pilot programmes. Identifies the reasons for the early failures of these programmes

as laying in the failure to transfer knowledge. Sees lack of top management as being one cause. of this failure. Looks at how people can be encouraged to share information and knowledge, underlining that this is not a technical issue but one of reward and recognition. Argues that knowledge management projects cannot be imposed from the top and that they need to be implemented step-by-step, enabling support for the project to be built up throughout the company as the benefits become clear.

Lucier, C., Torsilieri, J., (1997) Why Knowledge Programs Fail? *Strategy & Business* 4th Quarter available at http://www.strategy-business.com/ press/article/13007?pg=0

Abstract: Based on a sample of 70 KM programmes. Does not set out to address issues of knowledge creation, learning, or change.

Defines learning organisation and states that organisational learning needs to be managed learning. Defines managed learning. Managed learning builds on two natural organisational dynamics, which need to be run in iterative cycles. These are (a) the creation of knowledge and (b) the organisation's ability to change. Learning needs some measures and the number of active participants in knowledge communities is suggested as one of them. Does not see a learning organisation as an end, but as a means to improving competitive position. Sees knowledge as a source of competitive advantage, but argues that knowledge has no intrinsic value. The value of knowledge is dependent upon its application.

Estimates impact of KM generally as modest. Estimates that 16% of KM programmes achieve very significant impact in years 1 and 2 following introduction. 50% achieve small, but important benefits. Remaining 34% are failures because:

1. There are no specific business objectives. For the authors the specific business value is concerned with creating improved value for the customer. In this context there is discussion of an emerging new paradigm for strategy involving the creation of greater value for customers in addition to long term value creation for stakeholders. These are held to be the drivers of a company's competitive position;
2. There is incomplete programme architecture;
3. There is a lack of focus on strategic priorities;
4. There is no ongoing involvement from top management. Here there are 4 roles for top managers: guide the start-up; set aggressive targets; change the organisation; exercise stewardship.

Most KM programmes are cut back within 2 to 3 years of implementation because they become perceived as a cost and not generating any significant business value.

The benefits of KM are measured in terms of business value. Advocates a set of KM metrics composed of: sales/employee; margin/employee; net assets/employee and that trends in these measures should be analysed over time. These measures enable inter-organisation comparisons because they are linked to operating measures and therefore provide a meaningful baseline for comparisons. Cumulative change over time is referred to as the Knowledge Gap.

Lyytinen, K., Robey, D., (1999) Learning Failure in Information Systems Development *Information Systems Journal* (9)2 pp.85-103

Abstract: States that organisations fail to learn from their experiences with developing information systems. Analyses the obstacles to learning. Considers sources of knowledge and critiques theories of use as inadequate. Identifies barriers to learning and examines how to increase organisational intelligence through KM.

Pfeffer, J., Sutton, R.I., (1999) Knowing "What" To Do Is Not Enough *California Management Review* (42)1 pp.83-107

Abstract: The authors draw attention to the failure of implementation. They are concerned by the fact that there is a plethora of knowledge, mainly explicit, but that organisations do not act on it. They report that in 1996 more than 1700 business books were published in the US; $60 billion was spent on training; $43 billion was spent on management consultancy; 80,000 MBAs graduate annually in the US and 73% report not drawing on their MBA skills at all during their first managerial assignments. But still the knowing, but not doing syndrome continues. Argues that some of the most successful firms do not recruit business school graduates - Southwest Airlines, The Men's Warehouse, Wal-Mart, Service Master, Starbucks and others by way of example. Claims that knowledge is not being implemented. Asks how organisations can discover the extent to which they are not doing what they think they should be doing.

Quotes Fortune magazine commenting that maybe CEOs don't say what they mean and maybe they have trouble implementing what they say. Poor communication leads to lack of consistency in management practices and philosophy across different facilities within the same organisation. Variation in performance is determined by the extent to which knowledge can be translated into action. Best practice often is not rocket science. Cites Honda's BP (best practice, best process, best performance) programme and concludes that the genius of the Honda system was in its implementation, not in particularly novel or complicated technical ideas for enhancing productivity.

In the US firms have not exploited knowledge by building it into products and services, or developed new products and services based on organisational knowledge. Key to this is that KM efforts are often divorced from day-to-day realities. Critiques managers, management consultants and information technologists for designing and building systems for collecting, storing and retrieving knowledge based on limited and inaccurate perceptions of how people actually use knowledge in their jobs. Tacit knowledge especially is transferred via social process - stories, gossip, observation - social interaction. Cites the Centre for Workforce Development reporting that up to 70% of workplace learning is informal. Dumping technology on a problem is rarely an effective solution. Yet when knowledge is transferred by stories and gossip instead of solely through formal data systems, it comes along with information about the process that was used to develop that knowledge. When just reading reports or seeing presentations, people don't learn about the subtle nuances of work methods - the failures, the tasks that were fun, the tasks that were boring, the people who were helpful, and the people who undermined the work.

Claims that KM systems seem to work best when those who generate the knowledge are also those who store it, explain it to others and coach them as they try to implement the knowledge. Management literature is castigated for separating knowledge from philosophy and values. Points to the difference between knowledge and knowing by taking an example from Toyota where the surface knowledge in terms of a set of techniques and practices is easily revealed, but the philosophy and perspective remain hidden. Proposes 8 guidelines for turning knowledge into action:

1. Philosophy - consider the why before the how;
2. Knowing comes from doing and teaching others how;
3. Action is more important than elegant plans and concepts;
4. There can be no doing without mistakes - reasonable failure should never be received with anger (Warren Bennis and Burt Nanus);
5. Fear encourages the knowing-doing gap, so fear must be driven out;
6. Fight the competition, not each other;
7. Measure what matters and what can assist in transforming knowledge into action;
8. It matters what leaders do.

Storey, J., Barnett, E., (2000) Knowledge Management Initiatives Learning from Failure *Journal of Knowledge Management* (4)2 pp.145-156

Abstract: Up to 84 per cent of knowledge management programmes will fail with a large proportion being cut back within two to three years of their initiation. Yet despite this statistical reasons behind the failure rate are rarely explored or lessons learned. A review is made of the key elements of knowledge management initiatives and sources for potential failure are summarised. A case study of a major European company, International Resources, and its failed knowledge management initiative is presented and causes of the failure are discussed and explored in the context of the wider literature on knowledge management.

III. COMMUNITIES OF PRACTICE (COPS)

OVERVIEW

> *"CoPs are becoming the core knowledge strategy for global organizations. As groups of people who come together to share and learn from one another face-to-face and virtually, communities of practice are held together by a common interest in a body of knowledge and are driven by a desire and need to share problems, experiences, insights, templates, tools, and best practices. CoPs channel knowledge flow and promote consistent and standardized knowledge sharing throughout an organization. These communities give organizations the structures and processes needed to quickly identify and exchange valuable knowledge capital to drive business results."* [APQC 2004a]

CoPs define a particular type of social relationship, and as such may be understood through concepts drawn from social theory. They can be defined as a group of individuals, which may be co-located or distributed, motivated by a common set of interests and willing to develop and share both tacit and explicit knowledge. Communities enhance organisations - they foster professional development as well as organisational learning.

The role of CoPs is to share knowledge and improve the way the organisation does business, whether in the public or private sector. They are a community workplace where people can share ideas, mentor each other, and tap into interests [APQC, 2002]. CoPs may use tools but these tools should be adjusted to fit the different types of communities that exist and the culture that they work within. Vestal [2003] suggests four main types of communities :

- innovation communities - that are cross-functional to work out new solutions utilising existing knowledge;
- helping communities - to solve problems;
- best-practice communities - attaining, validating and disseminating information;
- knowledge-stewarding - connecting people and collecting and organising information and knowledge across the organisation.

All communities contain people undertaking a number of roles within them. There will need to be a community sponsor, a leader, and members. The sponsor needs to assist in the set-up and maintenance of the community providing not just moral support but perhaps also financial and public relations. The sponsor is the person with the vision whereas the leader is the person with the necessary passion to ensure that the community continues to operate, grow and develop. The leader should also be a person of some expertise in the area and needs a number of skills to perform this role: - communication skills; networking; listening; the ability to make things happen; to sustain activity; business orientation and general business skills [APQC & McDermott R., 2001].

10 TRAITS OF SUCCESSFUL COMMUNITIES OF PRACTICE

Successful CoPs [Vestal, 2003] should exhibit the following 10 traits:

1. a compelling, clear business value proposition for all involved;
2. a dedicated skilled leader;
3. a coherent, comprehensive knowledge map for the CoP's core content;
4. an outlined, easy-to-follow knowledge sharing process;
5. an appropriate technology medium that facilitates knowledge exchange, retrieval and collaboration;
6. communication and training plans for those outside of the CoP;
7. an updated, dynamic roster of CoP members;
8. several key metrics of success to show business results;
9. a recognition plan for participants;
10. an agenda of topics to cover for the first 3 - 6 months of existence.

All communities contain people undertaking a number of roles within them. There will need to be a community sponsor, a leader, and members. The sponsor needs to assist in the set-up and maintenance of the community providing not just moral support but perhaps also financial and public relations. The sponsor is the person with the vision whereas the leader is the person with the necessary passion to ensure that the community continues to operate, grow and develop. The leader should also be a person of some expertise in the area and needs a number of skills to perform this role: - communication skills; networking; listening; the ability to make things happen; to sustain activity; business orientation and general business skills [APQC & McDermott R., 2001].

> *"In helping communities--those designed to connect members for help on specific problems--leaders bring people together and help identify the projects that the community will address. In best-practice communities--those that focus on developing, validating, and disseminating specific practices--leaders' jobs are organized primarily around managing the flow of ideas into verified, distributed practices. Because knowledge-stewarding communities focus on ownership of knowledge in a specialty area, it is important for the leader to remove organizational barriers, allow the community to be heard, and change the strategic direction of the company. In an innovation community--those designed to develop and promote innovation- -the leader faces the greatest challenge of finding a balance between letting the community grow on its own and keeping it focused to organizational objectives."* [APQC & McDermott 2001]

> *"Most important when dealing with CoPs is the realization that these communities are living bodies of knowledge that require a moderate amount of attention to function. That is, too much pressure to perform can dissipate a community, just as leaderless communities can lose direction. And as communities become a more integral part of an organization, they can reshape the organization itself by changing the culture to one of greater knowledge sharing."* [APQC 2004b]

CoP's only exist and operate successfully when they trust (Section XIII) the other members of that CoP. Knowledge is connected and is a bond between the social and professional links of practitioners in particular areas that enable them to share experience and understanding. These bonds are not fostered by organisations but exist despite them although organisations can support them. They are easy to destroy but difficult to construct. Membership, and choice, of a community needs to be voluntary otherwise members may not participate in the knowledge-sharing that is their raison-d'etre.

Each CoP can be a focus of learning and competence for the organisation. Much of an organisation's work can be facilitated and (conversely) frustrated, through these CoPs. Some authors call CoPs 'the shop floor of human capital' and thus they are strongly related to the notion of Intellectual Capital (IC) (Section V) . IC has been thought of by many theorists as a combination of customer capital, organisational capital and human capital. Here, human capital serves as a collective term for an organisation's core competences, the skills and knowledge, which the enterprise draws on to create and innovate in order to remain competitive. This development of human capital can thus take place in a CoP. But CoPs are not yet common in all organisations and are often not fully supported either through technology or through the organisational structure. Yet they are one way that (semi) autonomous team-working has infiltrated into organisations that might otherwise be inimical to that idea.

CoPs differ from traditional team-working approaches in that they are most likely to be cross-functional and multi-skilled. They therefore align themselves closely to the sociotechnical ideals of inclusivity and fluid boundaries. CoP members will be drawn from those who wish to involve themselves and who desire to share knowledge and learn from others about a specific topic, wherever in an organisation (and in some cases, outside the organisation too), they may be located. Functional position is irrelevant, topic knowledge or interest is all that is necessary to join a CoP. The diversity of a CoP's population may encourage creativity and problem solving, and linkages to external communities will also enhance their activities. CoPs are the legitimate place for learning through participation. They additionally provide an identity for the participator in terms of social position and knowledge attributes and ownership. CoPs will have a shared domain and domain language and some members may become apprentices as they are acculturated into this domain and knowledge development. It also important when establishing CoPs, to think about the embedded habits, assumptions, and work practices or cultural norms that exist in the organisation. Communication, and how and where, as well when, people communicate are extremely important in relation to information sharing.

Communities (John Seeley Brown argues in Ruggles and Holtshouse [1999]) are also the places that provide us with different perspectives and lenses through which to view the world.

CoPs have become increasingly important as a means of information sharing within professions and of collaboration with like-minded people. CoPs may also be increasingly important due to organisational complexities including subsidiaries, mergers and acquisitions. But communities may not yet be possible in every workplace environment. The evidence from the workplace is that ICT-supported strategies for CoP development are better than ICT-led strategies [Kling and Courtright 2003] and that the sociotechnical approach is valid for CoP development. ICT has different roles to play as knowledge management systems are established and evolve in organisations - it moves from being the underlying infrastructure to the linking mechanism, to the support mechanism [Pan and Leidner 2003]. Yet without an understanding of the underlying work practices and organisational social and cultural aspects, the ICT support will not match the specific elements that make this organisational culture unique and thus will be ineffective.

Many organisational cultures are still not yet ready for this process. Scarbrough [2003] argues that there are four key behaviours that drive collaboration - he identifies these as the knowledge web; the knowledge ladder; the knowledge torch and the knowledge fortress. It is important to remember, he argues, that one organisation may contain one or more of these behaviours within its different units and functional areas or subsidiaries. Therefore, one knowledge management strategy will not fit all organisational areas.

In Scarbrough's terms the knowledge web connects people with others through social networks. Knowledge is thus valued because it connects people to others. Social networks are the key factor in knowledge-sharing and will determine how knowledge is shared through the ICT networks. The use of the ICT mirrors the social networks - who connects to whom, who is the hub of the network etc that exists outside of the technology. Successful CoPs will mirror these social networks and thus strengthen existing behaviours rather than undermine them.

REFERENCES FOR SECTION III

APQC (2002) *Communities of Practice* Houston: APQC

APQC and McDermott R., (2001) *Building and Sustaining Communities of Practice* Houston: APQC

APQC(2004a) http://www.apqc.org/portal/apqc/site/generic?path=/site/km/communities.jhtml (accessed 14/02/04)

APQC (2004b) *Retaining Valuable knowledge: Proactive Strategies to Deal with a Shifting workforce* www.apqc.org/pubs (accessed February, 2004)

Kling, R., and Courtright, C. (2003). Group Behaviour and Learning in Electronic Forums: A Sociotechnical Approach. *Information Society,* 19(3), 221- 235.

Pan, S.L., and Leidner, D.E. (2003). Bridging Communities of Practice with Information Technology in Pursuit of Global Knowledge Sharing. *Journal of Strategic Information Systems,* (12), pp. 71-88.

Ruggles, R., & Holtshouse, D. (1999). *The Knowledge Advantage: 14 Visionaries*

Define Marketplace Success in the New Economy Oxford: Capstone.

Scarbrough, H. (2003). Why your Employees Don't Share What They Know. *KMReview,* 6(2), 16-19.

Vestal W., (2003) Ten Traits for a Successful Community of Practice *Knowledge Management Review* (5)6 Jan/Feb. p.6

WEB REFERENCES FOR SECTION III

http://www.gurteen.com/gurteen/gurteen.nsf/0/36018DC0241567CA8025697E004AD425

http://www.tcm.com/trdev/cops.htm

http://www.infed.org/biblio/communities_of_practice.htm

http://www.it-analysis.com/article.php?articleid=11047

http://www.intranetfocus.com/intranets/communities.html

http://www.knowledgeboard.com/community/zones/sig/cp.html

ARTICLES

Barker, M., (2000) Knowledge Management Best Practice *Personnel Today* (29) Feb 17

Abstract: In this profile, the author, a senior consultant for Post Office Consulting, describes the organisation's experience with a knowledge management programme. The support needed by knowledge management communities is outlined and a number of key tips are summarised.

Büchel B. and Raub S., (2002) Building Knowledge-Creating Value Networks, *European Management Journal,* (20)6, pp.587-596, December

Abstract: The author's previous research showed that the most valuable activities in knowledge management focus on creating knowledge networks that extend beyond the traditional concept of communities of practice. 'Business Opportunity' and 'Best Practice Transfer' networks were shown to contribute directly to the creation of value within firms. To foster these value-creating

networks, the authors propose a four-stage process illustrated by examples of companies that were investigated in detail.

Cinquegrani, R., Futurist Networks: Cases of Epistemic Community?, *Futures,* (34)8 pp.779-783 Oct

Abstract: This article analyses the concept of epistemic community focusing the attention on two aspects, which contribute to define this 'actor': knowledge and capacity of acting under the conditions of uncertainty. The link between these two issues and the 'nature of future studies' is considered and the possibility of considering some organisations and institutions as future epistemic communities is explored. The case of the World Futures Studies Federation is examined in detail. In 1992, Peter Haas defined an 'epistemic community' as follows: "an epistemic community is a network of professionals from a variety of disciplines and backgrounds, they have a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members; shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired outcomes; shared notions of validity--that is, inter-subjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and a common policy enterprise--that is a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence". In ancient Greek, the term 'episteme' has a meaning which belongs to the philosophical sphere; 'community' is a concept which comes from the religious tradition and, more recently, has been the objective of sociological studies. Epistemic community links the two terms to indicate a 'new' and in some aspects, atypical political actor. At etymological level we already have a first sort of indication with respect to what is meant: politics as a synthesis of religion (faith), sociology (the decisions taken by policy makers have consequences on the whole society) and philosophy (intended as Weltanschaung). Haas identifies other characteristics: "members of an epistemic community share inter-subjective understandings; have a shared way of knowing; have shared patterns of reasoning; have a policy project drawing on shared causal beliefs, and the use of shared discursive practices and have a shared commitment to the application and production of knowledge" This gives rise 'to the desire for information, which is not so much based on purely technical knowledge but rather information, which is the product of human interpretation'. Epistemic communities, national or trans-national, are one possible provider of such information. At this stage, and considering only this aspect of the whole definition, we could argue that a network of experts active in the field of future studies would represent the perfect portrait of what we are looking for: a multi-person actor able to 'anticipate', using knowledge, various backgrounds and expertise. To anticipate, in this context, might be specified as to understand or comprehend global and local changes. In general, futurists work within the framework of complexity and uncertainty, try to re-define problems in broader context and attempt to comprehend 'change' using knowledge. Futurists cannot afford to ignore this connection between the knowledge and alternative futures. Thus, the concept of epistemic community and the theory of 'knowledge economy' have a great deal in common. If we consider that the so-called 'decision-makers' are (in democratic countries) elected by the people, we can argue that that section of the people able to disseminate consciousness of problems, possible solutions and long term implications, posses a form of power. Without engaging with this power, we cannot shape viable and meaningful futures.

The analytical tools offered by the concept of epistemic community seem appropriate under the current prevailing conditions of uncertainty and ignorance. Understanding uncertainty and bringing multi-faceted expertise and knowledge to analyse difficult problems and propose future solutions are the two fundamental characteristics of futurists. The constitution of a network of experts coming from different backgrounds is already a reality inside the Federation but, at the moment, there is no linkage with the traditional and democratic forms of power. To become an active epistemic community, the WFSF has to realise its potential and develop these much needed linkages.

Haas P., (1992) Banning Chlorofluorocarbons - Epistemic Community Efforts To Protect Stratospheric Ozone *International Organization* (46)1 pp.187-224 Winter

Hildreth P., Kimble C., Wright P., (2000) Communities of Practice in the Distributed International Environment *Journal of Knowledge Management* (4)1 pp.27-38

Abstract: Modern commercial organisations are facing pressures which have caused them to lose personnel. When they lose people, they also lose their knowledge. Organisations also have to cope with the internationalisation of business forcing collaboration and knowledge sharing across time and distance. Knowledge management (KM) claims to tackle these issues. This paper looks at an area where KM does not offer sufficient support, that is, the sharing of knowledge that is not easy to articulate. The focus in this paper is on communities of practice in commercial organisations. We do this by exploring knowledge sharing in Lave and Wenger's [1991] theory of communities of practice and investigating how communities of practice may translate to a distributed international environment. The paper reports on two case studies that explore the functioning of communities of practice across international boundaries.

A rich and well argued article. Examines the debate in the literature and then proceeds to illustrate with case studies of Watson Wyatt from Kimble et al [1998] - an international actuarial business - and the management team of IT support in an anonymous international company. Discusses how downsizing has resulted in loss of knowledge base from organisations. Differentiates two forms of knowledge: domain knowledge, which is relatively easily replaced; knowledge of how work is done in practice, which is not easily replaced. Differentiates between hard and soft knowledge. Hard knowledge is equivalent to domain knowledge. Soft knowledge encompasses experience, work knowledge, tacit knowledge [Nonaka I., 1991]. Discusses concept of Communities of Practice [Lave and Wenger 1991] (See also Liedtka, J. [1999], in which she employs a metaphor of communities of practice to think about organisations creating sets of meta capabilities, which include organisational learning, participative leadership, collaboration, strategic thinking & TQM, argues that meta capability offers sustainable competitive advantage.)

Communities of Practice (COP) can be seen as a form of apprenticeship of knowledge (see Bloom[1956]) and this is a way to join a COP, which is regarded as "an intrinsic condition for the existence of knowledge" [Lave & Wenger 1998] and a place where "learning as legitimate peripheral participation" occurs. Legitimation, participation and peripherality are all seen as boundary conditions where location and identity are situated in the social world. Turns attention to a business operating in a distributed international environment that requires an international team to bring skills and expertise to problems and tasks. Provides definitions of COPs drawn from the literature. Refers to importance of story telling in organisational culture (see Johnson and Scholes [1993]) in this respect for model of cultural web) by means of which solutions become part of the knowledge stock of a COP. Makes the connection between a COP and a team. The two terms are not synonymous, but a COP can become a team and vice versa given certain conditions. It is also possible for COPs to become virtual, but this seems to contradict one of the success criteria established earlier by the authors, which concerned the importance of face-to-face contact. Key aspects in successful virtual COPs are a "shared domain language and knowledge".

In the case studies, provides 5 metrics as indicators of COPs involving contact, dialogue, sharing, swapping, learning in which the concept of bandwidth becomes prominent.

Liedtka, J., (1999) Linking Competitive Advantage With Communities Of Practice *Journal of Management Inquiry* (8)1 pp.4-16

This article argues that a dominant set of current themes in the management literature themes of learning, participative leadership, collaboration, strategic thinking, and total qualify management, converge around the creation of a set of metacapabilities. Metacapabilities allow organizations to adapt to change on a continuous basis by contributing the hinds of skill and knowledge that underlie the process of capability building itself.The creation of these metacapabilities, in turn,

requires new metaphors for thinking about organizations. One such metaphor conceives of organizations as communities of practice. Communities of practice are composed of groups of individuals united in action. This view allows us to move beyond the emulation of fragmented best practices to focus on the underlying value system that is likely to support such communities. The author argues that this discussion is informed by more than a decade of work by feminist moral theorists on an ethic of care.

Malone, D., (2002) A Model for Organizational Learning, International Journal of Accounting Information Systems, (3)2 pp.111- 123 August

Abstract: This paper presents a model developed with the help of the Knowledge Management Special Interest Group (KM SIG) of the Consortium for Advanced Manufacturing International (CAM 1) with organizational implications for managing knowledge. The KM SIG model rests on knowledge domains that exist in an organization's environment. Firms engage in knowledge management practices for the purpose of filtering knowledge into its core, stable processes where that knowledge can be used to produce value for the firm. The model presented in this paper identifies the route knowledge takes in this filtering process. The filtration mechanisms that accomplish this process are project teams, knowledge communities, communities of practice and knowledge networks.

McKenna B., (1999) Communities Shaped by Technology *Online & CD - ROM Review* (23) 2, 111-113 April

Pan, S.L. and Leidner, D.E., (2003) Bridging Communities of Practice with Information Technology in Pursuit of Global Knowledge Sharing, *The Journal of Strategic Information Systems*, (12) 71-88

Abstract: This paper explores the use of information technology to support knowledge sharing within and between communities of practice. In so doing, it presents a case of a multi-national organization's efforts to implement an organizational knowledge management (KM) system. The cases trace both the technological solutions and the KM strategy of the organization as it met with various challenges along a several year period of establishing KM as organizational practice. The study highlights several lessons, including the possibility of a flexible KM strategy, the necessity for multiple channels of knowledge sharing, the desirability of expanding communities of practice, and the evolution of the role played by information technology as KM strategies evolve

Storck J. Hill P.A., (2000) Knowledge Diffusion through "Strategic Communities" *Sloan Management Review* (41)2, pp. 63-74 Winter

Abstract: When faced with a global IT infrastructure transition project, Xerox managers decided to launch a knowledge-sharing initiative called the Transition Alliance. When fully functional, the Alliance comprised fifty IT professionals responsible for managing 70,000 desktop workstations, nearly 1,200 servers, and networking hardware on five continents. Storck and Hill observed that community members provided high-quality, validated solutions, handled unstructured problems well, and dealt effectively with new developments in hardware and software. The authors also point out that the motivation for learning and developing at an individual level seemed greater in this community structure than in other organizational forms, which has important implications for the longer-term job performance of the participants.

The Alliance was more than simply a group that met occasionally to discuss common issues related to a single functional or professional area, it had a defined relationship to formal organizational objectives yet was not formally required to report back to headquarters on its activities. Within the Alliance, the communication repertoire was built upon the leadership training required for all Xerox employees. Work processes that developed within the Alliance supplemented those used elsewhere in the organization. Handling action items, creating meeting agendas, and developing other processes were evidence of the self-directed nature of the group and provided a context for communication.

Storck and Hill identified six guiding principles that were instrumental to Alliance success and are applicable whenever circumstances require organizational learning:

- Design an interaction format that promotes openness and allows for serendipity.
- Build upon a common organizational culture.
- Demonstrate the existence of mutual interests after the initial success at resolving issues and achieving corporate goals.
- Leverage those aspects of the organizational culture that respect the value of collective learning.
- Embed knowledge-sharing practices into the work processes of the group.
- Establish an environment in which knowledge sharing is based on processes and cultural norms that are defined by the community rather than other parts of the organization.

Tovstiga G., (1999) Profiling the Knowledge Worker in the Knowledge-Intensive Organization: Emerging Roles *International Journal of Technology Management* (18)5-8, pp. 731-744

Abstract: Interested in the post-industrial enterprise because its wealth creation is based on innovation, creativity, discovery and inventiveness. Essentially concerned with the role profiling of knowledge workers, but describes the knowledge intensive organisation's knowledge creation and conversion process. Discusses the way that knowledge crosses boundaries and knowledge workers become networked into communities of knowledge practices. Provides a useful cyclical model showing how learning creates knowledge which fuels innovation thus breeding change that in turn accelerates further learning. Refers to Nonaka and Takeuchi [Nonaka, I., Takeuchi, H. 1995], and their description of how knowledge-intensive organisations, when innovating in response to a changing environment, in effect create new knowledge as a result of knowledge conversion between either of two forms or modes of knowledge - the tacit and the explicit forms.

The role of the knowledge worker is evolving even as organizations in the post industrial era are increasingly relying on the intangible intellectual capital of their people for competitiveness. Understanding, harnessing and capitalizing on the attributes of its knowledge workers in ways that contribute to the sustained well being of the firm is increasingly being considered fundamental to the survival of today's firm. In spite of its immense competitive implications, the concept of the evolving role of the knowledge worker has, nonetheless, remained much of an enigma to management.

A diagnostic approach to profiling the evolving role of the knowledge worker in terms of patterns of behavioural and functional attributes is described. It is based on a conceptual framework that describes the knowledge intensive organization's knowledge creation and conversion processes; metaphorical role descriptions are used to elicit the relative contributions of the knowledge worker to each of the knowledge processes. What emerges is a visual pattern mapping of the knowledge worker's role showing a potentially hybrid, composite, and flexible portfolio of competencies and attributes, all of which contribute to the organization's knowledge creation and knowledge conversion processes. The role portfolio is not necessarily concentrated within a single knowledge worker; rather, it is distributed across boundary crossing communities of knowledge practices' on various levels within and external to the knowledge intensive firm.

The paper concludes with an illustration of how the diagnostic instrument has been used to profile ‘the knowledge worker' in one particular knowledge intensive organization an industrial research laboratory. The results suggest a shift in the knowledge worker role from that of primarily 'technology gatekeeper' to one consisting of a flexible composite of 'knowledge engineer', 'knowledge navigator', 'knowledge analyst' and knowledge steward`. While the 'technology gatekeeper' role in the past has contributed primarily to the firm's explicit knowledge processes, there appears to be an increasingly greater impact of the emerging knowledge roles within the tacit knowledge domain. Equally important, however, the case illustrates that the emerging role of the knowledge worker is highly dependent on the knowledge intensive firm's organizational context its learning culture, knowledge base and enabling practices

BOOKS

Bokin, J., (1999) *Smart Business: How Knowledge Communities Can Revolutionize Your Company* New York NY: Free Press
Abstract: From the publisher: Examines how managers can organise their workplaces to effectively exchange, expand and exploit knowledge and attempts to demonstrate how to turn knowledge into wisdom. Examples of practical applications are cited throughout, and case studies from Xerox, Marriott, Saturn, IRL, Sweden Post, SMG and Los Alamos National Laboratory are included.

ELECTRONIC RESOURCES

Cody K., (2001) Best practice: Exploiting knowledge within a global company: The Truffles intranet — *Interactive Marketing,* 2 3 http://www.theidm.com/index.cfm?fuseAction=contentDisplay.&chn=3&tpc=18&stp=53&pge=206
Abstract: Reviews four years of the development of O&M's KM support technology known as Truffles. Explains the system's name derived from a comment attributed to David Ogilivy: "we pursue knowledge the way a pig pursues truffles".

Describes how KM usage is championed actively and continuously by the Chairman and top management team. Found that usage is a variable dependent upon office size and remoteness of location. Usage reported to be higher in smaller and more remote offices.

Truffles is intranet accessible. The composition of the site's front page is described in some detail - e.g. importance of hyperlinks to other knowledge objectives and external sites. Central to the concept of Truffles are the issues of content, usage, and application. Describes one of the early issues as being concerned with who had the rights to publish new knowledge objects. This right is now restricted to KM managers working to a specific template. Knowledge objects are sometimes so large (e.g. case studies) that they become sitelets, which exploit the design and creative skills available within this media organisation. Truffles decides where new knowledge objects are placed.

Employs metaphors of the Library and the Cafeteria to explain how KM operates within O&M. The content and systems within Truffles represents the Library; the Cafeteria is a virtual device aimed at encouraging participation and the sharing of tacit knowledge. On entering the Cafeteria, individuals register and create a set of profiles such as personal, professional, interests, and skills. Truffles captures their interests and skill sets and structures these into searchable form. A personalised home page is created containing images and biographical information.

Truffles encouraged the establishment of communities of practice and set up community pages by filtering information so time is not wasted in scanning irrelevant content.

Brown, J.S., Denning, S., Groh, K., Prusak, L., (2001) Storytelling: Passport to the 21st Century http://www.parc.xerox.com/ops/members/brown/storytelling/ Intro4a-How Larry&JSB.html
Abstract: Authors argue that knowledge and learning are formed as a result of the interplay between content, context, and community.

Stories enable effective transactions between communities of practice. Good stories are seen as capable of engaging listeners' feelings, offering transportability of ideas/concepts, and providing a framework for understanding generalities. Offers the idea of stories being bridges between CoPS.

The role of the knowledge artist at Xerox PARC is briefly discussed.

Advocates the use of storytelling as "the ultimate low cost, high return technology." States that storytelling communicates ideas holistically.

Blames Plato, Aristotle, Bacon and Descartes for disseminating negative views of storytelling. Highlights storytelling as narrative thinking vs. abstract thinking and contend that vested interests continue to denigrate the former. Claims that the storytelling role model should be Tolstoy.

IV. CULTURE

ARTICLES

Bonfield, P., (1999) Knowledge Management Strategy at BT *Managing Information* (6)6 pp.26-30

Abstract: The author, Chief Executive of BT, talks about the challenges of knowledge management within this global communications company. He discusses a range of issues, including: why BT has needed to share knowledge; the way in which a knowledge sharing environment was created; the identification of knowledge worth sharing; and the steps BT takes to share knowledge.

Chait, L.P., (1999) Creating a Successful Knowledge Management System. Journal of *Business Strategy* (20)2 pp.23-26

Abstract: As the corporate director for knowledge management for Arthur D Little Inc (ADL), the author outlines the knowledge management system implemented at ADL. He identifies and discusses three factors that have been most important to setting up the knowledge management system: ensuring vision and alignment; managing the four domains of content, culture, process and infrastructure; and creating an effective plan.

Darling. M. S., (1996) Building the Knowledge Organisation *Business Quarterly* London:ONT: Richard Ivey School of Business pp.61-66, Winter

Abstract: Sees intellectual capital in organisations as analogous to social capital at national level. Has some links here with Bartels and Savage [1999] in terms of organisational glue. Organisational knowledge is regarded as an intangible asset. States that knowledge is the only asset that offers the assurance of a thriving competitive future. KM is concerned with managing abundance rather than scarcity like the traditional factors of production. States that structuring and applying knowledge assets are more challenging than obtaining them. Corporate systems - especially HRM/PM have to support organisational knowledge. KM has to be embedded in organisations to be of value/benefit. Describes CIBC as a learning organisation and provides a measure of success (page 63).

A barrier to motivating individuals is the threat to their position in the organisations if they share their implicit knowledge. Another barrier is the NIH attitude (not invented here). It is stated that a knowledge culture needs to be created in order to free an organisation from these mindsets. Is a knowledge culture the same as a learning organisation? Defines knowledge culture as associated with:

- Valuing knowledge and placing it at the disposal of the customer;
- Democratising knowledge by de-linking it from individuals;
- Valuing diversity by recognising no age, experience, race or gender hegemony;
- Accepting a new role for management;
- Focusing on the knowledge grid of what we know we know, what we know we don't know, what we don't know we know, what we don't know we don't know - in this respect customer satisfaction surveys are always backward looking and do not focus on what we don't know we don't know, which is the most important segment.

States the purpose of KM as being to improve output for the customer. Offers four key elements to make this achievable:

1. Individual learning as an outcome of knowledge mapping;

2. Team learning and sharing knowledge;
3. Organisation learning;
4. Customer learning.

Tools to assist 1 through 4 are:

- Internal web sites - intranets;
- Guides, templates and questionnaires - Lotus Notes is mentioned as being particularly useful here;
- Walking the talk in order to help transform the organisation and embed its knowledge culture - this is an important area for management and requires a lot of small actions over the medium term.

Argues KM cannot be measured in terms of rate of return, but says some performance indicators might be:

- Increased business;
- Improved employee satisfaction;
- Better customer assessment;
- Increased return on equity.

Huber, G.P., (1999) Facilitating Project Team Learning and Contributions to Organizational Knowledge. *Creativity and Innovation Management* (8)2 pp. 70-77

Abstract: Claims KM literature indicates majority of organisations are ineffective in KM. Sees project teams as main users/generators of organisational knowledge. Analyses how learning can be facilitated via type and design of teams. Looks at how organisational practices can support team enquiry and learning. Examines barriers to knowledge transfer between teams and thus the limitations on learning and suggests how organisations can overcome this problem.

Buckler, B., (1998) Practical Steps Towards a Learning Organisation: Applying Academic Knowledge to Improvement and Innovation in Business Processes The *Learning Organization* (5)1 p.7

Abstract: Describes work being carried out at Nottingham Trent University in synthesising a learning process model from learning theory and deriving a practical model for practitioners in management to apply to team and organisational learning. Identifies some of the systemic barriers and the leadership skills necessary to create a learning organisation.

Argues UK performs poorly in innovating and improving. Looks at linkages between learning and performance improvement. Advocates the need for change. Discusses incremental and continuous improvement in terms of doing better things, or doing things better over time. Both can be achieved by looking outwards to consider products and services from the customer perspective and by looking inwards at organisational processes. Defines learning as a process that results in changed behaviour in ways that lead to improved performance. Models the learning process [Buckler, 1996] Empirical study involved 26 managers drawn from manufacturing, service and public sector organisations. Examines the competitive advantage of innovating. States that a top down command and control style is inimical to a learning culture. Develops a taught-discovery learning continuum for assessment of various learning methodologies. Barriers to learning exist when driving and restraining forces for and against learning are matched. Says effective learning requires some kind of reflective process. Discusses the role of leadership in organisational learning and identifies effective manager-staff interaction. States that organisational culture might need transforming. Summarises 7 key learning points that have emerged from the study and offers a concept of the learning organisation. Highlights 7 important principles influencing the design of workshops for managers involved in this programme.

Graham, A., Pizzo, V., (1997) 'Competing on Knowledge': Buckman Laboratories *International Knowledge & Process Management* (4)1 pp4-11
Abstract: Describes how US chemical manufacturer Buckman Laboratories International set about achieving its goal to be faster and more innovative than competitors by developing competences in knowledge management through the investment in a computer-based knowledge sharing infrastructure, known as K'Netix. Explores the features of the system which include: e-mail; personal home pages for each employee; a number of forums such as a message bulletin board, a library and a virtual conference room; access to the Internet's World Wide Web. Discusses how employees initially reacted to the system, and the company's knowledge networkers' continuous endeavours to make K'Netix a more effective management tool. Explains how the initial culture shock was handled through notions of respect for the individual embodied in the company's code of ethics. Gives examples of how the network has differentiated the company from its competitors, providing effectively an interface between the customer and the entire company.

Kersey, S.M., (1998) Changing the Corporate Culture *Knowledge Management* June pp11-14
Abstract: Explores how organisations are capturing explicit knowledge and installing KM tools - i.e technology. Provides some examples through interviews with others including Elizabeth Lank. Sets out a list of intangibles considered as critical for successful implementation of KM.

Leidner D.E., (1998) Understanding Information Culture: Integrating Knowledge Management Systems into Organisations *Insead Working Papers* Cedex, Fountainebleu
Abstract: KM systems clash with corporate culture, framework for assessing those aspects of culture which are likely to be a source of implementation challenges.

Lucas, E., (2000) Creating a Give and Take Culture *Professional Manager* (9)3 pp.11-13
Abstract: The need to share information and knowledge within and often between organisations is emphasised, and barriers to such sharing are considered. The views of author Nancy Dixon and of Dr Laura Empson are given and a knowledge-sharing project at Jewson Builders merchants is described. The Ulster Bank Group's focus on developing a culture for sharing is mentioned.

Lynn B.E., (1999) Culture and Intellectual Capital Management: a Key Factor in Successful ICM Implementation *International Journal Of Technology Management* (18)5 -8, pp.590 -603
Abstract: National culture and organizational culture can have a profound impact on the way in which organizations choose to manage themselves. This paper provides an introductory discussion of the relationship between intellectual capital management (ICM) and reporting and three national cultures Canada, USA and Sweden. Six company cases are presented: Canadian Imperial Bank of Canada, Royal Bank, Dow Chemical, IBM, Celemi and Skandia The case studies reveal that both national culture and organizational culture affect the successful implementation of ICM. Furthermore, culture appears to play a major role in whether ICM information remains proprietary (USA) or is disseminated to a larger audience (Sweden).

Dixon, N.M., (1998) The Responsibilities of Members in an Organization that is Learning. *The Learning Organization* (5)4 pp. 161-167
Abstract: It is stated that as organisations move towards organisational learning the responsibilities of its members change. Members themselves should be giving consideration to what these responsibilities should be and not leaving this to management. Offers 6 responsibilities for further discussion concerning the generation and sharing of knowledge.

Harvey, M., Palmer, J., Speier, C., (1998) Implementing Intra-Organizational Learning: A Phased-Model Approach Supported by Intranet Technology *European Management Journal* (16)3 pp.341-354
Abstract: States that the learning organisation has been heralded as a proactive structure by means of which to address the turbulent environment within which modern businesses operate. A learning culture enables managers to meet the expectations of both internal and external stakeholders. How a learning culture may be engendered is proposed through the use of a 4-

phase model for the implementation of learning within an organisation. The model is supported by IT in the form of an intranet.

Provides a definition of learning organisation driving from Senge's Fifth Discipline. Provides an instance of IT creating a barrier to learning and cites Gill [1995]. Highlights several companies, which have become learning organisations including Koch Industries, Ford, Skandia, National Semiconductor. Follows McGill and Slocum [1993] categories of culture:

- A knowing culture;
- An understanding culture;
- A thinking culture;
- A learning culture.

Establishes the properties of each category in terms of its interaction with IT. Identifies 3 learning processes based on Argyris and Schon's [1978] model - single, double and deutero, or triple, loop learning. Offers a 4 phase model for the transformation of organisational culture thereby facilitating the development of a learning organisation. Refers to various information technologies utilsed in information exchange including email, groupware and discussion groups. Argues that these are inferior to intranets. Defines an intranet. Advocates introduction of an intranet as the most effective IT architecture to support a learning organisation.

Petrash G., (1996) Dow's Journey to a Knowledge Value Management Culture *European Management Journal* (14)4 pp. 365-373 August

Abstract: Intellectual Capital/Knowledge Management is not the next silver bullet or fad that we should rally around. We need to ask is knowledge management important for the sake of 'what does it have to produce?' It is the creation of value for customers, share holders and employees. The Dow Chemical Company has spent the last four years developing a vision, functional systems, and tools, for the 'value management' of its Intellectual Assets (IA). During this effort, it has developed some competencies in the area of 'measuring and valuing' IA, and in developing systems that support the leveraging of IA for maximum value. In this article, Dow shares its experiences gained and reveals some of the lessons learned from this highly successful endeavor. The article also gives a glimpse of Dow's future direction in the area of Intellectual Capital Management.

Pfeffer, J., Sutton, R.I., (1999) Knowing "What" To Do is Not Enough. *California Management Review* (42)1 pp83-107

Abstract: The authors draw attention to the failure of implementation. They are concerned by the fact that there is a plethora of knowledge, mainly explicit, but that organisations do not act on it. They report that in 1996 >1700 business books were published in the US; $60 billion was spent on training; $43 billion was spent on management consultancy; 80,000 MBAs graduate annually in the US and 73% report not drawing on their MBA skills at all during their first managerial assignments. But still the knowing, but not doing syndrome continues.

Herbert, I., (2000) Knowledge is a Noun, Learning is a Verb *Management Accounting* (78)2 pp. 68-72

Abstract: Written from an accountant's perspective and apparently aimed at students- more specifically from the point of view of management accounting. Sees learning as a process and knowledge as a product of the learning activity. Knowledge becomes an asset although not a tangible one thus it is seen as work in progress. This work in progress is referred to as intellectual capital. This form of capital is part of the total value of non-tangible assets in the organisation represented by the difference between net assets in the accounts and market capitalisation - this involves shareholder perception in the case of listed companies. Intellectual capital includes patents, brands, techniques, products, markets.

Defines the difference between data, information and knowledge. Data are facts; information is processed data; knowledge represents the collection of events, experiences and feelings about

an organisation's business that helps it to rationalise its current situation and develop plans/products for the future. Knowledge is seen as either explicit, or tacit. Explicit knowledge is transparent and can be codified, categorised and stored. Tacit knowledge is opaque because it resides in individuals.
Argues that KM is driven by IT (an over-simplification and contentious) and is concerned with collecting, rationalising, codifying, storing and disseminating all knowledge within an organisation. States that a key theme of KM is to transform tacit into explicit knowledge, which requires a change in organisational culture. States that organisational learning is the process by which individuals, and the organisation as a whole, develop and use their stock of knowledge while a learning organisation is one that both teaches and learns from itself. Cites Senge's 'The Fifth Discipline' as the source of the term learning organisation. Discusses single and double loop learning, but significantly omits the triple loop, or deutero, learning in which state an organisation is said to be capable of learning from itself. Introduces the idea of capacity for learning as a function of ability and attitude. Also discusses organisational memory and sees knowledge as a commodity - marketing people would probably take issue with this and argue that in an organisation knowledge is at least a product and perhaps even a brand. In this respect the author contradicts himself as his article opened by defining knowledge as a product. But does helpfully point out that knowledge is perishable.

Hofstede, G., (1993) Cultural Constraints in Management Theories *Academy of Management Executive* (7)1 pp81-94

BOOKS

Chase, R.L., (1998) *Creating a Knowledge Management Business Strategy: Delivering Bottom Line Results* Lavendon (UK):Management Trends International

Abstract: The first in this series on knowledge management examines how companies can select, develop and implement a knowledge management strategy. A number of approaches are outlined and a range of issues such as developing leadership and managing knowledge workers, encouraging a knowledge sharing culture, using information technology tools, and measuring intellectual capital are addressed. Barriers and pitfalls to avoid are discussed and 16 best practice case studies of international and UK companies are presented. The final chapter lists knowledge management resources including books, journals and web sites.

V. INTELLECTUAL CAPITAL

INTELLECTUAL CAPITAL AND STRATEGY

Carayannis, E.G., Alexander, J., (1999) The Wealth of Knowledge: Converting Intellectual Property to Intellectual Capital in Co-Opetitive Research and Technology Settings *International Journal of Technology Management* (18)2/3, pp. 326-352

Abstract: Intellectual property rights (IPR) are shown to be the emerging currency of the global, knowledge-based economy and the intellectual property (IP) audit is a key strategic competitive weapon for firms. Presents the role of IPR enforcement and harmonisation and IP commercialisation strategies in a global, intra and inter firm and industry context. IP management is examined from the perspectives of the knowledge management and technology management fields, paradigms which facilitate rather than impede research collaborations in co-opetitive, technology-driven environments.

Peppard J. and Rylander A., (2001) Using an Intellectual Capital Perspective to Design and Implement a Growth Strategy:; The Case of APioN, *European Management Journal,* (19)5, pp. 510-525 October

Abstract: This paper uses the case of telecommunications software company APiON to illustrate how the company developed and implemented a growth strategy that allowed it to realize a dramatic increase in shareholder value through proactively focusing on harnessing its intellectual capital (IC) resources. Having surveyed the literature on value creation, categorizing it under financial and economic, strategic, managerial action, and resource based perspectives. the paper notes that a major criticism that can be leveled at all these perspectives is that they are weak in identifying specific actions and in mobilizing organizational resources to increase shareholder value. Even resource based theory (RBT) focuses on the development and protection of valuable resources rather than on providing a theory of 'resources in action'. The IC perspective has emerged alongside RBT as a complementary viewpoint but has a distinctive practitioner bent emphasizing resource accumulation and deployment in the value creation process. This paper presents the key tenets, concepts and language of the IC perspective, illustrating its implementation using the case of APiON. It closes with some lessons and implications for knowledge intensive businesses.

Saint-Onge, H., (1996) Tacit Knowledge: The Key to the Strategic Alignment of Intellectual Capital *Strategy & Leadership* (24)2 pp. 10-15

Abstract: Discusses the concept of intellectual capital, and explores the role of tacit knowledge in the three constituent elements of intellectual capital: human capital, consumer capital and structural capital. Considers how tacit knowledge is formed, the impact it has on strategy development and implementation, and how tacit knowledge can be aligned in support of strategy. Examines the management of tacit knowledge at the Canadian Imperial Bank of Commerce, where the Leadership Centre provides the organization with systemic practices for the generation and renewal of intellectual capital. Suggests that tacit knowledge can be reshaped through participation in group sessions that systematically surface individually- or collectively-held assumptions about how to deal with business, customers or employees; that the beliefs underlying these assumptions can be made explicit; and that the ways in which these beliefs may need to change to accomplish objectives in a new business environment can then be determined.

ARTICLES

Alexopoulos E., Theodoulidis B., (2003) The Generic Information Business Model *International Journal of Information Management* (23)4 pp. 323-336 August

Abstract: Today, businesses have to cope with rapid environmental changes, which are mainly driven by technological innovation. In order to gain a sustainable advantage, they need to effectively manage their intellectual capital, leveraging the data they possess to information that can be acted upon to facilitate knowledge creation. As it was soon established, effective organisational information management is hindered by the lack of structure that pertains information use. The information audit is a management technique that provides the necessary structure by identifying the way in which employees use information in order to perform their tasks. However, even though the technique succeeds in capturing the entities that affect organisational information use, it is accepted that it fails to effectively map the complex many-to-many relationships existing between those entities and to effectively guide the auditors during synthesis between the audit stages. The present paper introduces the generic information business model that overcomes these problems, providing a complete and clear picture of organisational information use.

Baladi P., (1999) Knowledge and Competence Management Ericsson Business Consulting *Business Strategy Review* (10)4 pp.20-28.

Abstract: This case study describes a new knowledge management and competence management initiative at Ericsson Business Consulting (EBC).

Bassi L.J., (1997) Harnessing the Power of Intellectual Capital *Training & Development* (51)12, December

Abstract: Training and performance improvement professionals can play pivotal roles in managing knowledge in their organizations.

This article, written by the vice president of research at the American Society for Training & Development points out that though there is nothing new about intellectual capital being a competitive advantage, what is new are the ways that companies are creating and leveraging such capital.

The article defines intellectual capital as employees' brainpower, know how, and knowledge. In the current combative business environment, a firm's fortunes can rise or fall depending on how effectively it creates, captures, and makes the most of its knowledge.

The article offers several explanations for why knowledge management has suffered from "delayed development," including downsizings and the fact that the information era sort of sneaked up on us mainly through technological breakthroughs that made information processing faster and cheaper. The trick is catching up.

One technology that helped spur knowledge management is the use of the Internet for information gathering and sharing. In fact, economists refer to Intemet-based virtual communities as "natural monopolies."

IM professionals can be central players in knowledge management initiatives by helping senior managers see the need for a culture change to support such initiatives and by helping lead them.

The article provides a list of 12 ways to measure intellectual capital, adapted from the Montague Institute. The include benchmarking, competency models, and a balanced scorecard.

Bontis N., Dragonetti N.C., Jacobsen K., Roos G., (2001) Assessing Knowledge Assets: a Review of the Models Used to Measure Intellectual Capital *International Journal Of Management Reviews* (3)1 pp. 41- 60.

Abstract: This paper reviews the literature pertaining to the assessment of knowledge assets. Since knowledge assets are at the crux of sustainable competitive advantage, the burgeoning field of intellectual capital is an exciting area for both researchers and practitioners. Unfortunately, the measurement of such intangible assets is difficult. A variety of models have surfaced in an attempt to measure IC and this paper aims to highlight their strengths, weaknesses and operationalizations

Bontis N., Keow W.C.C., Richardson S., (2000) Intellectual Capital and Business Performance in Malaysian Industries *Journal of Intellectual Capital* (1)1, pp85 -100.

Abstract: The purpose of this empirical study is to investigate the three elements of intellectual capital, i.e. human capital, structural capital, and customer capital, and their inter relationships within two industry sectors in Malaysia. The study was conducted using a psychometrically validated questionnaire which was originally administered in Canada. The main conclusions from this particular study are that: human capital is important regardless of industry type; human capital has a greater influence on how a business should be structured in non service industries compared to service industries; customer capital has a significant influence over structural capital irrespective of industry; and finally, the development of structural capital has a positive relationship with business performance regardless of industry. The final specified models in this study show a robust explanation of business performance variance within the Malaysian context which bodes well for future research in alternative contexts.

Brennan N., Connell B., (2000) Intellectual Capital: Current Issues and Policy Implications *Journal of Intellectual Capital* (1) 3 pp.206-240

Abstract: Substantial differences between company book values and market values indicate the presence of assets not recognised and measured in company balance-sheets. Intellectual capital assets account for a substantial proportion of this discrepancy. At present, companies are not required to report on intellectual capital assets, which leaves the traditional accounting system ineffective for measuring the true impact of such intangibles. Regulations currently in place are analysed in this article. Prior research concerning intellectual capital is presented. Frameworks for intellectual capital are compared. Indicators used for the measurement of intellectual capital are examined. The research methodologies employed for collecting information about the use of intellectual capital accounts in companies are reviewed. Guidelines available to companies for reporting on intellectual capital are considered and also the efforts made towards developing an accounting standard for intellectual capital. Finally, current issues and policy implications of accounting for intellectual capital in the future are examined.

Brooking A., (1997) The Management Of Intellectual Capital *Long Range Planning* (30)3 pp. 364-365

Brooking A., (2000) Introduction to Intellectual Capital *The Technology Broker* http://www.tbroker.co.uk/intellectual_capital/index.html

Bukh P.N., Larsen H.T. and Mouritsen J., (2001) Constructing Intellectual Capital Statements *Scandinavian Journal of Management* (17)1, pp.87 -108, March.

Abstract: This article analyses the development of intellectual capital statements in 19 Danish firms. These statements are discussed in order to show how they work in relation to knowledge management activities. Based on survey and interview data from the firms that have collaborated in developing intellectual capital statements, the article focuses on why and how these firms embarked on producing such statements. Three brief case studies illustrate the complexities of this type of reporting, which integrates a three way relationship between narratives/stories, sketches, and metrics.

Caddy I., (2000) Intellectual Capital: Recognizing Both Assets and Liabilities *Journal of Intellectual Capital* (1) 2 pp129-146.

Abstract: Contends that the current treatment of intellectual capital possessed by organizations (either knowledge intensive or otherwise) has been somewhat superficial. For instance, the terms "intellectual" assets and "intangible" assets have often been used interchangeably, although a case can be made that there are differences between these two groups of assets. To date there has been too much focus on intellectual assets - and to some extent an implied equivalence between intellectual assets and intellectual capital. Considers the issue of the other factor within the intellectual capital equation, namely, intellectual liabilities. For if double entry is to apply in the area of intellectual capital then with every debit (in the sense of a building up) there should also be allowed the possibility of a credit (in the sense of a reducing down). In fact intellectual capital is more appropriately derived as a net figure (subtracting intellectual liabilities from intellectual assets) rather than a mere summation of the organization's identified intellectual assets. Whether or not actual absolute values can be derived is also considered questionable.

A theoretical article with application in practice.

Carayannis, E.G., Alexander, J., (1999) The Wealth of Knowledge: Converting Intellectual Property to Intellectual Capital in Co-Opetitive Research and Technology Settings *International Journal of Technology Management* (18)3/4 pp. 326-352.

Abstract: Intellectual property rights (IPR) are shown to be the emerging currency of the global, knowledge-based economy and the intellectual property (IP) audit is a key strategic competitive weapon for firms.

Chwalowski M., (1997) Intellectual Capital Matters *The Electricity Journal* Dec., pp.88-93.

Abstract: utility managers preoccupied with restructuring of their businesses, creating new value and distribution channels, and bundling new services need to take a step back and understand why they must focus on creating the intellectual capital to acquire the competitive edge.

Cotter, N., Bagshaw, M., Bagshaw, C., (1999) Intellectual Capital Knowledge has a Value, *Training Journal* April pp10-12

Abstract: The importance of the asset of knowledge to an organisation is emphasised. The barriers to learning, knowledge and creation in organisations are examined and the three essential elements required to turn learning potential and knowledge into profit are described. The implications for the learning organisation are discussed.

Dess G.D., Ireland R.D., Zahra S.A., Floyd S.W., Janney J.J., Lane P.J., (2003) Emerging Issues in Corporate Entrepreneurship *Journal of Management* (29)3 pp.351-378, June

Abstract: Research on corporate entrepreneurship (CE) has grown rapidly over the past decade. In this article, we identify four major issues scholars can pursue to further our understanding about CE. The issues we explore include various forms of CE (e.g., sustained regeneration, domain redefinition) and their implications for organizational learning; the role of leadership and social exchange in the CE process; and, key research opportunities relevant to CE in an international context. To address the latter issue, we propose a typology that separates content from process-related studies and new ventures vs. established companies. We close with a reassessment of the outcomes in CE research, which becomes particularly salient with the increasing importance of social, human, and intellectual capital in creating competitive advantages and wealth in today's knowledge economy. Throughout the article, we use the organizational learning theory as a means of integrating our discussion and highlighting the potential contributions of CE to knowledge creation and effective exploitation.

Dibiaggio L., (2002.) Managing Intellectual Capital. Organizational, Strategic, and Policy Dimensions *Technovation* (22)1 pp.62- 64 January

A book review of Teece, D.J., *Managing Intellectual Capital*… Oxford: Oxford University Press

Dilnutt R., (2002) Knowledge Management in Practice: Three Contemporary Case Studies Inter*national Journal of Accounting Information Systems* (3)2, pp.75-81, August

Abstract: This paper discusses 3 knowledge management initiatives recently undertaken in the Asia Pacific region that delivered real business improvement with quantifiable benefits and demonstrable outcomes. 2 of these cases involve major Australian - based financial institutions, whilst the 3rd relates to a government treasury organisation.

Edvinsson L., Kitts B., Beding T., (2000) The Next Generation Of IC Measurement - The Digital IC-Landscape *Journal of Intellectual Capital* (1)3 pp. 263-273.

Abstract: A methodology (based on multi-dimensional scaling and mathematical statistics) is introduced that reduces the high dimensionality of "IC-differencing components" into a 3-D dimensional representation - the digital IC-landscape. Building and maintaining a digital IC-landscape supports systematically: pedagogical display of IC complexity, migration of IC-affecting knowledge, exploratory retrieval of high IC-efficiency, investment planning and forecasting. In this project, 11 companies - with a total of 20-64 "essential variables" and "free parameters" - have been analyzed and results of the study reported.

Erikson T., (2002) Entrepreneurial Capital: The Emerging Venture's Most Important Asset and Competitive Advantage *Journal of Business Venturing* (17)3 pp.275-290, May

Abstract: This study presents a parsimonious model of entrepreneurial capital defined as a multiplicative function of entrepreneurial competence and entrepreneurial commitment. This approach is an extension of Ulrich's [1998] 15.1 proposition of intellectual capital to a practical framework of entrepreneurial capital. The relationship between entrepreneurial competence and

commitment is argued to be a multiplicative one rather than additive as both components must be strongly present for development to take place. For example, the presence of entrepreneurial competence without any commitment creates little value for the new venture. In contrast, the presence of entrepreneurial commitment without adequate entrepreneurial competence may be regarded as a waste of both time and resources. However, the presence of both entrepreneurial competence and commitment lays the foundation for enterprise generation and performance. Inherent in this view on competence is the capacity to identify opportunities. Krueger and Dickson [1994] found that an increase in perceived capability increases perceptions of opportunities. That is, individuals who perceive themselves as entrepreneurially capable are expected to be alert and sensitive to opportunities, and able to take advantage of such opportunities if they consider the endeavor worthwhile. Entrepreneurial capital can also be conceived as the present value of future entrepreneurial behavior. This is analogous to the PV rule in the finance literature. A similar notion is used when social capital is conceived as the sum of resources in networks. However, McGrath [1996] conceived opportunities as latent potential or shadow options. Entrepreneurial capital can then be conceptualized as the present value of an infinite series of shadow options. In this study, entrepreneurial behavior is conceived as the pursuit of opportunities without regard to resources currently controlled. The perceived capacity to venture is investigated in a prospective research design and prospective MBAs serve as a study sample. The empirical evidence of this study supports the proposed relationship between the main components in the equation. The practical implications for society and educational institutions are that the focus of training should be on the drivers of the components in the equation. Investors and prospective entrepreneurs are also advised to be concerned about these issues. The practical implications for venturing individuals are that it is vital to demonstrate their competence and motivation toward possible stakeholders. The practical implications for investors are that they should be more concerned about competence and motivation issues among individuals and individuals in venturing teams, e.g. is the venturing team properly matched?

Graef J., (1997) *CFO's Guide to Intellectual Capital* Limited Edition Publishing; also URL: http://www.montague.com/le/le1096.html

Abstract: 12 techniques used to value intangible assets

Harrison S and Sullivan PH Sr., (2000) Profiting from Intellectual Capital: Learning from Leading Companies *Journal of Intellectual Capital* (1)1 pp33 -46

Abstract: Over the course of the 1990s the level of interest as well as the sophistication of best practices in the management of intangible assets increased dramatically. This article is intended to provide information on the current state of best practices in the management of intellectual capital. In addition, the article will discuss the evolution of best practices in ICIT concepts underlying the activities of companies sophisticated in the management of their intangibles, factors affecting the measurement of intellectual capital, and the ways in which companies tailor their ICM activities to match the needs of their different business strategies.

Herbert, I., (2000) Knowledge is a Noun, Learning is a Verb *Management Accounting* (78)2 pp.68-72.

Abstract: Written from an accountant's perspective and apparently aimed at students- more specifically from the point of view of management accounting. Sees learning as a process and knowledge as a product of the learning activity. Knowledge becomes an asset although not a tangible one thus it is seen as work in progress. This work in progress is referred to as intellectual capital. This form of capital is part of the total value of non-tangible assets in the organisation represented by the difference between net assets in the accounts and market capitalisation - this involves shareholder perception in the case of listed companies. Intellectual capital includes patents, brands, techniques, products, markets.

Ho C-A and Williams S M., (2003) International Comparative Analysis of the Association between Board Structure and the Efficiency of Value Added by a Firm from its Physical Capital

and Intellectual Capital Resources, *The International Journal of Accounting* (38) 4,pp465-491

Abstract: This study investigates the link between corporate board features and corporate performance for a sample of 286 publicly traded firms from South Africa (84 firms), Sweden (94 firms), and the UK (108 firms). Corporate board features considered are board composition, inside director ownership, duality and board size. In contrast to prior literature, performance is defined as the efficiency of value added (VA) rather than in financial terms. Further, the analysis examines the association between board features and efficiency of VA and each of the firm's physical capital (PC) and intellectual capital (IC), respectively. Finally, the present study analyzes the association between board features and corporate performance conjointly. Comparable to general findings from studies using U.S. data, the empirical analysis as a whole did not discern consistent significant link between the four board features and corporate performance across the three nations. However, individual board features are found to influence corporate performance in isolated cases. Overall, results provide evidence that even under different sociopolitical and economic conditions, governance needs vary across firms. Consequently, these findings do not lend support to the notion that uniform board structures should be mandated.

Hunter L., (2002) Managing Intellectual Capital: Organizational, Strategic and Policy Dimensions by David Teece, Oxford: Oxford University Press, 2002. (book review) *European Management Journal* (20)6 p.712 December

Abstract: This is the paperback edition of David Teece's book, the hardcover version of which first appeared in 2000. It is greatly to be welcomed in this form, as it makes the work more easily accessible to the increasing number of academics, managers and students concerned with the knowledge economy and intellectual capital issues.

Johnson W.H.A., (1999) An Integrative Taxonomy of Intellectual Capital: Measuring the Stock and Flow of Intellectual Capital Components in the Firm *International Journal Of Technology Management* (18)5/8, pp.562 -575

Abstract: Building on the resource based view of the firm, an Intellectual capital framework is suggested to identify and measure important resources that may provide the firm sustainable competitive advantage. The difficulty of measuring and managing the elements of intellectual capital is a result of management's inherent tendency towards over dependence on financial measures of performance. Typically, however, the Intellectual capital assets of the firm are intangible and not easily amenable to financial measures as benchmarks. In attempting to operationalize the concept the paper begins by developing an integrative taxonomy of Intellectual capital based on recent literature. Each element of Intellectual capital is then further developed by examining the various types of intangible assets that embody it. Using a software firm as an example, potential quantitative and qualitative indicators of tile stock of intellectual capital within the firm are given. Direction towards measuring flows as indicators of intellectual capital strength is discussed.

Jordan J and Jones P., (1997) Assessing your Company's Knowledge Management Style *Long Range Planning* (30)3 pp.392-398, June

Abstract: As a reaction to an increasingly volatile external environment, many companies now base strategy on their core competencies. This has emphasized the importance of intellectual capital to create competitive advantage. This is especially apparent in companies whose main assets are intangible, such as consultancy.

To maintain competitive advantage, companies need to have and manage resources which are difficult to copy. In this it is the way in which the company exploits its intellectual capital which is vital. The challenge is to improve knowledge acquisition. Research was used to identify ways in which companies did acquire and use knowledge.

Most organizations use a mix of both internal and external sources. The way in which this is achieved has four elements. One is whether the primary problem solving function is at team or individual level. Another is whether the approach is random or programmed. The other two are whether it is based on experience and whether the focus is radical or incremental. Sharing the knowledge comprises processes, i.e. whether the sharing is formal or informal, wide or restricted. Ownership of information can be emotional, e.g. when there is the belief that knowledge is power, and it can be resource based. The means of storing information need to be considered; this can be explicit or tacit.

The research findings can be illustrated through the case history of Company X. There the acquisition of knowledge takes place opportunistically and relies on internal sources which can be questioned. The problem solving is undertaken by individuals concerned with their specific expertise and developing solutions based on experience. Information goes informally to a relatively small number of people and an individual will be reluctant to part with knowledge if he or she feels undervalued. Knowledge is chiefly in the head rather than in files. The company is highly dependent on individuals' willingness to share and runs a high risk when an individual leaves the company. The reaction of management in such an instance is a decision to change, with the introduction of responsibilities to integrate information, of more cross functional team working as well as formal mechanisms.

Organizations wishing to alter their management of knowledge need to tackle both structural changes and approaches to work. At the same time knowledge codification does not ensure efficient distribution of information. The use of IT can be positive but problems of system use and information overload can result in potential not being realized. A useful starting point for companies wanting to understand the company's core competence is to profile the existing knowledge characteristics. By understanding the knowledge processes within the company and recognizing the hurdles in the way of change, companies should be able to identify and exploit their own unique sources of competitive advantage.

The growing intensity and dynamism of competition has forced firms to focus their long term strategies on resources and capabilities rather than served markets. Intellectual capital has emerged as one of the firm’s critical resources, and the ability to build and exploit intellectual capital its most strategically significant capability. Any attempt to exploit intellectual capital for competitive advantage must be based on a sound understanding of an organization's current approach to acquiring, sharing and utilizing knowledge. In this article the authors explore the key dimensions of organizational knowledge and develop a framework which distinguishes different knowledge profiles.

Khurana I.K., (2003) International Comparative Analysis of the Association between Board Structure and the efficiency of Value-Added by a Firm from its Physical Capital and Intellectual Capital Resources: A Discussion *The International Journal of Accounting* (38)4 pp.493-497

Kitts B., Edvinsson L., Beding T., (2001) Intellectual Capital: From Intangible Assets to fitness Landscapes *Expert Systems with Applications* (20) pp35-50

Abstract: Intellectual Capital (IC) has been proposed by Edvinsson and Malone [1997] as a technique for quantifying a company's intangible assets. A careful analysis can result in hundreds of variables, and extracting knowledge from these measurements can be difficult. We introduce a knowledge management technique called IC mapping that attempts to synthesize this data into a fitness landscape. Using the map, managers can query the surrounding landscape, view the company's trajectory across the landscape, and calculate what parameters need to be changed to reach new locations. IC mapping provides a novel knowledge management tool for understanding, managing, and representing a company's intangible knowledge assets.

Klaila D, Hall L., (2000) Using Intellectual Assets as a Success Strategy *Journal of Intellectual Capital* (1)1 pp.47-53.

Abstract: You may be surprised to discover that millions of dollars in revenue are sitting, undiscovered, inside your own organization. Follow the authors as they walk you through different areas of your business to discover the untapped potential of "forgotten" intangible assets that may already exist, including patents, trademarks, licensing arrangements, employee know how, infringement protection plans, and much more. Learn how to manage these assets to their fullest potential by creating an Intellectual Asset Management Portfolio (I AMP). The authors reveal their own five step process and then present three case studies (an energy company, a high tech manufacturer and a telecom company), which illustrate the remarkable increases in revenue generated by this program. In one case, $1 billion was shifted from the expenditure to the revenue side of the ledger!

Liebowitz J. & Suen C.Y., (2000) Developing Knowledge Management Metrics for Measuring Intellectual Capital *Journal of Intellectual Capital* (1)1 pp. 54 - 67.

Abstract: Measuring intellectual capital is a growing area of interest in the knowledge management field. Metrics are being developed and applied by some organizations, but there needs to be more research throughout the international community to better define these measures. One limitation of the current measures is that they do not necessarily address the "knowledge leveP and the types of value added knowledge that individuals obtain. This paper takes a look at the current measures, discusses some possible limitations, and suggests some additional measures that could be used in the intellectual capital area to complement existing measures.

Low J., (2000) The Value Creation Index *Journal of Intellectual Capital* (1)3 pp.252-262

Abstract: The Cap Gemini Ernst & Young Center for Business Innovation (CBI) conducted a series of studies on the role of intangibles in creating value in the modern corporation and developed a rigorous, comprehensive model - the value creation index - of value creation for progressive companies, one that enables users to measure the impact of key intangible asset categories on a company's market value. By devising a set of standardized measures, weighted according to their relative impact, managers have the tools to better drive and monitor their company's future performance. At the same time, if disclosure rules change in parallel, investors will be armed with a more uniform, less subjective and more robust way of evaluating companies. Over time, the value creation index will evolve, continuing to identify value creation drivers, while remaining sufficiently flexible so it can adapt to the constantly changing nature of companies in the connected economy.

Lynn B. E., (1999) Culture and Intellectual Capital Management: A Key Factor in Successful ICM Implementation *International Journal Of Technology Management* (18) 5/8, pp.590 -603.

Abstract: National culture and organizational culture can have a profound impact on the way in which organizations choose to manage themselves. This paper provides an introductory discussion of the relationship between intellectual capital management (ICM) and reporting and three national cultures Canada, USA and Sweden.

Masoulas V., (1998) Organizational Requirements Definition for Intellectual Capital Management *International Journal of Technology Management* (16)1/3 pp.126- 143

Abstract: To manage intellectual capital of organizations, a systemic and human oriented approach must be followed. In this article a means is proposed of managing Intellectual capital: participative development of systems supporting the management of skills (learning systems), information (information systems), experience (experience systems) and attitudes (compensation, selection, career development systems). The design of these systems should be based on organizational requirements. In this paper, a formal method of requirements definition is presented to be used as the basis of intellectual capital management in organizations. A case study is included to show how the method can be brought into practice as well as its general applicability for managing intellectual capital of organizations.

Mouritsen J., Larsen H.T. and Bukh P.N.D., (2001) Intellectual Capital and the 'Capable Firm': Narrating, Visualising and Numbering for Managing Knowledge *Accounting, Organizations and Society* (26)7/8 p735 p.762 October-November

Abstract: Intellectual capital statements are 'new' forms of reporting whose object is knowledge management activities. Based on 17 firms' work to develop intellectual capital statements, this paper analyses them as managerial technologies making knowledge amenable to intervention. Aspects of actor network theory are mobilised to suggest that the intellectual capital statement is a centre of translation, which mobilises knowledge management via three interrelated elements: knowledge narratives, visualisations and numbers. Intellectual capital statements report on the mechanisms put in place to make knowledge manageable. Writing intellectual capital is a local story, which often concerns making knowledge collective and a process of allowing it to be oriented towards organisational ends. In such a story, knowledge is about a firm's capabilities and abilities to make a difference to a user. When writing an intellectual capital statement, firms locate employees, customers, processes and technologies and orient them towards a user. However, the statement as such is a means of 'dis locating' knowledge resources making them amenable to intervention. There are certain broad types of intervention that allows a classification of strategies of intervention to be proposed. These terms are portfolio management, improvement activities and productivity. Such forms of intervention circumscribe the aspiration to transform knowledge from something internal to the person into something that is the effect of a collective arrangement. They allow through intellectual capital statements the dark, tacit knowing of individuals to come into the open space of calculation and action at a distance.

Mouritsen J., (1998) Driving growth: Economic Value Added versus Intellectual Capital *Management Accounting Research* (9)4 pp.461-482, December

Abstract: This paper compares and contrasts Economic Value Added (EVATM) and Intellectual Capital (IC) as two technologies of managing oriented towards encouraging growth. The analysis suggests that EVATM, and IC contrasts greatly. EVATM is a financial management system based on radical delegation and 'empowerment' and which therefore directs attention to the results created by managers. Based on financial micro-theory, EVATM is a performance measure that attempts to account more properly for the cost of capital, but more than that, it is also a management control system which seeks to create radically independent business units and minimize corporate staff. IC is a different control system concerned to encourage endogenous growth implemented via loosely coupled sets of non-financial measurements that become strong via stories and metaphors about the post-modern firm in the post-modern world. Here, based on theories of organizational knowledge and competence development, emphasis is put on mobilizing white collar productivity and creativity based on some form of evolutionary economics or resource-based theory. While EVATM looks to managers as the movers of change, IC seems more systematically to promote the creativity possessed by employees.

Nunamaker J.F. Jr, Romano N.C. Jr, and Briggs R.O., (2002) Increasing Intellectual Bandwidth: Generating Value from Intellectual Capital with Information Technology *Group Decision and Negotiation* (11) pp.69-86, Mar

Peppard J. and Rylander A., (2001) Using an Intellectual Capital Perspective to Design and Implement a Growth Strategy; The Case of APioN *European Management Journal* (19)5 pp.510-525, October

Abstract: This paper uses the case of telecommunications software company APiON to illustrate how the company developed and implemented a growth strategy that allowed it to realize a dramatic increase in shareholder value through proactively focusing on harnessing its intellectual capital (IC) resources. Having surveyed the literature on value creation, categorizing it under financial and economic, strategic, managerial action, and resource based perspectives. the paper notes that a major criticism that can be leveled at all these perspectives is that they are weak in identifying specific actions and in mobilizing organizational resources to increase shareholder value.

Petty R., Guthrie J., (2000) Intellectual Capital Literature Review Measurement, Reporting and Management *Journal of Intellectual Capital* (1)2 pp.155-176

Abstract: The rise of the "new economy", one principally driven by information and knowledge, is attributed to the increased prominence of intellectual capital (IC) as a business and research topic. Intellectual capital is implicated in recent economic, managerial, technological, and sociological developments in a manner previously unknown and largely unforeseen. Whether these developments are viewed through the filter of the information society, the knowledge-based economy, the network society, or innovation, there is much to support the assertion that IC is instrumental in the determination of enterprise value and national economic performance. First, we seek to review some of the most significant extant literature on intellectual capital and its developed path. The emphasis is on important theoretical and empirical contributions relating to the measurement and reporting of intellectual capital. The second part of this paper identifies possible future research issues into the nature, impact and value of intellectual management and reporting.

Reich B.H. and Kaarst-Brown M.L., (2003) Creating Social and Intellectual Capital through IT Career Transitions *The Journal of Strategic Information Systems* (12)2 pp.91-109 July

Abstract: Many organizations must continuously innovate with information technology (IT) to maintain their competitive position. This paper illustrates how the Clarica Life Insurance Company created a stream of business-enabling IT innovations after more than 70 career transitions of IT people into line business positions. The theoretical lens used to discuss this case is the Nahapiet and Ghoshal theory of co-creation of social and intellectual capital. After presenting the Clarica case study with three management profiles, we interpret the data to show how social capital led to an increase in intellectual capital and the organizational advantage that was achieved. We conclude with suggestions for extensions of this model and implications for research and practice.

Roos J., (1998) Exploring The Concept Of Intellectual Capital (IC) *Long Range Planning* (31)1 pp.150-153, February

Teece D.J., (1998) Capturing Value from Knowledge Assets: The New Economy, Markets for Know How, and Intangible Assets *California Management Review* (40)3 pp. 55 + SPR

Abstract: The increasing liberalization of markets coupled with the creation of new markets for intermediate products is stripping firm level competitive advantage back to its fundamental core.. difficult to create and difficult to imitate intangible assets. This article explores these developments and elucidates implications for the management of Intellectual capital inside firms.

Ulrich D., (1998) Intellectual Capital = Competence x Commitment *Sloan Management Review* Winter (39)2 pp.15-26

Abstract: Makes the point that intellectual capital appreciates and that this is important in an era when the service economy sector is growing. Argues that the multiplication in the title is important as it easily alters the index. States that service level comes out of relationships and that organisations need a learning culture. The commitment indicator is the length of time an employee remains within an organisation. Organisations can build intellectual capital by investing in employee learning and can do this by buying it, building it, borrowing it, bouncing it and binding it. Proposes a simple formula in which intellectual capital derives from the interaction of competence with commitment. Examines ways of increasing both commitment and competence and provides a number of management tools for achieving both based on the 5Bs above. Essentially a people management approach to enhancing an organisation's intellectual capital.

Commitment and competence are embedded in how each employee thinks about and does his or her work and how a company organizes to get work done. It is, according to Dave Ulrich, a firm's only appreciable asset. As the need for intellectual capital increases, companies must find ways to ensure that it develops and grows.

Five tools for increasing competence in a firm, site, business, and plant are:

1. Buy. The company goes outside to hire new talent.
2. Build. Managers invest in employee learning and training.
3. Borrow. A company hires consultants and forms partnerships with suppliers, customers, and vendors to share knowledge, create new knowledge, and bring m new ways to work.
4. Bounce. The company removes those employees who fail to change, learn, and adapt.
5. Bind. The firm finds ways to keep those workers it finds most valuable.

Companies also need to foster employees who are not only competent but committed. Employees with too many demands and not enough resources to cope with those demands quickly burn out, become depressed, and lack commitment. A company can build commitment in three ways:

1. Reduce demand on employees by prioritizing work, focusing only on critical activities, and streamlining work processes.
2. Increase resources by giving employees control over their own work, establishing a vision for the company that creates excitement about work, providing ways for employees to work in teams, creating a culture of compensating workers fairly, sharing information on the company's long range strategy, helping employees cope with the demands on their time, providing new technologies, and training workers to use it.
3. Turn demands into resources by exploring how company policies may erode commitment, ensuring that new managers and workers are clear about expectations, understanding family commitments, and having employees participate in decision making.

Only by fostering competence and commitment together can a company ensure the growth of intellectual capital, says Ulrich.

Van Buren M.E., (1999) A Yardstick for Knowledge Management *Training and Development* (53)5 pp.71-73,75

Abstract: The question of measuring the value of investments in intellectual capital is explored through an examination of the experience of a partnership of companies under the guidance of the American Society for Training and Development. The different types of measurement are reviewed and the components of a model of intellectual capital measurement are described. The application of the model is explained. Reports research carried out by the American Society for Training & Development (ASTD) and other US companies, which looked at how organizations could measure the value of their investments in intellectual capital. Calls for across-industry co-operation to develop measurement standards for intellectual capital, pointing out that this needs formalized information sharing. Discusses how the measurement of intellectual capital has been attempted to date, dividing these into those that have measured levels of intellectual capital within the organization and those that have tried to measure the economic value the organization's intellectual capital produces. Outlines the Intellectual Capital Measurement Model, developed from the ASTD's research, which is based on these two measurements. Explains the measures used, outlining how to use them in the model.

There are no universally accepted, across the board standards for measuring and managing knowledge at least, not quite yet.

The American Society for Training & Development, in partnership with seven pioneer companies of the knowledge era, has been working on creating sound methods for measuring the value of organizations' investments in their intellectual capital. The partnership is called the ASTD Effective Knowledge Management Working Group. The companies are Charles Schwab, Chevron, Dow Chemical, EDS, Motorola, Polaroid, and PricewaterhouseCoopers.

In particular, the group has focused on these areas of measurement: the stocks of intellectual capital, the knowledge management process itself, and the economic value generated by intellectual capital.

The article contends that most organizations don't have a full understanding of how much they invest in intellectual capital nor do they know the true return on such investments, A few companies have ventured into measuring and leveraging their knowledge assets and have made their measurement systems available publicly. But to date, none of those systems is widely accepted. The article proposes that there won't be an acknowledged set of standards without collective action.

The group identified these categories of intellectual capital: human capital, innovation capital, process capital, and customer capital. Then to winnow the measures in each category to a manageable set, the group ranked the items on the basis of their relevance to a firm's knowledge management objectives, strategic importance to top executives, and the availability of data applicability to a wide variety of organizations.

There's a matrix that describes types of knowledge management processes and "enablers," and information on how companies can benchmark their intellectual capital.

Wiig K.M., (1997) Integrating Intellectual Capital and Knowledge Management *Long Range Planning* (30)3 pp.399- 405 June

Abstract: Progressive managers consider intellectual capital management (ICM) and knowledge management (KM) to be vital for sustained viability. Recent practices support this notion and have provided important approaches and tools. IC focuses on renewing and maximising the enterprise wide value of intellectual assets. KM supports ICM by focusing on detailed systematic, explicit processes and overlap and synergy between ICM and KM, and advanced enterprises pursue deliberate strategies to coordinate and exploit them. From ICM perspectives, they create balanced intellectual capital portfolios that they implement with KM approaches and tools.

INTELLECTUAL CAPITAL BOOKS

Chase, R.L., (1998) *Creating a Knowledge Management Business Strategy: Delivering Bottom Line Results* Lavendon: Management Trends International Knowledge management report series

Abstract: The first in this series on knowledge management examines how companies can select, develop and implement a knowledge management strategy. A number of approaches are outlined and a range of issues such as developing leadership and managing knowledge workers, encouraging a knowledge sharing culture, using information technology tools, and measuring intellectual capital are addressed. Barriers and pitfalls to avoid are discussed and 16 best practice case studies of international and UK companies are presented. The final chapter lists knowledge management resources including books, journals and web sites.

Centre for Strategic Business Studies,(1998) *Managing Knowledge and Intellectual Capital* Winchester: CSBS Publications

Abstract: Provides an introduction to knowledge management and the management of intellectual capital. Contents include: defining a new world of knowledge; getting the most from your intellectual assets; and so what's a knowledge management project? Case studies of knowledge management at BP and Dow Chemicals are provided. Finally, a glossary of terms is included to clarify terminology.

Huseman, R.C., Goodman, J.P., (1999) *Leading with Knowledge : the Nature of Competition in the 21st Century* Thousand Oaks CA: Sage

Abstract: Looks at the origins of knowledge management and demonstrates how valuable it is to an organisation. The book also looks at how it is used in organisations, particularly those that recognise the competitive advantage of their employees' intellectual capital. Based on the authors study of more than 200 of America's largest companies, it shows how more and more companies are increasingly aware of the competitive value of knowledge and the crucial role it plays in today's highly technological economic climate.

Stewart T.A., (1997) *Intellectual Capital: The New Wealth of Organizations* New York: Currency Doubleday

Abstract: Knowledge has become the most important fact of economic life. It is the chief ingredient of what we buy and sell, the raw material with which we work. In the new economy, intellectual capital not natural resources, machinery, or even financial capital has become the one indispensable asset of corporations.

Thomas A. Stewart's Intellectual Capital is a ground breaking book, visionary in scope and immediately practical in application. It shows how the emergence of the Information Age has changed the nature of wealth and wealth creation, and it offers powerful new ways of looking at what companies do and how to lead them. In an economy based on knowledge, intellectual capital the untapped, unmapped knowledge of organizations has become a company's greatest competitive weapon. It is found in the talent of the people who work there; the loyalty of the customers it serves and learns from; the value of its brands, copyrights, patents and other intellectual property; the collective knowledge embodied in its cultures, systems, management techniques, and history. But these vital assets are nowhere found on a balance sheet, only rarely managed, and almost never managed skillfully.

For most organizations, intellectual capital is as rich a lode as Fort Knox and as inaccessibly locked away. Intellectual Capital is the first book to provide the map and the key, showing how to discover, understand, and unlock the value of these hidden assets and revealing the secrets of knowledge management. Dazzling in its ability to make conceptual sense of the economic revolution we are living through, but also pointed, utilitarian, and urgent, Intellectual Capital cuts through the vague rhetoric of "paradigm shifts" to show how the Information Age economy really works and how to make it work for you and your business.

Stewart T.A., (2003) The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organisation London: Nicholas Brealey Publishing Ltd

VI. KNOWLEDGE MANAGEMENT AND STRATEGY

ARTICLES

Blumentitt, R., Johnston, R., (1999) Towards a Strategy For Knowledge Management *Technology Analysis & Strategic Management* (11)3 pp.287-300

Abstract: Makes a clear distinction between information and knowledge on the basis that information can be captured, stored and transmitted in digital form, while knowledge can only exist in an intelligent system. States that trading relations are now vested in a global knowledge economy. Capital and labour intensive industries are giving way to knowledge intensive ones. Knowledge is seen as the key to competitive advantage.

Distinguishes a number of approaches to gaining competitive advantage in the knowledge economy. The first is based on creating intellectual capital from intellectual property, measuring this capital and managing it. Skandia leads the way here. A second approach is through the management of knowledge and involves its creation, capture and flow within an organisation. This approach has strong links with management consultancy activities; also it is supported by KM applications' software development from Lotus (Lotus Notes i.e.), Canon and Microsoft. Third

approach is an economic one, which searches for best pratices that will release the economic value of knowledge.

Examines classifications of knowledge from traditional epistemology to Lundvall, Collins, Miller et al and Fleck. Provides 4 categories of knowledge:

1. Codified knowledge = information;
2. Common knowledge = routines & practices - explicit knowledge;
3. Social knowledge = relationships and cultural matters;
4. Embodied knowledge = tacit knowledge - that knowledge deriving from experience, skills, competences, training, practice accumulated during a lifetime.

Offers a knowledge-information cycle reliant on IT/intelligent systems (i.e. humans) and incorporates this into a knowledge-information management model. Concludes that knowledge and information are different; that the boundary between knowledge and information can be clearly established. Knowledge cannot be managed with the same tools as information. The interaction of knowledge and information can be modelled and while information management is well advanced the management of knowledge is still relatively under developed.

Bonfield, P., (1999) Knowledge Management Strategy at BT *Managing Information* (6)6 pp.26-30
Abstract: The author, Chief Executive of BT, talks about the challenges of knowledge management within this global communications company. He discusses a range of issues, including: why BT has needed to share knowledge; the way in which a knowledge sharing environment was created; the identification of knowledge worth sharing; and the steps BT takes to share knowledge.

Bowander, B., Miyake, T., (2000) Technology Strategy of Toshiba Corporation a Knowledge Evolution Perspective *International Journal of Technology Management* (19)7/8 pp.864-895
Abstract: An analysis is made of the knowledge management systems in operation at Toshiba. An overview of the Toshiba Corporation is presented and its numerous technological achievements and patents are outlined. The innovative knowledge management framework adopted by the corporation is discussed, with particular reference to knowledge evolution, fusion, enhancement, pooling and spin off. The link between knowledge management strategies and competitive advantage in technology markets is considered.

Bowonder, B. Miyake, T., (1999) Japanese LCD Industry: Competing Through Knowledge Management *Creativity and Innovation Management* (8)2 pp.77-100
Abstract: Briefly outlines the reasons for Japan's industrial competitiveness, before analysing the reasons for Japanese firms' dominance in the LCD (flat panel display) industry. Presents an overview of the Japanese LCD industry, analysing the characteristics of the industry. Sets out how the companies involved in the industry use their knowledge management processes to respond to technical change and maintain their competitive edge in a highly competitive environment. Outlines the knowledge processes that underpin the firms' strategies, explaining how these enable the companies to identify new product opportunities and develop virtual networks of suppliers and customers to allow the firms to concentrate on their core competences. Develops an analysis of strategy based on two dimensions - the mode of strategy realization, e.g. co-operation or competition; and the time focus, e.g. present or future capability. Indicates the implications of the four strategic options that emerge for the firm's approach to knowledge management. Concludes that Japanese firms are using these various approaches to knowledge management extensively and asks if this will be sufficient to give them advantage over US competitors seeking to enter the market. Suggests improvements that can be made.

Burn J. Ash C., (2000) Knowledge Management Strategies for Virtual Organisations *Information Resources Management Journal* (13)1 pp.15-23
Abstract: Much has been written about the virtual organisation and the impact this will have on organisational forms, processes and tasks for the 21st century. There has been little written

about the practicalities of managing this virtual organisation and managing virtual change. The ability of the organisation to change or extend itself as a virtual entity will reflect the extent to which an understanding of virtual concepts has been embedded into the km of the virtual organisation as a Virtual Organisation Change Model. Managing these change factors is essential to gain and maintain strategic advantage and to derive virtual value. The authors expand these concepts by using the example of organisations using ICT and illustrate the 3 levels of development mode - virtual work, virtual sourcing and virtual encounters and their relationship to km, individually, organisationally and community wide through the exploitation of ICT.

Darling, M. S., (1996) Building the Knowledge Organisation *Business Quarterly* pp.61-66, Winter

Abstract: Sees intellectual capital in organisations as analogous to social capital at national level. Has some links here with Bartels and Savage [1999] in terms of organisational glue. Organisational knowledge is regarded as an intangible asset. States that knowledge is the only asset that offers the assurance of a thriving competitive future. KM is concerned with managing abundance rather than scarcity like the traditional factors of production. States that structuring and applying knowledge assets are more challenging than obtaining them. Corporate systems - especially HRM/PM have to support organisational knowledge. KM has to be embedded in organisations to be of value/benefit. Describes CIBC as a learning organisation and provides a measure of success (page 63).

Drew S., (1999) Building Knowledge Management into Strategy: Making Sense of a New Perspective, *Long Range Planning* (32)1 pp.130-136

Abstract: Strategy at the Leading Edge features short reports on conferences, new research and experiments by academics, organizations and consultancies for all those involved in strategy and strategic management. Knowledge management is rapidly becoming one of the next big trends. All the signs are apparent in the number of recent conferences, articles and books devoted to the topic. Even the comic strip Dilbert has taken notice and poked fun at it. Our experience of earlier management trends, including BPR, organizational learning and TQM, might cause sceptics to question: so what's new here? The experiences of knowledge management pioneers in North America and Europe show that real and significant results are possible. However, as with older methodologies, good planning and implementation are essential and success is not guaranteed. This paper explores how managers might build knowledge management into the strategy process in their firms. Much has already been written about the philosophy and concepts of knowledge and intellectual capital. Less attention has been focused on how to combine a knowledge perspective with established strategy tools, or how to develop unique knowledge-based sources of sustainable competitive advantage. Gary Hamel and C.K. Prahalad have observed that managers typically spend too little time thinking seriously about strategy and the future. We need to ensure that in this limited time, the important dimension of knowledge doesn't get overlooked.

Hansen, M.T., Nohria, N., Tierney, T., (1999) What's Your Strategy for Managing Knowledge? *Harvard Business Review* (77)2 pp.106-116

Abstract: Two different approaches to knowledge management are identified. The first, the codification strategy, focuses on technology, while the second, the personalisation strategy, relies upon person-to-person contacts for knowledge dissemination. A comparison is made between these two strategies and the experiences of a number of companies in applying them are examined. The need to choose the right strategy, and to make an explicit connection between a company's existing competitive strategy and the way knowledge is used to support it, is emphasised.

Havens, C. Knapp, E., (1999) Easing Into Knowledge Management *Strategy and Leadership* (27)2 pp.4-9

Abstract: The growing interest in knowledge management is noted, and evidence of its increasing importance for competitive success is mentioned. The rise of the Knowledge Economy and its effects are discussed, knowledge and information management are distinguished, and `three C's'

of knowledge management - content, community and computing - are outlined. Approaches to getting started on implementing a knowledge management strategy are considered.

Kamara J.M., Anumba C.J. and Carrillo P.M., (2002) A CLEVER Approach to Selecting a Knowledge Management Strategy, *International Journal of Project Management* (20)3 pp.205-211, April

Abstract: The effective management of knowledge is being recognised as a vehicle through which organisations can address their need for innovation and improved business performance. This paper describes a framework for selecting a knowledge management strategy that is appropriate to the organisational and cultural context of an organisation. The framework is the main output of the CLEVER (cross-sectoral learning in the virtual enterprise) research project at Loughborough University. It was developed following a detailed study of current knowledge management processes in the construction and manufacturing sectors. The approach represented in the framework underscores the fact that knowledge management is not an end in itself but a means towards the solution of business problems that militate against the efficiency and innovative capacity of a company.

Kermally S., (2001) E-Strategy is Key to Future Success *Professional Manager* pp28-29, July

Abstract: Argues that the Internet has created a new business model with unique value chain and that organisations must have an e-strategy for on-line trading. Cites Gary Hamel as stating that competition is now between business models and not between products. Identifies KM as the key driver of this new business model and also lists a flexible value chain, an entrepreneurial mindset, a strategic focus generated by scenario planning (and offers prescriptive guidelines for effective scenario planning) and strategic partnerships. It is stated that there should be no single approach to strategy and no single view of the future. Also offers a 6 point template of attributes on which to construct a successful e-business. Additionally identifies the importance of leadership role and prescribes 7 items as the focus of effective e-business leadership. Draws attention to the importance of intellectual capital.

Lei D.T., (1997) Competence-Building, Technology Fusion and Competitive Advantage: The Key Roles of Organizational Learning and Strategic Alliances *International Journal of Technology Management* (14)2/3/4 pp. 208-237

Abstract: It is argued that the knowledge base that lays the foundation of the firm's core competence is composed of both explicit and tacit forms of knowledge. Tacit knowledge is embedded in the social fabric of the organisation's processes, dynamic routines and internal communication paths and provides a firm-specific resource to sustain competitive advantage. Makes a distinction between competitive advantage driving from strong product/market positions and the resource based perspective, which involves sustained and continuous learning aimed at developing and exploiting assets, skills and capabilities that influence a firm's evolution, competitive strategies and growth paths.

Generic competitive strategies are of little use in the longer term because they are transparent to competitors and easily imitated. A strategic focus on building and applying core competencies may provide the basis for sustainable competitive advantage. It is stated that this route to competitive advantage requires a highly dynamic competence building process relying on continuous organisational learning, the ability to fuse technologies, the acquisition and internalisation of embedded knowledge and multiple approaches to product development and production. Organisational learning creates new forms of knowledge.

Sees strategic alliances as key to building sustainable competitive advantage. Such alliances are likely to be in the form of close cooperation and interaction between partners along every aspect of the product's value chain, or underlying technology. States sustainable competitive advantage is more likely to result from building core competencies possessing a high component of tacit knowledge that is embedded in the organisation. Cites Kawasaki Heavy Industries and Unimation as one example of a strategic alliance, also Mitsubishi/Westinghouse, Fanuc/General Electric and

Fanuc/General Motors, AT&T has had alliances with Nippon Electric, Mitsubishi Electric, HP, Sundisk and IBM.

Explicit knowledge is often product rather than organisationally embodied. It is also codifiable and not context specific. But tacit embedded knowledge is difficult to learn without close interaction and collaboration with the strategic partner. Competence building involves two distinct stages of learning and knowledge accumulation:

1. Acquisition/transformation;
2. Extension/application.

Regards competence building is an ongoing, evolutionary process that depends on sustained organisational learning and the cumulative growth of the firm's knowledge base from current and earlier periods. Notes the growth of network organisations, which enable firms to alternate between collaborating and competing, as a rising form of organisational structure.

Massey A.P., Montoya-Weiss M.M., and Holcom K., (2001) Re-Engineering the Customer Relationship: Leveraging Knowledge Assets at IBM, *Decision Support Systems* (32)2 pp.155-170, December

Abstract: A successful knowledge management strategy identifies a firm's key leverage points essential to achieve business results. These often reside in core business processes that may be re-engineered to capitalize on and expand organizational knowledge resources and capabilities. This case describes a 4-year initiative undertaken by IBM to re-engineer its customer relationship management process and capitalize on knowledge-based resources. The case illustrates the effective, integrated use of information technologies to improve the performance of both customers and IBM's human experts by providing knowledge access and availability, acquiring and assembling knowledge, and disseminating knowledge to those who need to apply it.

McCampbell, A.S., Clare, L.M., Gitters, S.H., (1999) Knowledge Management: The New Challenge for the 21st Century *Journal of Knowledge Management* (3)3 pp.172-179

Abstract: The emerging discipline of knowledge management is reviewed. The principles and practices of knowledge management are introduced and the role of information technology is considered. Four brief case studies describe the process of knowledge management at Teltech, Ernst and Young, Microsoft and Hewlett Packard.

Conclusions are drawn from each of the case studies and recommendations on the implementation of a knowledge management strategy are presented.

Quintas P., Lefrere P., and Jones G., (1997) Knowledge Management: A Strategic Agenda *Long Range Planning* (30)3 pp.385-391, June

Abstract: Knowledge can be seen as a key source of advantage. Its importance has been recognized for a long time. Some scholars have realized that information can create wealth. What is happening today is that there has been a qualitative change in the way in which vast amounts of data can be collected and communicated. The risk is of information overload. To help avoid this, a discipline is needed which can distinguish between data and knowledge, can find ways to reduce the overload and can organize itself

At present, little consideration is given to whether and how individuals and organizations can manage knowledge. Knowledge management is a process of continually managing knowledge of all kinds and requires a company wide strategy which comprises policy, implementation, monitoring and evaluation. Such a policy should ensure that knowledge is available when and where needed and can be acquired from external as well an internal sources. Activities such as these have management implications at all organizational levels and functions; thus culture, people, process and technology have all to be considered. in this, the fact that much information that is used is not in computers but in heads needs to be recognized. Indeed, companies are now

aware that traditional database structures can hold only a fraction of what is available. This in turn leads to increased emphasis on information and communication technologies (ICTs) and the need to realize that to be accessible information has to be organised in the same way as the human brain. This is very important in the case of collecting tacit knowledge. In addition, organizations have to solve the "boundary paradox", in other words, they must be open to receive information on both an informal and formal basis from the outside. It is difficult, of course, to find solutions and processes which are completely outside individual experience. To be successful, it is necessary to recognize that knowledge is a process or set of relationships.

Knowledge can be seen as a product of power relations, Knowledge management comprises information, communication, human resources, intellectual capital, brands etc. It involves facing a number of challenges such as its usefulness, its transfer to others and its quantity. It is necessary to develop an organizational capability which may be costly. It does not mean managing all that is known. It does mean formulating and implementing strategies. improving business processes and monitoring and evaluating what knowledge exists, and its effective management. It is important yet difficult to scope, define and understand the processes, but to do so is necessary if organizations are going to be able to cope.

Smith, A.C., (1998) Systemic Knowledge Management: Managing Organizational Assets for Competitive Advantage *Journal of Systemic Knowledge Management* April 12 Available: http://www.tlainc.com/article8.htm

Abstract: Briefly reviews the context for the increased interest in more explicitly valuing intangible assets and explores the strengths and weaknesses of current approaches involving Intellectual Capital, the Balanced Scorecard and KM. Contends that overemphasis on developing and leveraging intangible assets is counterproductive. Proposes a new approach labelled SKM - systemic knowledge management and goes on the illustrate SKM using system dynamics models and how this approach is relevant to strategic planning and operational decision making.

Tuck, J., (2000) Why KM is Today's Business Imperative *Knowledge Management* p.8 April

Abstract: Argues that a knowledge management strategy needs to be based on real business solutions. Provides 3 principles for the implementation of KM. States that business objectives must define what KM is in an organisation. Sees technology as an enabler and not as KM itself.

Ulrich D & Smallwood N., (2002) Seven Up *People Management* (8)10 pp.42-44 16 May

Abstract: highlights 7 strengths and strategies that can have a dramatic effect on an organisation's market value

Vit Beijerse, R.P., (2000) Knowledge Management in Small and Medium-Sized Companies: Knowledge Management for Entrepreneurs *Journal of Knowledge Management* (4)2 pp.162-179

Abstract: An examination is made of the use of knowledge management theories and instruments in small and medium sized companies. A conceptual model designed to analyse important knowledge management processes is introduced and its application in 12 innovative companies from the industrial and business service sectors is reported. Seventy nine instruments used to organise knowledge are identified and discussed. It is concluded that whilst knowledge management techniques are applied at an operational level in SMEs, they are rarely developed on a strategic or tactical level.

Whitehead, M., (1999) Collection Time *People Management* (5)21 pp,68-69,71

Abstract: A profile is presented of the knowledge management strategy at the Post Office. It is suggested that this most complex of organisations relies particularly heavily on the knowledge and experience of its employees and that capturing this `tacit' and `implicit' information and converting it into a form which can be shared and communicated presents a challenge. The aims

and techniques adopted by the organisation's knowledge management group to deal with this challenge, including `after-action reviews' and `knowledge interviews' are analysed and discussed.

Wiig, K. Odem, P., (1999) Benchmarking Unveils Emerging Knowledge Management Strategies *Benchmarking: An International Journal* (6)3 pp.202-212

Abstract: Explores how organizations incorporate various knowledge management approaches into their businesses through an analysis of the findings of a benchmarking study of leading US organizations, and supported by case study examples from several companies including Arthur Anderson, Price Waterhouse, Skandia and Texas Instruments. Utilizing a knowledge management framework that views knowledge management as the strategies and methods of identifying, capturing and leveraging knowledge to help a firm compete, discovers six emerging knowledge management strategies employed by the best practice organizations: knowledge management as a business strategy; transfer of knowledge and best practices; customer-focused knowledge; personal responsibility for knowledge; intellectual asset management; and innovation and knowledge creation.

Zack M.H., (1999) Developing a Knowledge Strategy *California Management Review* (41)3 pp.125-145

Abstract: To help managers articulate the relationship between their organisation's competitive strategy and their intellectual resources, a theoretical framework, called Knowledge Strategy, is proposed. The issues of business strategy, knowledge as a strategic resource, and the knowledge - strategy link are examined, drawing upon the experiences of five organisations. The knowledge strategy framework is then discussed.

BOOKS

Chase, R.L., (1998) *Creating a Knowledge Management Business Strategy: Delivering Bottom Line Knowledge* Management Report Series Lavendon (UK) : Management Trends International

Abstract: The first in this series on knowledge management examines how companies can select, develop and implement a knowledge management strategy. A number of approaches are outlined and a range of issues such as developing leadership and managing knowledge workers, encouraging a knowledge sharing culture, using information technology tools, and measuring intellectual capital are addressed. Barriers and pitfalls to avoid are discussed and 16 best practice case studies of international and UK companies are presented. The final chapter lists knowledge management resources including books, journals and web sites.

Chase, R.L., (1999) *Most Admired Knowledge Enterprises Report* Lavendon (UK): Management Trends International

Abstract: (From the foreword) Examines how organisations can select the most appropriate knowledge strategy, develop knowledge workers, establish a knowledge management culture and infrastructure and create a knowledge sharing environment which will deliver bottom line results and benefits. In the Most Admired Knowledge Enterprises report the reader will explore the eight key knowledge performance drivers; examine the success factors of companies; learn the secrets of the top knowledge based enterprises; and discover best practices for leading knowledge organisations.

Dutrenit, G., (2000) *Learning and Knowledge Management in the Firm: From Knowledge Accumulation to Strategic Capabilities* Cheltenham UK: Edward Elgar

Huseman, R.C., Goodman, J.P., (1999) *Leading with Knowledge: the Nature of Competition in the 21st Century* Thousand Oaks CA: Sage

Abstract: Looks at the origins of knowledge management and demonstrates how valuable it is to an organisation. The book also looks at how it is used in organisations, particularly those that recognise the competitive advantage of their employees' intellectual capital. Based on the authors study of more than 200 of America's largest companies, it shows how more and more companies are increasingly aware of the competitive value of knowledge and the crucial role it plays in today's highly technological economic climate.

Kaplan, R.S., Norton, D.P., (1996) *Using the Balanced Scorecard as a Strategic Management System* Boston MA: Harvard Business School

Zack M.H., (1999) *Knowledge and Strategy* Boston MA: Butterworth Heinemann

Abstract: From the publisher: organisational knowledge is the most valuable strategic resource, and the ability to create and apply it the most important capability for generating competitive advantage. Knowledge and strategy addresses the link between knowledge management and business strategy. The book is divided into four parts, the resource based view of the firm, the resource based view of knowledge, characteristics of knowledge as a strategic asset, and knowledge and strategy.

VII. LEARNING ORGANISATIONS

ARTICLES

Agarwal, R., Krudys, G., Tanniru, M., (1997) Infusing Learning into the Information Systems Organization *European Journal of Information Systems* (6) pp. 25-40

Abstract: Argue that IS reliant organisations are faced with a requirement for new and innovative technical solutions as well as rapid changes in technology. Provide an operational definition of a learning organisation, synthesised from the literature, as embodying procedures, management initiatives, norms and culture allowing individual learning with enhanced performance as the intended outcome. Identify the core drivers of developing a learning organisation as a learning context in which:

1. Individual and organisational performance measures are explicit;
2. Processes and management initiatives facilitate individual learning in order to enhance performance;
3. Norms and culture appropriate to learning is embedded in the organisation through leadership.

States that learning needs to be directed by being linked to performance measures and that this aspect can be encapsulated in a performance driven mission. Learning requires knowledge sharing through email and group decision support plus opportunities to use it in team oriented tasks. Makes the point that learning through observation is lower risk than learning through experience and that in this context there is no need to re-invent the wheel. Knowledge can be sourced internally, or externally, through joint ventures and strategic alliances. Make the point that mainframes symbolise single loop learning - does this represent a barrier? Whereas a double, or triple loop, learning position implies individual empowerment to create change when operations are perceived as incompatible with the mission. [Shein, 1984; Senge, 1990]

Bertels, T., Savage, C.M., (1999) A Research Agenda for the Knowledge Era: The Tough Questions *Knowledge and Process Management* (6)4 pp.205-212

Abstract: States that organisations are in a period of transition from an era underpinned by capital to one dependent on knowledge. Hence organisations are moving into the Knowledge Era and are leaving behind the Industrial Era. Argues that the Industrial Era is unsustainable and that the KE will require cultural change. But does not indicate at what level this change must occur -

organisational? Societal? National? Suggests that the dominant logic of the IE is a barrier to the KE and that this logic needs to be challenged across a number of fields including:

1. Change and continuity	4. Information and infostructures	7. Measurement and motivation
2. Contribution and coherence	5. Leadership and language	8. Transfer and transparency
3. Culture and context	6. Learning and leveraging;	9. Values and valuation

The authors raise issues for consideration under each of these 9 headings. For example, instead of change in relation to organisational culture they suggest transformation would be more apposite. They cite the Danish company, Oticon, as an example of good practice in terms of an open and supportive culture that enables knowledge sharing. It is suggested that organisations need to use the whole person and all of the individual's talents because no one person has all the insights. The term infostructure is invoked [Burus and Gittines 1993] in questioning what information infrastructure will be most effective for organisations. Infostructures are becoming critical to effective KM in which systems thinking is key to understanding the multiple connections and cause-effect loops. There will be a need to link the individual to the organisation, which will of necessity be more dynamic with tasks/projects crossing functional and organisational boundaries. The authors ask whether culture, values and language will provide sufficiently strong connections to bind an organisation together. The 7-S, 3x generic strategies and 2x2 frameworks are regarded as inadequate in the knowledge era. The language of business will need to evolve so that the machine metaphor is relinquished in favour of more dynamic metaphors such as hypertext organisations [Nonanka, I., Takeuchi, H. 1995], fractal enterprises [Warnecke 1993] and spaghetti companies [Kolind 1994].

Buckler, B., (1998) Practical Steps Towards a Learning Organisation: Applying Academic Knowledge to Improvement and Innovation in Business Processes *The Learning Organization* (5), pp. 31-37

Abstract: Describes work being carried out at Nottingham Trent University in synthesising a learning process model from learning theory and deriving a practical model for practitioners in management to apply to team and organisational learning. Identifies some of the systemic barriers and the leadership skills necessary to create a learning organisation.

Argues UK performs poorly in innovating and improving. Looks at linkages between learning and performance improvement. Advocates the need for change. Discusses incremental and continuous improvement in terms of doing better things, or doing things better over time. Both can be achieved by looking outwards to consider products and services from the customer perspective and by looking inwards at organisational processes. Defines learning as a process that results in changed behaviour in ways that lead to improved performance. Models the learning process. This model published earlier in Buckler[1998]. Empirical study involved 26 managers drawn from manufacturing, service and public sector organisations. Examines the competitive advantage of innovating. States that a top down command and control style is inimical to a learning culture. Develops a taught-discovery learning continuum for assessment of various learning methodologies. Barriers to learning exist when driving and restraining forces for and against learning are matched. Says effective learning requires some kind of reflective process. Discusses the role of leadership in organisational learning and identifies effective manager-staff interaction. States that organisational culture might need transforming. Summarises 7 key learning points that have emerged from the study and offers a concept of the learning organisation. Highlights 7 important principles influencing the design of workshops for managers involved in this programme.

Burgoyne J., (1999) Design of the Times *People Management,* (5)11 pp38-44, June 3

Abstract: The Learning Organisation has recently been criticised as a piece of unobtainable HR jargon. Burgoyne counters with his proposals for a new model.

Corssan, M., Guatto T., (1996) Organizational Learning Through Research Profile *Journal of Organizational Change Management* (9)1, pp.107-112

Cotter, N., Bagshaw, M., Bagshaw, C., (1999) Intellectual Capital Knowledge Has a Value *Training Journal,* pp. 10-12 April

Abstract: The importance of the asset of knowledge to an organisation is emphasised. The barriers to learning, knowledge and creation in organisations are examined and the three essential elements required to turn learning potential and knowledge into profit are described. The implications for the learning organisation are discussed.

Darling, M. S., (1996) Building the Knowledge Organisation *Business Quarterly*. London ONT: Richard Ivey School of Business pp61-66 Winter

Abstract: Sees intellectual capital in organisations as analogous to social capital [Putnam, 1995, Journal of Democracy] at national level. Has some links here with Bartels and Savage [1999] in terms of organisational glue. Organisational knowledge is regarded as an intangible asset. States that knowledge is the only asset that offers the assurance of a thriving competitive future. KM is concerned with managing abundance rather than scarcity like the traditional factors of production. States that structuring and applying knowledge assets are more challenging than obtaining them. Corporate systems - especially HRM/PM have to support organisational knowledge. KM has to be embedded in organisations to be of value/benefit. Describes CIBC as a learning organisation and provides a measure of success (page 63).

A barrier to motivating individuals is the threat to their position in the organisations if they share their implicit knowledge. Another barrier is the NIH attitude (not invented here). It is stated that a knowledge culture needs to be created in order to free an organisation from these mindsets. Is a knowledge culture the same as a learning organisation? Defines knowledge culture as associated with:

- Valuing knowledge and placing it at the disposal of the customer;
- Democratising knowledge by de-linking it from individuals;
- Valuing diversity by recognising no age, experience, race or gender hegemony;
- Accepting a new role for management;
- Focusing on the knowledge grid of what we know we know, what we know we don't know, what we don't know we know, what we don't know we don't know - in this respect customer satisfaction surveys are always backward looking and do not focus on what we don't know we don't know, which is the most important segment.

States the purpose of KM as being to improve output for the customer. Offers four key elements to make this achievable:

1. Individual learning as an outcome of knowledge mapping;
2. Team learning and sharing knowledge;
3. Organisation learning;
4. Customer learning.

Tools to assist 1 through 4 are:

- Internal web sites - intranets;
- Guides, templates and questionnaires - Lotus Notes is mentioned as being particularly useful here;
- Walking the talk in order to help transform the organisation and embed its knowledge culture - this is an important area for management and requires a lot of small actions over the medium term.

Argues KM cannot be measured in terms of rate of return, but says some performance indicators might be:

- Increased business;
- Improved employee satisfaction;
- Better customer assessment;
- Increased return on equity.

Garratt, B. (1999) The Learning Organisation 15 Years On: Some Personal Reflections *The Learning Organisation* (6)5 pp. 202-207

Abstract: Author claims responsibility for the triple loop model of learning in 1986 [Garratt, 1986]. This article discusses the learning organisation and within this framework considers policy formulation, strategic thinking, integration/operational learning. Refers to Mintzberg, Lampel, and Ahlstrand, B. [1998], stating that organisational learning is one of the biggest and few sustainable innovations of recent years. Recalls that concept and practice of learning organisations originated by Reg Revans, Fritz Schumaker and Jacob Bronowski at the UK National Coal Board circa 1945 and evolved out of an action learning process into learning circles and subsequently quality circles.

Hansen, M.T., Von Oetinger, B., (2001) Introducing T-Shaped Managers: Knowledge Management's Next Generation *Harvard Business Review* (74)3, pp107-116, March

Abstract: The T in T-shaped manager symbolised an organisation. Horizontal stroke represents direction across an organisation; vertical stroke represents direction through a business unit. The T-shaped manager is located at the intersection of the two strokes and the intersection creates tension because the manager has two sets of responsibilities to balance. Organisations need to create horizontal and vertical value through exploitation of KM. Offers 5 practices for creating horizontal value.

Some organisations have centralised KM; others have invested heavily in KM technology. These strategies generate economies of scale, but can also lead to moribund KM bureaucracies. Effective transfer of implicit knowledge requires direct personal contacts. This is crucial to creative/innovative organisations. Giving autonomy to business unit heads assists with implicit knowledge transfer - the upside is in increased accountability + more innovation + increased sensitivity to local market conditions; the downside is greater autonomy encourages inter Unit competition and hoarding of expertise.

Inter BU collaboration is the key to knowledge sharing. Key executives must promote and discipline knowledge sharing. This requires clear incentives, economic transparency, cross-unit interaction and the creation of human portals. The authors cite BP Amoco's BPX Division of the early 1990s as an example of KM best practice.

Inter BU collaboration via T-shaped managers can be too successful because it can spawn too many cross-unit networks and sub-networks resulting in learning loops that are only marginally effective at best. This situation consumes too much management time. Solution is to focus managers' attention on specific business results and BUs' bottom lines are made economically transparent so peer comparisons are possible. Uses a formula - n(n-1)/2 where n=number of people in the organisation- to calculate that for 100 people to keep in direct touch each individual must maintain 4,950 relationships.

Reports that BP Amoco utilises an electronic "yellow pages" + multi-media e-mailing + desktop video conferencing as its digital networking technology. But also emphasises that to be successful virtual teams need face-to-face interactions as well.

The study drew examples from organisations involved in computer, biotech, paper, steel, pharmaceuticals, consumer goods, banking and hi-tech sectors located in Europe, Asia and the

US. Concludes that cross BU collaboration frequently fails, but cites notable exceptions as: GlaxoSmithKline; Siemens; Ispat International. Also concludes that cross BU learning is best achieved through decentralised and horizontal networking.

Harvey, M., Palmer, J., Speier, C., (1998) Implementing Intra-Organizational Learning: A Phased-Model Approach Supported by Intranet Technology *European Management Journal* (16)3 pp.341-354

Abstract: States that the learning organisation has been heralded as a proactive structure by means of which to address the turbulent environment within which modern businesses operate. A learning culture enables managers to meet the expectations of both internal and external stakeholders. How a learning culture may be engendered is proposed through the use of a 4 phases model for the implementation of learning within an organisation. The model is supported by IT in the form of an intranet.

Herbert, I., (2000) Knowledge is a Noun, Learning is a Verb *Management Accounting* (78)2 pp.68-72

Abstract: Written from an accountant's perspective and apparently aimed at students- more specifically from the point of view of management accounting. Sees learning as a process and knowledge as a product of the learning activity. Knowledge becomes an asset although not a tangible one thus it is seen as work in progress. This work in progress is referred to as intellectual capital. This form of capital is part of the total value of non-tangible assets in the organisation represented by the difference between net assets in the accounts and market capitalisation - this involves shareholder perception in the case of listed companies. Intellectual capital includes patents, brands, techniques, products, markets.

Huber, G.P., (1999) Facilitating Project Team Learning and Contributions to Organizational Knowledge *Creativity and Innovation Management* (8)2 pp.70-77

Abstract: Claims KM literature indicates majority of organisations are ineffective in KM. Sees project teams as main users/generators of organisational knowledge. Analyses how learning can be facilitated via type and design of teams. Looks at how organisational practices can support team enquiry and learning. Examines barriers to knowledge transfer between teams and thus the limitations on learning and suggests how organisations can overcome this problem.

Lloyd B., (1998) Understanding the Power, Responsibility, Leadership and Learning Links: The Key to Successful Knowledge Management *Journal of Systemic Knowledge Management* January available at http://www.tlainc.com/article3.htm

Abstract: Takes an essentially moral/ethical approach to discussion of successful KM through an examination of power, responsibility, leadership and learning and their underpinning links to KM. Considers how each of these PRLL elements can facilitate, or hinder, the development of organisational learning/learning organisations for the benefit of society. Quotes Zuboff [1988], who claims that learning is the new form of labour and that it is no longer a separate activity that occurs before the individual enters employment, or in remote classroom settings during employment. Zuboff says that learning is at the heart of productivity. The author also refers to Peters & Waterman [1982] who pointed out that all of the excellent companies they researched were learning organisations.

Lucier, C., Torsilieri, J., (1997) Why Knowledge Programs Fail? *Strategy & Business* 4th Quarter available at http://www.strategy-business.com /press/article/13007?pg=0

Abstract: A full version of this abstract is available under the ‘Failure’ subsection in Section II of this article..

Estimates that 16% of KM programmes achieve very significant inpact in years 1 and 2 following introduction. 50% achieve small, but important benefits. Remaining 34% are failures because:

1. There are no specific business objectives. For the authors the specific business value is concerned with creating improved value for the customer. In this context there is discussion of an emerging new paradigm for strategy involving the creation of greater value for customers in addition to long term value creation for stakeholders. These are held to be the drivers of a company's competitive position;
2. There is incomplete programme architecture;
3. There is a lack of focus on strategic priorities;
4. There is no ongoing involvement from top management. Here there are 4 roles for top managers: guide the start-up; set aggressive targets; change the organisation; exercise stewardship.

Most KM programmes are cut back within 2/3 years of implementation because they become perceived as a cost and not generating any significant business value.

Rowley J., (2000) From Learning Organisation to Knowledge Entrepreneur Journal *of Knowledge Management* (4)1 pp.7-15

Abstract: Establishes the clear link between learning and knowledge, and proposes a simple model, which makes this relationship explicit. A range of definitions of the learning organisation are drawn from the literature. Much of this literature makes little reference to that which is being learned although those authors who have introduced the concepts of the learning laboratory, the knowledge creating organisation and the knowing organisation acknowledge the significance of knowledge in organisational development and learning. Other perspectives on the organisational processes associated with knowledge come from the recent literature on knowledge management. It is argued that indiscriminate knowledge creation will not lead to organisational learning, and that knowledge is not something that can be viewed as a neutral tool in the learning process. A number of characteristics of knowledge need to be recognised, and accommodated in learning processes and knowledge management. Finally, the concept of a knowledge entrepreneur is proposed.

Scarbrough, H., Swan, J., Preston, J., (1999) *Knowledge Management: a Literature Review* in Series Issues in People Management, London: Institute of Personnel and Development

Abstract: This publication is one of two, which form part of a contracted publication for the IPD. The authors set KM in the context of people management (PM) and development professionals. Claims that KM is a key plank in business strategy. Claims that HRM is being marginalised in the KM function and that KM is being hijacked by IS professionals. Argues that IS is on the supply side of knowledge and that organisations have overlooked the demand side. Finds that knowledge is often confused with data and that knowledge has become a commodity. For KM to be effective organisations require a culture to be one of openness, risk taking and with linkages to rewards and performance measures. Define KM as any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organisations. Defines organisational learning as an organisation that is able to discover what is effective by reframing its own experiences and learning from that process; by developing the skills of its people it continuously transforms itself. Cites Pedler et al [1991] for definition of organisational learning. Sees some form of medium/channel as vital for exchange of knowledge (especially tacit) and refers to Prusak [1997] and the importance of water cooler/photocopier conversations in this respect. Also cites Drucker [1993] who argues that knowledge creation is an iterative process and that there has been a historical shift from knowledge as craft to knowledge as production management to knowledge as knowledge work, or a substitute for capital. The authors interrogated two on-line databases in compiling their literature review. These were ProQuest Direct, which used to be ABI Inform, and the SSCI (Social Sciences Citation Index), which is provided by BIDS using search terms knowledge management; learning organisation/organization. Conclude from literature review that the discourse on learning organisations is declining and that on KM is increasing. They wonder whether by adding/creating value from an active leverage of intellectual assets KM is now a core competitive competence. Highlights the following about KM - it codifies and communicates knowledge; its supply side

encourages the release of knowledge, but the neglected demand side encourages the application of knowledge; there is a danger that it could become a form of asset stripping of intellectual capital, which would prompt high turnover (what is the half life of knowledge?) and would not encourage commitment (notes that turnover in consultancies is 15%-18% pa and that consultancies employ counselling out tactics with staff so that knowledge is about flows rather than stocks) and wonders whether KM can be dehumanising. Reveals the 1990s as an era of exponential growth in interest in organisational learning [Corssan and Guatto 1996]. Sees KM as integrating personal mastery, mental models, shared vision and team learning [Senge1990].

Senge P.M., (1990) The Leader's New Work: Building Learning Organisations *Sloan Management Review* Fall (32) 1 pp7-22

Smith, A.C., (1999) The Learning Organization Ten Years On: A Case Study *The Learning Organisation* (6)8

Abstract: Although a useful article about learning organisations using the example of the Canadian Imperial Bank of Commerce circa 10 years ago (1992), with which the author was involved, this is not an article dealing with KM. The author sees the term learning organisation as a metaphor for organisational change. Draws on the literature of LO to provide several definitions of the concept. Discusses how LO initiatives can be sabotaged by organisational resistance. Advocates that LO needs to be introduced by stealth rather than directly by attempting to change organisational culture as a first step and shows how this has been achieved by CIBC and its 30,000 employees by inverting the organisational pyramid and setting business and performance objectives, which required learning to occur in order for their achievement. Belief of CIBC top management was that organisational structure determines organisational behaviour hence the inverted pyramid. This approach redefined the role of managers from being controller to becoming enablers. This removed many of the barriers to CIBC becoming an LO. Highlights the need to free up the mind sets of middle managers first and then to adopt a top up-top down implementation startegy. Sees Vision as the starting point and the incentive for innovating. Innovation becomes a challenge and the challenge requires learning to take place so that on the way to becoming an LO the enterprise "develops dynamic capabilities which are the organizational abilities to learn". Points to the need for bringing together "two conceptually simple and intuitively attractive concepts in combination". These are:

1. Workplace based learning;
2. A performance framework.

At CIBC workplace based learning utilised an adapted form of Deming's Quality Circle framework. This required a range of Enablers to be introduced into the learning process so that it became similar to action learning links to UK NCB late '40s and early '50s (see Garratt). The performance framework was driven by the desired business outcomes and consisted of:

1. Focus - a clear definition of the desired performance;
2. Will - developing attitudes and emotions consistent with the focus;
3. Resources - the means to achieve the focus.

Four key premises underpinned CIBC's Learning Organization:

1. A systemic approach;
2. Recognising that the influence of managers was so critical that their needs had to be addressed first;
3. Behaviours and habits had to be changed before thinking and learning would change not vice versa;
4. The change effort had to be focused on performance and had to be driven by business outcomes.

In the CIBC case the business outcome was that the Bank should become a customer obsessed company. Top management believed it was possible to exercise some control over the turbulence of the business environment and initiated change to being customer obsessed from a Vision and then a strategy that would deliver the Vision - this in contrast to Coakes and Sugden (2000) supporting a more cybernetic/open systems view of organisational evolution in line with Von Bertalanffy (1950). Took 3½ years to complete LO implementation.

BOOKS

Argyris, C., Schon,D.A., (1978) *Organizational Learning: A Theory of Action Perspective* Reading, Mass: Addison-Wesley

Cross, R., Israelit, S.B., (2000) *Strategic Learning in a Knowledge Economy: Individual, Collective and Organizational Learning Processes* Boston, MA: Butterworth Heinemann

Garrat, B., (1986) *The Learning Organization: The Need for Directors Who Think* London: Harper-Collins

Pedler, M., Burgoyne, J., Boydell, J., (1994) *Towards the Learning Company* Maidenhead UK : McGraw-Hill

Senge, P.M., (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization* New York : Doubleday/Currency

Shukla, M., (1997) *Competing Through Knowledge: Building a Learning Organization* Thousand Oaks CA : Sage, Response Books

VIII. MULTIPLE INTELLIGENCE THEORY

The theory of multiple intelligences (MI theory) was first proposed by Gardner [1983][2]. The traditional perspectives on intelligence -such as IQ tests - lead to the question "Is a person intelligent?" MI theory offers a pluralistic view that asks instead "In what ways is this person intelligent?"

The plurality of intelligence that Gardner argues exists includes

- linguistic
- spatial
- musical
- intrapersonal
- logical-mathematical
- bodily-kinesthetic
- interpersonal

intelligences. The human intellect it would seem is multifaceted.

Gardner & Hatch, [1989] define intelligences as "the ability to solve problems, or to fashion products, that are valued in one or more cultural or community settings." Although the seven intelligences are rooted in universal, neurological structures, they are not merely the hereditary traits of lone individuals; rather, intelligences represent an amalgam of both individual and cultural factors [Gray and Viens, 1994]. Individuals are born with potential in all seven intelligences which are developed in a variety of ways, depending on the cultural, local, and personal contexts within which they grow [Hatch and Gardner, 1993].

To read further about the work of Gardner, consult Smith[2002] on the Internet. This page defines Gardner's seven intelligences as follows:

[2] References on multiple intelligences are listed at the end of this Section.

- **"***Linguistic intelligence* involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals. This intelligence includes the ability to effectively use language to express oneself rhetorically or poetically; and language as a means to remember information.

- *Logical-mathematical intelligence* consists of the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. In Howard Gardner's words, it entails the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking.

- *Musical intelligence* involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the capacity to recognize and compose musical pitches, tones, and rhythms. According to Howard Gardner musical intelligence runs in an almost structural parallel to linguistic intelligence.

- *Bodily-kinesthetic intelligence* entails the potential of using one's whole body or parts of the body to solve problems. It is the ability to use mental abilities to coordinate bodily movements. Howard Gardner sees mental and physical activity as related.

- *Spatial intelligence* involves the potential to recognize and use the patterns of wide space and more confined areas.

- *Interpersonal intelligence* is concerned with the capacity to understand the intentions, motivations and desires of other people. It allows people to work effectively with others. Educators, salespeople, religious and political leaders and counsellors all need a well-developed interpersonal intelligence.

- *Intrapersonal intelligence* entails the capacity to understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view it involves having an effective working model of ourselves, and to be able to use such information to regulate our lives."

In addition, several further intelligences are suggested:

Naturalist intelligence which enables human beings to recognize, categorize and draw upon certain features of the environment.

Spiritual intelligence, existential intelligence, (a concern with 'ultimate issues'), and *moral intelligence* (a concern with those rules, behaviours and attitudes that govern the sanctity of life - in particular, the sanctity of human life and, in many cases, the sanctity of any other living creatures and the world they inhabit.

REFERENCES FOR SECTION VIII

Gardner, H., (1983; 1993) *Frames of Mind: The Theory of Multiple Intelligences*, New York: Basic Books.

Gardner, H., & Hatch, T. (1989). Multiple Intelligences Go to School: Educational Implications of the Theory of Multiple intelligences. *Educational Researcher,* 18(8), pp. 4-9.

Gray, J H., Viens, J T., (1994) Theory of Multiple Intelligences *National Forum* Winter, (74) p1

Hatch T., and Gardner H., (1993) Finding Cognition in the Classroom: An Expanded View of Human Intelligence in G. Salomon (ed.) *Distributed Cognitions. Psychological and Educational Considerations*, Cambridge: Cambridge University Press.

Smith, M.K., (2002) Howard Gardner And Multiple Intelligences, *The Encyclopedia Of Informal Education*, http://www.infed.org/thinkers/ gardner.htm (accessed February 2004)

IX.PHILOSOPHY OF KNOWLEDGE

Knowledge has been discussed by philosophers in a number of contexts across the history of humankind. This section is intended as a pointer towards some of the major philosophy theories and their authors and sources where more can be discovered.

A recent and influential exposition of course is to be found in Polanyi [1958][3] Succinct descriptions of the theories mentioned can be found in both Honderich's Oxford Companion to Philosophy [1995] and the Concise Routledge Encyclopaedia of Philosophy [2000] from which much of the discussion below is abstracted. Honderich himself says that virtually all theorists agree that true belief is a necessary condition for knowledge. There is, according to Honderich, no way of estimating the amount of knowledge yet to be discovered. This is partly because we cannot measure what we already know and partly because how can we estimate what is yet to become known?

If we look at epistemology - which is the theory of knowledge - we find that it is the branch of philosophy concerned with the general nature of knowledge, its possibility, scope and general basis. The origins of epistemology can be said to start with the Greeks. The ancient Greek word for knowledge is *gnosis*. However the word for information derives its roots from *informationem* (Latin) which is in turn derived from the Greek *morphe* - this latter translates as a concrete representation of the empirical elements of a phenomenon. Early philosophers such as Plato and Aristotle were concerned with the nature of knowledge, and Plato in particular, looked at the question of what distinguishes knowledge from belief. In the *Meno* he put forward the idea that correct belief can be turned into knowledge by fixing it by means of a reason or cause. He also distinguished between knowledge through theory and knowledge through experience and observation. Aristotle thought that knowledge of a thing involved understanding it in terms of the reasons for it. Knowledge proper, in Aristotle's terms, means bringing its object within a context of explanatory and reason-giving propositions. Aristotle appears also to have believed that the acquisition of knowledge depended on the experience in some way.

Locke would seem to be in broad agreement with Aristotle when he suggests (Book IV 1 2 1) that knowledge is the "perception of the connection and agreement, or disagreement .. of any of our ideas" and thus it can be perceived through the use of reason. When the connection is direct this is "intuitive" knowledge, when it is indirect, and the connection appears through other ideas and connections, then it is "demonstrative" knowledge. Demonstrative knowledge thus involves understanding and as Locke argued that observation and experimentation (experience) will lead to belief and opinion, demonstrative knowledge will be learned from past activities and will be bounded by our own ideas and worldview.

Hamlyn [1990] says that a knower must be active and seek to regulate their beliefs in accord with a norm of truth - this requires membership of a community - knowers are thus social and affective agents.

Additional Western Philosophers that should be considered in the context of exploring the meaning of knowledge are: Foucault; Saadiah Gaon; Shestor; and Spinoza. It is worth noting here that traditional Western philosophy sees knowledge as abstract, universal, impartial and rational. In effect, a stand-alone artefact. Against this view the post-modern view of organisations should be considered - where Boje, Gephart and Thatchenkerry [1996] define organisations saying that:

> *"…rather than conceiving of organisations substantively as concrete facilities embedded in artefacts such as policies and buildings, we regard organisations relationally as a concept of social actors that is produced in contextually embedded social discourse and used to interpret the social world. " (p2).*

[3] References on the philosophy of knowledge are listed at the end of this Section.

This view of organisations resonates with feminist philosophy which sees the person as relational. The self has relationships that cannot be separated from its existence. There is no 'I' unless there is a 'You'. It emphasises the responsibilities of the relationship rather than the rights, and is discussed through the idea of caring. Feminine philosophers say that humans only know through relationships. There is feminist ethic of 'care' and 'connected knowing' theory [Belenky et al., 1986; Gilligan 1982; Gilligan and Attanucci 1988] which implies that knowledge is interconnected and contextual and possibly biased. This view of knowledge fits closely to ideas concerning communities within organisations and the development of social and cultural knowledge through these communities[4]. .

As well as Western Philosophy, knowledge has also been discussed in Eastern Philosophy. See, for example, Bhattacharyya [1987], Datta [1992], and Krishnamurthy [various]. Also look at knowledge and epistemology in Islamic, Buddhist and Chinese philosophy amongst others and, although not extensively written up, knowledge is also considered by some African cultures or tribes.

REFERENCES AND ADDITIONAL READINGS FOR SECTION IX

Bhattacharyya S. (1987) *Doubt, Belief and Knowledge* New Delhi: Indian Council of Philosophical Research and Allied Publishers

Belenky M.F., Clinchy B.M., Goldberger N.R. and Tarule J.M. (1986) *Women's Ways of Knowing: The Development of Self Voice and Mind* Cambridge MA: Harvard University Press

Boje D.M., Gephart R.P. and Thatchenkerry T.J. (1996) *Postmodern Management and Organisation Theory* Thousand Oaks CA: Sage

Bonjour L. (1985) *The Structure of Empirical Knowledge* Cambridge MA: Harvard University Press

Concise Routledge Encyclopaedia of Philosophy (2000) London: Routledge

Datta D.M. (1932) *Six Ways of Knowing* London: Allen and Unwin

Gilligan C. (1982) *In a Different Voice* Cambridge, MA: Harvard University Press

Gilligan C. Attanucci J. (1988) '2 Moral Orientations – Gender Differences and Similarities' *Merrill-Palmer Quarterly Journal of Developmental Psychology* (34)3 pp223-237 July

Hamlyn D.W., (1990) *In and Out of the Black Box* Oxford: Oxford University Press

Honderich (1995) *Oxford Companion to Philosophy* Oxford: Oxford University Press

Krishnamurti (various) available from the Krishnamurti Centre, Brockwood, Hampshire, UK; also http://www.jkrishnamurti.org/

Lehrer K. (1974) *Knowledge* Oxford: Oxford University Press

Lehrer is interested in the coherence theory of belief, where belief depends for its justification on inferential relationships to other beliefs.

Pollock J. (1986) *Contemporary Theories of Knowledge* Totwa NJ: Rowman and Littlefield

Pollock looks at various accounts of knowledge and justification

[4] See the discussion on Communities of Practice in Section III.

Polanyi M., [1958] *Personal Knowledge: Towards a Post-Critical Philosophy* Chicago: University of Chicago Press

Russell B. [see Clark R.W.C. (1975) *The Life of Bertrand Russell* London: Cape, Weidenfeld & Nicolson and Jager R. (1972) *The Development of Bertrand Russell's* Philosophy London: Allen and Unwin]

Shape R. (1983) *The Analysis of Knowing* Princeton NJ: Princeton University Press

Shape provides a good survey of causal theories of knowing and related theories. Causal theory discusses the idea that a person knows a proposition only if there is an appropriate link between the state of affairs that makes that proposition true, or the person's belief in the proposition.

X. SOCIAL CAPITAL

The concept of social capital bridges the domains of sociology and economics [Adam and RonCevic, 2003] and its utility relies on the extent to which it will map onto economic thinking. The World Bank Group defines social capital as the norms and networks that enable collective action. In addition, the term social capital indicates the nature of different types of relationships with others and in the business context may be regarded as a factor of production [Schmid and Robinson, 1995]. Nahapiet and Ghoshal [2000], state that social capital influences the development of intellectual capital and thereby impacts the economic performance of organisations. Consequently social capital can impact not only economic transactions, but also production, loyalty and risk taking.

Social capital, therefore, is an external system predicated on relationships between individuals.

REFERENCES FOR SECTION X

Adam, F., RonCevic, B. (2003): Social Capital: Recent Debates and Research Rrends, *Social Science Information*, (42)2, pp.155-183.

Blanchard, A., Horan, T. (2000): Virtual Communities and Social Capital in E. Lesser (Ed), *Knowledge and Social Capital*, Oxford and Boston: Butterworth-Heinemann, pp.159-178.

Nahapiet, J., Ghoshal, S. (2000): Social Capital and the Organizational In E. Lesser (Ed), *Knowledge and Social Capital*, Oxford and Boston: Butterworth-Heinemann, pp.119-157.

Schmid, A., Robinson, L. (1995): Applications of Social Capital Theory, *Journal of Agriculture and Applied Economics*, (27) pp.59-66

Illyas, M.I., Jashapara, A. (2003): Social Capital: Re-Interpreting the Cultural and Political Dynamics of Knowledge Sharing, in F. McGrath and D. Remenyi (Eds), *Proceedings of the Fourth European Conference on Knowledge Management*, 19 September, Oriel College, Oxford University

XI. SOCIO-TECHNICAL PERSPECTIVE[5]

The arguments below are largely from Lehaney et al. [2003] and Coakes, Willis and Clarke [2002].

Knowledge management we would argue is not about managing technology alone but is about managing how humans can share their knowledge effectively, using technical tools where appropriate. In this sense we use the phrase 'information system' to include technology and

[5] References for the Socio-Technical Perspective are listed at the end of this Section

people and also non-technical means of sharing information such as story-telling, newsletters and notice-boards. We take as our context that the 'real' information system is built upon organisational culture and interpersonal communication. This system contains the rich and dynamic tacit knowledge, which, if it is harnessed and managed effectively, can give organisations competitive advantage [Liebenau and Backhouse 1990].

When we consider the social system and the technical systems that we use in our working life we need to think about the way humans use technology for their own purposes as:

> *"Organisational work too, is a multi-valenced concept as well as a multi-dimensional practice. It has included and continues to cover much territory: clerical, artistic, managerial, craft, supervisory, production, professional, routine, knowledge, symbolic, emotional, informal, technical, individual, and collaborative. Animating both technology and work is the human capacity to act in the world, to construct and use information technology, to define, control and modify work. Human agency is routine and innovative, mindless and reflective, planned and improvisational. It has both intended and unintended consequences. Most importantly, the assumptions, interests, concepts, approaches, and theories that we use, shape and refine our views of the world and of ourselves."* [Orlikowki, Walsham, and Jones,1996, p9]

A sociotechnical organisation can be considered equivalent to a post-Fordist[6] organisation - with participation as a key note. It will be flat in structure, flexible, decentralised with few work boundaries and encouraging of initiative. A key tenet of sociotechnical theory is the value of (semi) autonomous groups and the development of their expertise, in the organisation, so we next explore these ideas and apply them to the new autonomous groups that have sprung up for managing knowledge - Communities of Practice (Section III).

Knowledge is therefore socially constructed. It is not a stand-alone artefact or universal truth. If knowledge is a social construct, not simply a tool or resource, it will be discovered in a social context. It will be developed in our interactions with people. The 'socio' of sociotechnology. 'Socio' is derived from the Latin *socius* and had the original meaning of associate or companion. It now relates to the social world or society [Random House 1967]. Technology on the other hand, is derived from the Greek word *technologia* whose meaning was related to that of systematic treatment. Its dictionary definitions are various but of particular interest for its relationship to its combination with the word 'socio' to form sociotechnology, and for knowledge management, are those definitions offered by the Random House Dictionary [1967]:

> *"The sum of the ways in which a social group provide themselves with the material objects of their civilisation."*

And that offered by Webster [1986]:

> *"The science of the application of knowledge to practical purposes (in a particular field)."*

The word sociotechnology therefore is made up of these two root paradigms and is intended to imply a broad and inclusive viewpoint of the way technology is implemented in the social environment.

Here we would argue that consideration of one set of conceptual theories, whether the social or the technological, is insufficient to fully consider the technology and the social environment in which knowledge is acted upon.

---

[6] The Ford referred to is the automobile industrialist, Henry Ford.

It should be noted here, as it is of relevance to the design of knowledge management systems, that the sociotechnical approach to system design recognises the importance of different interest groups and a multivariate set of objectives. These include social, technical, economic, and organisational objectives [Land 2000]. Thus the sociotechnical approach includes social requirements analysis when attempting to understand an organisation and its system needs. Additionally, it requires user community participation and full involvement in any system design - of prime importance in the design of a knowledge management system (KMS).

Little is written in the theoretical literature that explicitly links these two concepts. Searching through the databases one encounters only a few conference papers and the occasional journal article. The two authors that do seem to have considered this relationship in most depth are Pan and Scarbrough [1999] in their work on Buckman Laboratories .

In this 1999 article, Pan and Scarbrough extend the sociotechnical perspective using Scarbrough [1995]. They build on the existing precepts of the open systems approach, the 'best match' idea and redundancy principles to concern themselves with:

> *"The subtle and diffuse structuring of behaviour and perceptions arising from information flows and communication systems."* (p361)

They also comment that the socio of sociotechnology needs to encompass the socially constructed aspects of knowledge within an organisation. Pan and Scarbrough also say that the systems perspective needs to place more emphasis on the processual and emergent aspects of the interplay between technology and the organisation. Thus they argue that a critical function of the sociotechnical account of knowledge management in an organisation is to understand the social relationships within which the tacit knowledge, in particular, is embedded.

REFERENCES FOR SECTION XI

Coakes E., Willis D., & Clarke S., (2002) *Knowledge Management in the SocioTechnical World* London: Springer-Verlag

Land, F. (2000). *Evaluation in a Socio-Technical Context*. London School of Economics working paper, London.

Lehaney B., Clarke S., Coakes E., & Jack G., (2003) *Beyond Knowledge Management* Hershey, PA: IRM Press

Liebenau J., & Backhouse J., (1990) *Understanding Information: An Introduction* London: MacMillan

Orlikowki, W., Walsham, G., & Jones, M.R. (1996). Information Technology and Changes in Organisational Work: Images and Reflections. In W. Orlikowski, G. Walsham, M.R. Jones, & J.I. DeGross (Eds.), IT and Changes in Organisational Work, pp. 1-10. London: Chapman & Hall.

Pan, S.L., & Scarbrough, H. (1999). Knowledge Management in Practice: An Exploratory Case Study. *Technology Analysis & Strategic Management,* 11(3), 359-374.

Random House (1967) *Dictionary of the English Language Unabridged* New York: Random House

Scarbrough, H. (1995). Blackboxes, Hostages and Prisoners. *Organizational Studies*, 16(6), 991-1019.

Webster (1986) Third New International Dictionary Springfield MA: Merriam Webster Inc

XII.STORY TELLING

ARTICLES

Boje, D.M., (2000) Storytelling Organizations http://cbae.nmsu.edu/~dboje/ storytellingorg.html Edition: 29th June 1999 revised 20th March 2000

Abstract: Stories speak to something. Organisations are regarded as containing competing ideologies and goals. Stories get invented and re-invented to suit changing purposes. Re-invented stories become simulacra.

Boje defines a storytelling organisation as a "collective storytelling system in which the performance of stories is a key part of members' sense making and a means to allow them to supplement individual memories with institutional memory."

The author posits that collective sense making can be achieved through story and myth. He works from a critical post-modern philosophy as his epistemological approach to researching storytelling organisations. This approach holds that there is internal and external storytelling pluralism accessible by means of deconstruction. It also implies the existence of counter narratives aimed at de-ligitimising the organisation's position by deconstructing the dominant ideology and institutional memory. Boje offers Nike as an example in this context.

This position is contrasted with the social construction [Boyce, 1996, see below] and the Barthesian [Czarniawska 1997] approaches. The former assumes all organisation members can be meaning makers and contributors to the processes of storytelling and culture creation. The latter employs the metaphor of drama and employs a narrative technique drawn from structuralist analysis.Kaye [1996] says, "stories can shape the culture of organizations. Through stories and myths, we can form images of the organization and judge whether it is healthy or ailing. They tell us about the people who are saving the organization and those who are bringing it down…myths support rituals, communicate values and help leaders envisage the future."

Boyce, M.E., (1996) Organizational Story and Storytelling: a Critical Review *Journal of Organizational Change Management* (9)5 pp.5-26

Abstract: Discusses some of the applications possible for researchers and practitioners of utilising story and storytelling. Introduces the practice of storytelling as an ancient medium for communication and meaning making.

States that the storytelling process is a primary vehicle for expressing individual and collective meaning in an organisational context. Story and storytelling can be used to develop a new meaning of work. This presents and opportunity for possible cultural intervention. In stories a multiplicity of voices need to be heard - those of the subordinate as well as the dominant because both sets are meaning makers.

According to Fisher [1987] there is a narrative paradigm, which presents a philosophy of reason, value and action. Thus the philosophical ground of the narrative paradigm is ontology. The narrative paradigm provides a form through which values, reasons and actions are expressed and as such it has message for the recipient. Story differs from dramatisation in as much as it has no dialogic necessity whereas drama does.

Examines the literature on storytelling from three perspectives:

1. Social constructivist;
2. Organisational symbolism;
3. Critical theory.

Social constructivism is associated with Berger and Luckman [1967] and focuses on social interaction. It introduces legitimation as a process through which people construct explanation and justifications for their behaviours. The narrative paradigm referred to by Fisher [1987]

consists of socially constructed reality + story + organisation. The inability to admit to alternative realities and alternative interpretations of stories can place people and communities in psychic prisons.

Organisational symbolism expresses the underlying character, ideology, or value system of an organisation according to Dandridge et al. [1980].

Critical theory is essentially a post-modern perspective advocating deconstruction of assumptions, expectations and language.

Clark [1972] talks about storytelling as organisational saga concerned with the actions of a charismatic leader. Mitroff and Kilmann [1975] write of epic myth in similar vein.

Story is useful for collective sense making and has the potential to revitalise organisational culture by remythologising. Story can be utilised in problem solving/action research for developing, sharpening and renewing the sense of purpose held by organisational members.

Brown, J.S., Denning, S., Groh, K., Prusak, L., (2001) Storytelling: Passport to the 21st Century http://www.parc.xerox.com/ops/members/brown/storytelling/Intro4a-How-Larry&JSB.html

Abstract: Authors argue that knowledge and learning are formed as a result of the interplay between content, context and community.

Stories enable effective transactions between communities of practice. Good stories are seen as capable of engaging listeners' feelings, offering transportability of ideas/concepts and providing a framework for understanding generalities. Offer the idea of stories as bridges between COPS.

The role of the knowledge artist at Xerox PARC is briefly discussed.

Advocate the use of storytelling as "the ultimate low cost high return technology". State that storytelling communicates ideas holistically.

Blame Plato, Aristotle, Bacon and Descartes for disseminating negative views of storytelling. Highlight this as narrative thinking vs. abstract thinking and contend that vested interests continue to denigrate the former. Claim that the storytelling role model should be Tolstoy.

McKenna, S., (1999) Storytelling and "Real" Management Competence *Journal of Workplace Learning* (11)3 pp. 95-104

Abstract: The author has a New Zealand perspective. Argues that organisations regard management competence as capable of being developed out of the organisation's core values and through management development programmes into behavioural norms.

Is critical of the assumption that managerial competencies can be defined in the abstract in this way. Countless organisations have developed "lists" of management competencies based on behavioural criteria. The objective of this competency development is to build a more competent managerial group in the context of a rapidly changing environment. This paper argues that most sets of "management competencies" are developed without recognition of their inherent contradictions and without due regard to their contextuality. Through the use of storytelling as a methodology, two case histories are outlined to show how competence is subject to, firstly, subjective interpretation and preference and, secondly, to the specific context in which behaviour takes place. The implications for management and organisational development are then discussed. Demonstrates the application of storytelling. Presents two stories concerned with managerial competencies. Organisation A is an NZ food production company. Joe is a production manager. His story illustrates how he becomes caught in an invidious position because of his Director's subjective interpretation of what competence means. Organisation B is a local government institution. Claire's story shows how competence was defined by the extent to which managers fitted into the culture created by the CEO and maintained by him through his position power.

The two stories demonstrate that competence is not generic, but dependent upon workplace micro-logics. Competence is contextually grounded.

Mouritsen J., Larsen H.T. Bukh P.N.D., (2001) Intellectual Capital and the 'Capable Firm': Narrating, Visualising and Numbering for Managing Knowledge Accounting, Organizations and Society (26)7/8 pp.735-762, October-November

Abstract: Intellectual capital statements are 'new' forms of reporting whose object is knowledge management activities. Based on 17 firms' work to develop intellectual capital statements, this paper analyses them as managerial technologies making knowledge amenable to intervention.

Quong, T. Walker, A., (2000) Using Stories to Shift Attitudes: The Case of Bullying *International Electronic Journal for Leadership in Learning* (4)4 http://education.uncc. edu/cpflower/rsch6101/quong_v4n4.html

Abstract: Recounts the development of the "Co-operative Capers" strategy. The authors offer an example of storytelling applied to changing attitudes relating to bullying in the context of an Australian elementary school. This is concerned with culture change through an action partnership involving a 3-month long intervention employing a story-based approach to the management of change.

It is held that individuals store their life experiences, attitudes, values and beliefs in story form and not as abstract lists (Sarbin 1986). Also that people's understandings about work in an organisational setting and on an individual basis are embodies in stories (Witherell & Noddings 1991).

Thus stories serve as repositories of knowledge and experience - tacit knowledge - and this content can be communicated through recalling and retelling these stories. Organisations contain a web of stories.

The authors developed a 4-stage model to frame their intervention:

1. Actively listen to stories of school and community;
2. Create conditions that promote the sharing of stories of success;
3. Perpetuate and in some instances enable stories of success to be created;
4. Explore the basis for the stories of success to discover what common values they share.

Anonymous (2001) Leadership and Management http://storytellingfoundation.net/ leader.htm Storytelling Foundation

Abstract: Storytelling Foundation International argues the need in organisations for sharing stories that inspire, teach and guide. The SFI advocates the application of storytelling to enhance leadership and management practices.

This piece cites the example of Stephen Denning in his role as Director of the World Bank's KM programme. Denning realised while making a presentation that his abstract approach using charts and tables was not capturing his audience's attention. He switched to a simple story of a Zambian health worker from a remote region being able to access a malaria treatment protocol by logging on to the Centre for Disease Control's website. This worked.

"A good story efficiently and powerfully conveys knowledge that often cannot be communicated as effectively in other ways. Stories are powerful because they show us rather than tell us, dramatically enacting a truth that can move us and influence the way we see things." (Denning).

Zdrahal, Z., Mullholland, P., Top, J., Warren, C., Phillips, S., (2001) The role of ontologies in Knowledge Management http://www.knowledgeboard. com/cgi-bin/item.cgi?id=50466 Accessed May 2004

Abstract: A transcription of an online workshop concerned with the use of ontologies in KM. Defines ontologies as explicit and formal conceptualisations of knowledge. Ontologies describe concepts and the relationships between them. The value of applied ontology is that it facilitates the mapping out of a particular domain in terms of categories. An ontology can be applied to defining the area of expertise required to solve a problem. In this approach the whole area of expertise is sub-divided into specific fields. Examples of specific fields might be vision, cognitive modelling, or situational awareness.

Ontologies can be represented graphically. They can be used as tools, often with their own languages such as OCML (operational conceptual modelling language), or OIL (ontology based inference layer). The participants question whether knowledge can be stored without an ontological representation of the knowledge domain. Agreed that it might be possible to do this intuitively, but without an appropriate ontology retrieval and re-use would be difficult.

It is argued that ontologies can access tacit knowledge and make it implicit by exporting it in code to a system. This implies an intervening stage between tacit and explicit knowledge.

BOOKS

Denning, S., (2000) *The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations* Boston and London: Butterworth Heinemann

Abstract: Contrasts storytelling with abstract communication in organisations and argues that combining both channels facilitates knowledge sharing and the creation of organisational knowledge.

XIII.TRUST

The issue of trust surfaces as a key element in the relationships within communities of practice, especially where such communities are networked by means of Information and Communications Technology (ICT). Social capital (Section X) serves to improve both the efficiency and effectiveness of knowledge distribution. Such transactions enable knowledge to be re-purposed [Nahapiet and Ghoshal, 2000][7] and we could speculate that such re-purposing might stimulate creativity within an organisation. Thus social capital can be a proxy measure of the quality of the relationships between members of these communities where knowledge is generated, shared, transferred and exploited. Ng [2001] provides an account of the failure to network via ICT caused by lack of trust and a consequent unwillingness to risk communicating and sharing knowledge with an unknown other.

Trust is a concept everybody understands at some personal level, but most people will have trouble enunciating a specific definition of the concept. Trust can be defined as the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the trustor [Mayer, Davis and Schoorman, 1995].

The word ‘trust’ has etymological roots in the Scandinavian word ‘trausti’ [Websters 1986] which relates to an agreement or pact made between parties. Whilst there are a number of meanings offered in the dictionary for the current usage of the word, certain elements are common. In particular it implies an assured attitude towards the other party in the agreement which may rely on past evidence or experience, knowledge of the other party, affection, or admiration or respect for that party. There is also an implication that both parties in the trusting relationship are confident in the character of the other through past experience perhaps, or faith or hope in the future relationship. There is a reliance on the integrity of the other party.

[7] References for trust are presented at the end of this section.

TRUST IN TEAMS

In an article about the security issues of the knowledge medium for project work, Damm and Schindler [2002] give an excellent summary of the issues relating to trust and team work, which is summarised below.

They argue, based on Guss [1998], that team members may share only a part of their terminology and mental models due to the interdisciplinary nature of many projects. They also argue that the exchange of implicit knowledge and the socialisation process of changing tacit knowledge into explicit knowledge (externalisation), [Nonaka and Konno 1998], can only be supported and enabled by ICT, as this technology permits collaboration and co-operation. Trust is thus an enabler for knowledge creation and transfer. It is also the facilitator for team learning [Huemer, Von Krogh and Roos 1998] and is nearly the only way people will take part in activities they cannot completely control or monitor [Bradach & Eccles 1998]. ICT is therefore not an essential component.

The literature seems to indicate that trust is based strongly on inter-personal relationships and needs touch [Handy 1995] but trust seems also the only way to prevent a geographically or organisationally dispersed project team becoming psychologically separated [O'Hara and Johansen 1994]. Some empirical studies do however, show that virtual teams can develop trust (O'Hara & Johansen 1994; Walther 1997] especially if there is initial face-to-face contact in paticular at 'kick-off' meetings [Guss 1998]. Trust is imported by the team members from other settings with which they are familiar [Meyerson et.al 1997] rather than is developed with the team's activities and therefore requires consistent role behaviours to become a norm and established. It will be a result of the many organisational and national cultures that may make up the project team and thus these cultures may clash or collide both in behaviours or expectations. Social dialogue enables and develops the project team trust [Jarvenpaa & Leidner 1998].

This article also argues that trust is difficult to establish if the project knowledge management environment is not guaranteed to be technically secure as critical details will not be shared.

REFERENCES FOR SECTION XIII

Braddach J.L. Eccles R.G. (1989) Markets Versus Hierarchies - from Ideal Types to Plural Forms *Annual Review of Sociology* (15) pp. 97-118

Damm D., Schindler M. (2002) Security Issues of a Knowledge Medium for Distributed Project Work *International Journal of Project Management* (20)1 pp.37-47 January

Guss C.L. (1998) Virtual Project Management: Tools and the Trade *Project Management Journal* (29)1 pp.22-30 March

Handy C., (1995) Trust and the Virtual Organisation *Harvard Business Review* (72)3 pp.40-50 May-June

Huemer L., von Krogh G., & Roos J. (1998) Knowledge and the Concept of Trust in G. von Krogh, J. Ross & D. Kleine (eds) *Knowing in Firms - Understanding, Managing and Measuring Knowledge* London: Sage pp. 123-145

Javenpaa S.L., & Leidner D.E. Communication and Trust in Global Virtual Teams *Journal of Computer-Mediated Communication* (4)3 http://jcmc.huji.ac.il/vol3/issue4/jarvenpaa.html June

Mayer, R.C., Davis, J.H., Schoorman, F.D. (1995): An Integrative Model of Organisational Trust, *Academy of Management Review*, (20)3, pp. 709-715.

Meyerson D., Weick K.E., Kramer R.M. (1997) Swift Trust and Temporary Groups in R.M. Kramer & T.R. Tyler (eds) *Trust in Organisations: Frontiers of Theory and Research* Thousand Oaks, CA.: Sage pp.166-195

Nahapiet, J., Ghoshal, S. (2000): Social Capital and the Organizational Advantage in: *Knowledge and Social Capital,* Eric Lesser (Ed), Oxford and Boston, Butterworth-Heinemann, 119-157.

Ng, K-C. (2001): Using E-Mail to Foster Collaboration in Distance Learning, *Open Learning,* (16)2, pp. 192-200.

Nonaka I., and Konno N. (1998) The Concept of 'Ba': Building a Foundation for Knowledge Creation *California Management Review* (40)3 pp40-54 Spring

O'Hara M., and Johansen R. (1994) *Global Work - Bridging Distance, Culture and Time* San Francisco: Jossey-Bass

Walther J.B. (1997) Group and Interpersonal Effects in International Computer-Mediated Interaction *Human Communication Research* (11) pp342-369

Websters (1986) *3rd New International Unabridged Dictionary,* Springfield, MA: Merriam-Webster

XIV. VALUATION OF KM AND OF INTELLECTUAL CAPITAL

Bontis N., Dragonetti N.C., Jacobsen K., Roos G., (1999) The Knowledge Toolbox: A Review of the Tools Available to Measure and Manage Intangible Resources *European Management Journal* (17)4 pp.391-402 August

Abstract: Given the increased discussion on the development of metrics to manage intangible resources, there is a need for a review of the most important tools available to managers for this purpose. This article reviews 4 measurement systems currently popular among practitioners: 1) human resource accounting 2) economic value added 3) the balanced scorecard & 4) intellectual capital. The assumptions and details of each tool are discussed, as well as the operationalisation procedures to apply them correctly. Strengths and weaknesses of each system are also analysed in order to supply 'knowledge managers' with the instruction sheet to the toolbox.

Johnson W.H.A., (1999) An Integrative Taxonomy of Intellectual Capital: Measuring the Stock and Flow of Intellectual Capital Components in the Firm *International Journal of Technology Management* (18)5-8 pp.562-575

Abstract: Building on the resource based view of the firm, an Intellectual capital framework is suggested to identify and measure important resources that may provide the firm sustainable competitive advantage. The difficulty of measuring and managing the elements of intellectual capital is a result of management's inherent tendency towards over dependence on financial measures of performance. Typically, however, the Intellectual capital assets of the firm are intangible and not easily amenable to financial measures as benchmarks. In attempting to operationalize the concept the paper begins by developing an integrative taxonomy of Intellectual capital based on recent literature. Each element of Intellectual capital is then further developed by examining the various types of intangible assets that embody it. Using a software firm as an example, potential quantitative and qualitative indicators of tile stock of intellectual capital within the firm are given. Direction towards measuring flows as indicators of intellectual capital strength is discussed.

Liebowitz J. and Wright K., (1999) Does Measuring Knowledge Make 'Cents'? *Expert Systems with Applications* (17) pp. 99-103

Abstract: Intellectual Capital measurement is an important element of KM. Organisations are grappling with the issue of how best to show that KM efforts are benefiting their organisation. The measurement and valuation of knowledge, especially pertaining to human capital, is an area of great interest. This article discusses this issue and proposes a valuation model for human capital.

Martin W., (2000) Approaches to the Measurement of the Impact of Knowledge Management Programmes *Journal Of Information Science* (26)1 pp.21 -27

Abstract: Interest in knowledge management is currently widespread, with organisations of all kinds investing in technologies, systems and people to this end. Concurrently, within business and the economy as a whole, intellectual capital or intangible assets are growing in significance in relation to traditional tangible assets such as buildings and equipment. Many organisations are finding that traditional measures of organisational performance are insufficient for the task of

managing intangibles. In trying to measure the value of knowledge inputs and outputs, such metrics as return on investment or the practice of consigning intangibles to the accounting category of goodwill need to be supplemented by alternative approaches. This paper looks at the problem of knowledge measurement and, in reviewing some of the current alternatives, argues for the importance of metrics to the overall process of knowledge management. The significance of knowledge measurement to the information science community is emphasised.

Mayo A., (2002) A Thorough Evaluation *People Management* (8)7 p.36

Abstract: new model aimed at assessing how each individual adds value to their organisation

Petrash G., (1996) Dow's Journey to a Knowledge Value Management Culture *European Management Journal* (14)4 pp.365-373, August

Abstract: Intellectual Capital/Knowledge Management is not the next silver bullet or fad that we should rally around. We need to ask is knowledge management important for the sake of 'what does it have to produce?' It is the creation of value for customers, share holders and employees. The Dow Chemical Company has spent the last four years developing a vision, functional systems, and tools, for the 'value management' of its Intellectual Assets (IA). During this effort, it has developed some competencies in the area of 'measuring and valuing' IA, and in developing systems that support the leveraging of IA for maximum value. In this article, Dow shares its experiences gained and reveals some of the lessons learned from this highly successful endeavour. The article also gives a glimpse of Dow's future direction in the area of Intellectual Capital Management.

Rodov I. Leliaert P., (2002) FiMIAM: Financial Method of Intangible Assets Measurement *Journal of Intellectual Capital* (3)3 pp.323-336

Abstract: Abstract Today's measurement systems fail to adequately account for intellectual capital (IC) in a transparent yet comprehensive manner. In spite of many recent attempts to qualify and sometimes quantify intangibles, there exists as yet not one standardized system that is sufficiently developed and globally accepted. The aim of the present paper is to contribute towards the creation of such a system. The financial method of intangible assets measurement (FiMIAM) presented in this paper aims to overcome some of the weaknesses of recent methods of IC valuation, and contribute to the creation of complete balance-sheets, reflecting both the tangible and intangible assets of a company.

Roos G. and Roos J., (1997) Measuring Your Company's Intellectual Performance *Long Range Planning* (30)3 pp.413-426, June

Abstract: Intellectual capital is rapidly becoming a very important measure of the company's future performance. It is therefore vital that indicators and measures are developed, to allow managers to handle this variable better. This article reports the results and conclusions from a large study among small and medium sized enterprises in Scandinavia. Previous research has captured intellectual capital as a snapshot, at one point in time. This is the 'Balance Sheet' approach. Based on the results of our study, we suggest the adoption, alongside the Balance Sheet approach, of a 'Profit and Loss' approach which could help companies to monitor the flows among different types pf IC and between intellectual and financial capital.

Schmidt J. and Lines S., (2002) A Measure of Success *People Management* (8) 9 pp.32-34, 2 May

Abstract: Describes a new approach to measurement which has found a direct link between people management and stock returns

Smith, A.C., (1998) Systemic Knowledge Management: Managing Organizational Assets for Competitive Advantage *Journal of Systemic Knowledge Management* April available at http://www.tlainc.com/article8.htm

Abstract: Briefly reviews the context for the increased interest in more explicitly valuing intangible assets and explores the strengths and weaknesses of current approaches involving Intellectual Capital, the Balanced Scorecard and KM. Contends that overemphasis on developing and leveraging intangible assets is counterproductive. Proposes a new approach labelled SKM - systemic knowledge management and goes on to illustrate SKM using system dynamics models and how this approach is relevant to strategic planning and operational decision making.

Tebbutt, J., (2000) Who Determines the Value of your Business? *Information Societies Technologies Conference* Nice: European Commission

Abstract: The workshop claims that competitive advantage depends on intangible factors, which are themselves comprised of core skills and services of businesses. Explains that the new economy consists of four main sectors: software, services, new media and digital content industries. Success in the new economy is determined by sustaining investment in intangibles, which are the key drivers of wealth production. Physical and financial assets have been reduced to commodities.

Draws attention to the ever present division between an organisation's book value and its market value as determined by its share value. The concept of goodwill is no longer adequate to explain this difference. The problem is in identifying and measuring intangibles in which process traditional accounting practices are deficient.. This highlights the need for better valuation models. Discusses MAGIC (measuring and accounting for intellectual capital) an EC methodology for capturing hard data on intellectual capital. States that enterprise valuation needs to consider the value of intellectual capital and intangible assets.

Goes on the say that organisational value is dependent on innovative capability. Innovative capability is comprised of human intellectual capital (as knowledge and know-how), organisational capital (culture, environment), marketing capital (strategy, analysis), managerial capital (strategy, implementation) and capital protection (IPR, patents).

Recognises that intellectual capital is the prime value adding component of a business and thus questions where ownership of tacit knowledge lies. Introduces the idea that there is a need for a new kind of contract between employer and employee. Describes these as relational contracts.

Concludes that EU and national policies should be directed towards fostering a business and political climate which encourages entrepreneurial opportunism, innovation and rapid technology diffusion. Refers to the work and report of the Higher Level Expert Group and its recommendations to the EC.

Ulrich D. & Smallwood N., (2002) Seven Up *People Management* (8)10 pp.42-44 16 May

Abstract: highlights 7 strengths and strategies that can have a dramatic effect on an organisation's market value

XV. ADDITIONAL JOURNAL SOURCES

International Journal of Knowledge Management (due 2005, Idea Group Publishing; http://www.idea-group.com/)
Journal of Knowledge Management Research and Practice (UK OR Society)
Journal of Knowledge Management Practice (online) http://www.tlainc.com/ jkmp.htm

APPENDIX I. MASTER LIST OF REFERENCES

This appendix compiles all the references cited in the text in a master alphabetical list. The text contains approximately 280 references, of which 228 are unique and listed here.

Ackerman M., Pipek V., and Wulf V., (2003) *Sharing Expertise: Beyond Knowledge Management* Cambridge Ma: MIT Press

Adam, F., RonCevic, B. (2003): Social Capital: Recent Debates and Research Trends, *Social Science Information*, (42)2, pp.155-183.

Adler, Goldoftas and Levine (1999) *Organization Science* 10 (1999) p. 43

Agarwal, R., Krudys, G., Tanniru, M., (1997) Infusing Learning into the Information Systems Organization *European Journal of Information Systems* (6) pp. 25-40

Alexopoulos E., and Theodoulidis B., (2003) The Generic Information Business Model *International Journal of Information Management* (23)4, pp. 323-336 August

Anonymous (2001) Leadership and Management http://storytellingfoundation.net/_leader.htm Storytelling Foundation

APQC (2002) *Communities of Practice* Houston: APQC

APQC (2004b) *Retaining Valuable knowledge: Proactive Strategies to Deal with a Shifting workforce* www.apqc.org/pubs (accessed February, 2004)

APQC and McDermott R., (2001) *Building and Sustaining Communities of Practice* Houston: APQC

APQC(2004a) http://www.apqc.org/portal/apqc/site/generic?path=/site/km/communities.jhtml (accessed 14/02/04)

Argyris, C., Schon, D.A., (1978) *Organizational Learning: A Theory of Action Perspective* Reading, Mass: Addison-Wesley

Baladi, P.,(1999) Knowledge and Competence Management. Ericsson Business Consulting *Business Strategy Review* (10)4 pp20-28

Balasubramanian, P., Nochur, K., Henderson, J.C., Kwan, M.M., (1999) Managing Process Knowledge for Decision Support *Decision Support Systems* (27)1/2 pp.145-163

Barker, M., (2000) Knowledge Management Best Practice *Personnel Today* (29) Feb 17

Bassi L.J., (1997) Harnessing the Power of Intellectual Capital *Training & Development* (51)12, December

Baum JAC and Silverman BS., (2004), Picking Winners or Building Them? Alliance, Intellectual, and Human Capital as Selection Criteria in Venture Financing and Performance of Biotechnology Start-Ups, *Journal of Business Venturing* (19)3 pp.411-436 May

Belenky M.F., Clinchy B.M., Goldberger N.R. and Tarule J.M. (1986) *Women's Ways of Knowing: The Development of Self Voice and Mind* Cambridge MA: Harvard University Press

Bellaver R.F., and Lusa J.M., (2001) *Knowledge Management Strategy and Technology* Artech House

Berger, H.S. and Luckmann, T. (1967), *The Social Construction of Reality*, New York: Anchor

Bertels, T., Savage, C.M., (1999) A Research Agenda for the Knowledge Era: The Tough Questions *Knowledge and Process Management* (6)4 pp.205-212

Bhattacharyya S. (1987) *Doubt, Belief and Knowledge* New Delhi: Indian Council of Philosophical Research and Allied Publishers

Blanchard, A., Horan, T. (2000): Virtual Communities and Social Capital in E. Lesser (Ed), *Knowledge and Social Capital*, Oxford and Boston: Butterworth-Heinemann, pp.159-178.

Bloom B.S., (1956) *Taxonomy of Educational Objectives: the Classification of Educational Goals. Handbook 1: Cognitive Domain.* New York: Longmans Green & Company

Blumentitt, R., Johnston, R., (1999) Towards a Strategy For Knowledge Management *Technology Analysis & Strategic Management* (11)3 pp.287-300

Boje D.M., Gephart R. P. and Thatchenkerry T.J. (1996) *Postmodern Management and Organisation Theory* Thousand Oaks CA: Sage

Boje, D.M., (2000) Storytelling Organizations http://cbae.nmsu.edu/~dboje/_storytellingorg.html Edition: 29th June 1999 revised 20th March 2000

Bokin, J., (1999) *Smart Business: How Knowledge Communities Can Revolutionize Your Company* New York: Free Press

Bonfield, P., (1999) Knowledge Management Strategy at BT *Managing Information* (6)6 pp26-30

Bonjour L. (1985) *The Structure of Empirical Knowledge* Cambridge MA: Harvard University Press

Bontis N, Dragonetti NC, Jacobsen K, Roos G., (2001) Assessing Knowledge Assets: A Review of the Models Used to Measure Intellectual Capital *International Journal Of Management Reviews* (3)1, pp. 41- 60.

Bontis N, Keow WCC, Richardson S., (2000) Intellectual Capital and Business Performance in Malaysian Industries *Journal of Intellectual Capital* (1)1, pp.85 -100.

Bowander, B., Miyake, T., (2000) Technology Strategy of Toshiba Corporation a Knowledge Evolution Perspective *International Journal of Technology Management* (19)7/8 pp.864-895

Boyce, M.E., (1996) Organizational Story and Storytelling: a Critical Review *Journal of Organizational Change Management* (9)5 pp.5-26

Bradburn A., and Coakes E., (2004) Intangible Assets And Social, Intellectual And Cultural Capital: Origins, Functions And Value. *OKLC* April Innsbruck

Braddach J.L. & Eccles R.G. (1989) Markets Versus Hierarchies - from Ideal Types to Plural Forms *Annual Review of Sociology* (15) pp97-118

Brennan N, Connell B., (2000) Intellectual Capital: Current Issues and Policy Implications Brooking A., (1997) The Management Of Intellectual Capital *Long Range Planning* (30)3, pp. 364-365

Bresnen M, Edelman L, Newell S, Scarbrough H and Swan J, (2003) Social Practices and the Management of Knowledge in Project Environments, *International Journal of Project Management* (21) 3, pp157-166 April

Brooking A., (2000) Introduction to Intellectual Capital *The Technology Broker* URL: http://www.tbroker.co.uk/intellectual_capital/index.html

Brown, J.S., Denning, S., Groh, K., Prusak, L., (2001) Storytelling: Passport to the 21st Century http://www.parc.xerox.com/ops/members/brown/storytelling/Intro4a-How-Larry&JSB.html

Büchel B and Raub S., (2002) Building Knowledge-Creating Value Networks, *European Management Journal,* (20)6, pp. 587-596, December

Buckler, B., (1998) Practical Steps Towards a Learning Organisation: Applying Academic Knowledge to Improvement and Innovation in Business Processes *The Learning Organization* (5)1

Buckler, B. (1996) A Learning Process Model to Achieve Continuous Improvement and Innovation, *The Learning Organization*, (3)3 pp. 31-39

Bukh PN, Larsen HT and Mouritsen J., (2001) Constructing Intellectual Capital Statements *Scandinavian Journal of Management* (17)1, pp.87 -108, March.

Burgoyne J., (1999) The Times *People Management,* (3) June, pp39-44

Burn J & Ash C., (2000) Knowledge Management Strategies for Virtual Organisations *Information Resources Management Journal* (13)1 pp.15-23

Burus, D., and Gittines, R. (1993) Technotrends: Twenty Four Hour Technologies that will Revolutionize our Lives, New York: Harper Business

Caddy I., (2000) Intellectual Capital: Recognizing Both Assets and Liabilities *Journal of Intellectual Capital* (1)2, pp129-146.

Carayannis, E.G., Alexander, J., (1999) The Wealth of Knowledge: Converting Intellectual Property to Intellectual Capital in Co-Opetitive Research and Technology Settings *International Journal of Technology Management* (18)2/3, pp. 326-352

Centre for Strategic Business Studies, (1998) *Managing Knowledge and Intellectual Capital* Winchester: CSBS Publications

Chait, L.P., (1999) Creating a Successful Knowledge Management System. *Journal of Business Strategy* (20)2 pp.23-26

Chase, R.L., (1998) *Creating a Knowledge Management Business Strategy: Delivering Bottom Line Results* Lavendon (UK): Management Trends International

Chase, R.L., (1999) *Most Admired Knowledge Enterprises Report* Lavendon (UK): Management Trends International

Choo CW., (1998) *The Knowing Organisation: How Organisations Use Information to construct Meaning, Create Knowledge and Make Decisions* Oxford: Oxford University Press
Chwalowski M., (1997) Intellectual Capital Matters *The Electricity Journal* Dec., pp.88-93.
Cinquegrani, R., Futurist Networks: Cases of Epistemic Community?, *Futures,* 34(8) pp779-783 October
CIO (2003) Knowledge Management http://www.cio.com/summaries/entreprise/knowledge/index.html (accessed Feb 2004)
Clark, B.R. (1972), The Organizational Saga in Higher Education, *Administrative Science Quarterly* (17) pp. 178-84.
Coakes E., (2003) *Knowledge Management: Challenges and Issues* Hershey: Idea Press
Coakes E., & Sugden G., (2003) 'Knowledge management – a review' - a web article - OR Society – *www.theorsociety.com*
Coakes E., Willis D., & Clarke S., (2002) *Knowledge Management in the SocioTechnical World* London: Springer-Verlag
Coakes, E., Bradburn, A., Sugden, G (2003) 'Managing and leveraging knowledge for organisational advantage', *KMAC03* (J. Edwards ed) Birmingham: Aston University July pp54-65
Cody K., (2001) Best practice: Exploiting knowledge within a global company: The Truffles intranet — *Interactive Marketing,*(2)3 http://www.theidm.com/ index.cfm?fuseAction=contentDisplay.&chn=3&tpc=18&stp=53&pge=206
Cole J., (1997) Getting Results-For the Hands-On Manager *Plant Edition* (AMA)(42)2 pp7-10,Feb
Concise Routledge Encyclopaedia of Philosophy (2000) London: Routledge
Corssan, M., Guatto T., (1996) Organizational Learning Through Research Profile *Journal of Organizational Change Management* (9)1 pp.107-112
Cotter, N., Bagshaw, M., Bagshaw, C., (1999) Intellectual Capital Knowledge Has a Value *Training Journal,* pp.10-12 April
Cross, R., Israelit, S.B., (2000) *Strategic Learning in a Knowledge Economy: Individual, Collective and Organizational Learning Processes* Boston, MA: Butterworth Heinemann
Czarniawska, B. (1997) *Narrating the Organization: Dramas of Institutional Identity*. Chicago: University of Chicago Press.
Damm D., & Schindler M. (2002) Security Issues of a Knowledge Medium for Distributed Project Work *International Journal of Project Management* (20)1 pp.37-47 January
Dandridge, T.C., Mitroff, I. and Joyce, W.F. (1980), Organizational Symbolism: a Topic to Expand Organizational Analysis", *Academy of Management Review* (5)1 pp. 77-82.
Darling. M, S., (1996) Building the Knowledge Organisation *Business Quarterly*. London: ONT: Richard Ivey School of Business pp. 61-66, Winter
Datta D.M. (1932) *Six Ways of Knowing* London: Allen and Unwin
Davenport, T. H., (1997) KM at Ernst & Young, http://www.bus.utexas.edu/kman/ E&Y.htm (Accessed 12 March 2003)
Dayasindhu N., (2002) Embeddedness, Knowledge Transfer, Industry Clusters and Global Competitiveness: A Case Study of the Indian Software Industry, *Technovation*, (22)9 pp551- 560. September
Denning, S., (2000) *The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations* Boston/London:Butterworth Heinemann
Desouza KC., (2003) Strategic Contributions of Game Rooms to Knowledge Management: Some Preliminary Insights, *Information & Management*, (41)1 pp63-74 October
Dess GD, Ireland RD, Zahra SA, Floyd SW, Janney JJ, Lane PJ., (2003) Emerging Issues in Corporate Entrepreneurship *Journal of Management* (29)3 pp.351-378, June
DeVries, E.J., Brijder, H.G., (2000) Knowledge Management in Hybrid Supply Channels: A Case Study *International Journal of Technology Management,* (20) pp.569-588
Dibiaggio L., (2002.) Managing Intellectual Capital. Organizational, Strategic, and Policy Dimensions *Technovation* (22)1, pp.62- 64 January
Dilnutt R.,(2002) Knowledge Management in Practice: Three Contemporary Case Studies *International Journal of Accounting Information Systems* (3)2 pp75-81, August
Dixon, N.M., (1998) The Responsibilities of Members in an Organization that is Learning. *The Learning Organization* (5)4

Drew S., (1999) Building Knowledge Management into Strategy: Making Sense of a New Perspective, *Long Range Planning* (32)1 pp.130-136

Drucker, P. (1993), *Post-Capitalist Society*, Oxford, Butterworth-Heinemann

Dutrenit, G., (2000) *Learning and Knowledge Management in the Firm: From Knowledge Accumulation to Strategic Capabilities* Cheltenham UK: Edward Elgar

Edvinsson L., Kitts B., Beding T., (2000) The Next Generation Of IC Measurement - The Digital IC-Landscape *Journal of Intellectual Capital* (1)3, pp. 263-273.

Edvisnsson L. and Malone, M.S. (1997) *Intellectual Capital: The Proven Way to Establish Your Company's Real Value by Measuring Hidden Brainpower* London:Piatkus

Erikson T., (2002) Entrepreneurial Capital: The Emerging Venture's Most Important Asset and Competitive Advantage *Journal of Business Venturing* (17)3 pp.275-290, May,

Evans P., and Wurster T., (2000) *Blown to Bits* Boston MA: Harvard Business School Press

Fisher, W.R. (1987), *Human Communication as Narration: Toward a Philosophy of Reason, Value, and Action,* Columbia, SC: University of South Carolina Press

Forza C and Salvador F., (2002) Managing for Variety in the Order Acquisition and Fulfilment Process: The Contribution of Product Configuration Systems, *International Journal of Production Economics*, (76)1 pp 87-98, 1 March

Gardner, H., (1983; 1993) *Frames of Mind: The Theory of Multiple Intelligences*, New York: Basic Books

Garrat, B., (1986) *The Learning Organization: The Need for Directors Who Think* London: Harper-Collins

Gill (1995), High-tech Hidebound: Case Studies of Information Technologies that Inhibited Organizational Learning', *Accounting Management and Information Technology*, (5), pp. 41-60.

Gilligan C. & Attanucci J (1988) 2 Moral Orientations – Gender Differences and Similarities *Merrill-Palmer Quarterly Journal of Developmental Psychology* (34)3 pp223-237 July

Gilligan C. (1982) *In a Different Voice* Cambridge, MA: Harvard University Press

Graef J., (1997) *CFO's Guide to Intellectual Capital* Limited Edition Publishing. Also: http://www.montague.com/le/le1096.html

Graham, A., Pizzo, V., (1997) 'Competing on Knowledge': Buckman Laboratories *International Knowledge & Process Management* (4)1 pp4-11

Gray J.H., and Viens J.T., (1994) The Theory of Multiple Intelligences *National Forum* Winter (74) 1, p.22

Guss C.L. (1998) Virtual Project Management: Tools and the Trade *Project Management Journal* (29)1 pp.22-30 March

Hamlyn D.W., (1990) *In and Out of the Black Box* Oxford: Oxford University Press

Handy C., (1995) Trust and the Virtual Organisation *Harvard Business Review* (72)3 pp.40-50 May-June

Hansen, M.T., Nohria, N., Tierney, T., (1999) What's Your Strategy for Managing Knowledge? *Harvard Business Review* (77)2 pp.106-116

Hansen, M.T., Von Oetinger, B., (2001) Introducing T-Shaped Managers: Knowledge Management's Next Generation *Harvard Business Review* (74)3, pp107-116 March

Harrison S and Sullivan PH Sr., (2000) Profiting from Intellectual Capital: Learning from Leading Companies *Journal of Intellectual Capital* (1)1 pp33 -46

Harvey, M., Palmer, J., Speier, C., (1998) Implementing Intra-Organizational Learning: A Phased-Model Approach Supported by Intranet Technology *European Management Journal* (16)3, pp.341-354

Hatch T., and Gardner H., (1993) Finding Cognition in the Classroom: An Expanded View of Human Intelligence' in G. Salomon (ed.) *Distributed Cognitions. Psychological and Educational Considerations*, Cambridge: Cambridge University Press.

Havens, C., Knapp, E., (1999) Easing into Knowledge Management *Strategy and Leadership* (27)2 pp.4-9

Hellstrom T, Kemlin P & Malmquist U., (2000) Knowledge and Competence at Ericsson: Decentralization and Organizational Fit *Journal of Knowledge Management* (4)2 pp99-110

Herbert, I., (2000) Knowledge is a Noun, Learning is a Verb *Management Accounting* (78)2 pp. 68-72

Hildreth, P., Kimble, C., Wright, P. (2000): Communities of Practice in the Distributed International Environment, *MCB Journal of Knowledge Management*, (4)1 pp. 27-38

Hinton CM., (2002) Towards a Pattern Language for Information-Centred Business Change, *International Journal of Information Management* (22)5 pp.325-341 October

Ho C-A and Williams S M., International Comparative Analysis of the Association between Board Structure and the Efficiency of Value Added by a Firm from its Physical Capital and Intellectual Capital Resources, *The International Journal of Accounting* (38)4, pp.465-491

Hofstede, G., (1993) Cultural Constraints in Management Theories *Academy of Management Executive* (7)1 pp.81-94

Honderich (1995) *Oxford Companion to Philosophy* Oxford: Oxford University Press

Huber, G.P., (1999) Facilitating Project Team Learning and Contributions to Organizational Knowledge. *Creativity and Innovation Management* (8)2 pp. 70-77

Huemer L., von Krogh G., & Roos J. (1998) Knowledge and the Concept of trust in G. von Krogh, J. Ross & D. Kleine (eds) *Knowing in Firms - Understanding, Managing and Measuring Knowledge* London: Sage pp.123-145

Hunter L., (2002) Managing Intellectual Capital: Organizational, Strategic and Policy Dimensions by David Teece, Oxford University Press, Oxford, 2002. (book review) *European Management Journal* (20)6 p.712 December

Huseman, R.C., Goodman, J.P., (1999) *Leading with Knowledge: the Nature of Competition in the 21st Century* Thousand Oaks CA: Sage

Illyas, M.I., Jashapara, A. (2003): Social Capital: Re-Interpreting the Cultural and Political Dynamics of Knowledge Sharing, in F. McGrath and D. Remenyi (Eds), *Proceedings of the Fourth European Conference on Knowledge Management*, 19 September, Oriel College, Oxford University

Javenpaa S.L., & Leidner D.E. Communication and Trust in Global Virtual Teams *Journal of Computer-Mediated Communication* (4)3 http://jcmc.huji.ac.il/ vol3/issue4/jarvenpaa.html June

Johnson WHA., (1999) An Integrative Taxonomy of Intellectual Capital: Measuring the Stock and Flow of Intellectual Capital Components in the Firm *International Journal of Technology Management* (18)5-8 pp.562-575

Johnson G., and Scholes K., (1993) *Exploring Corporate Strategy* Hemel Hempstead:Prentice Hall

Jordan J and Jones P., (1997) Assessing your Company's Knowledge Management Style *Long Range Planning* (30)3 pp.392-398, June

Kamara JM, Anumba CJ and Carrillo PM., (2002) A CLEVER Approach to Selecting a Knowledge Management Strategy, *International Journal of Project Management* (20)3 pp. 205-211, April

Kaplan, R.S., Norton, D.P., (1996) *Using the Balanced Scorecard as a Strategic Management System* Boston MA: Harvard Business School

Karlsen T, Silseth PR, Benito GRG and Welch LS, (2003) Knowledge, Internationalization of the Firm, and Inward-Outward Connections, Industrial Marketing Management (32)5 pp.385-396 July

Kautto-Koivula, K.,(1998) The Pitfalls of Knowledge *Information Strategy* (3)6, pp.26-28

Kaye, M. (1996) *Myth-makers and Story-Tellers.* Sydney,Australia: Business & Professional Publishing Pty Ltd

Kermally, S., (2001) E-Strategy is Key to Future Success *Professional Manager* pp.28-29, July

Kersey, S.M., (1998) Changing the Corporate Culture *Knowledge Management* June pp.11-14

Khurana I.K., (2003) International Comparative Analysis of the Association between Board Structure AND THE Efficiency of Value-Added by a Firm from its Physical Capital and Intellectual Capital Resources: A Discussion *The International Journal of Accounting* (38) 4 pp.493-497

Kimble C., Grimshaw D., and Hildreth P., (1998) The Role of Contextual Dues in the Creation of Information Overload in Avison D., and Edgar-Nevill D., (eds) *Matching Technology with*

Organisational Needs Proceedings of the 3rd UKAIS Conference, Reading:McGraw Hill pp.405-412

Kitts B, Edvinsson L, Beding T., (2001) Intellectual Capital: From Intangible Assets to fitness Landscapes *Expert Systems with Applications* (20) pp.35-50

Klaila D, Hall L., (2000) Using Intellectual Assets as a Success Strategy *Journal of Intellectual Capital* (1)1, pp.47-53.

Kling, R., and Courtright, C. (2003). Group Behaviour and Learning in Electronic Forums: A Sociotechnical Approach. *Information Society 19*(3), pp.221- 235.

Knight, D.J., (1999) Performance Measures for Increasing Intellectual Capital *Strategy and Leadership* (27)2 pp.22-27

Kolind, L. (1994), T*hinking the Unthinkable: the Oticon Revolution* Research Technology Management (19)5 p. 54, Sept/October

Krishnamurti (various) available from the Krishnamurti Centre, Brockwood, Hampshire, UK; also http://www.jkrishnamurti.org/

Krueger, Jr., N. and Dickson, P.R. (1994) *Decision Science* (25) p. 385

Land F., Nolas S-M., and Urooj A., (2004) Knowledge Management: The Darker Side of Knowledge Management, *7th ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technologies.* University of the Aegean, Syros, Greece, 14 to 16 April 2004.

Land, F. (2000). *Evaluation in a Socio-Technical Context*. London School of Economics working paper, London.

Lave J. and Wenger E., (1991), *Situated Learning - Legitimate Peripheral Participation*, Cambridge: Cambridge University Press

Lehaney B., Clarke S., Coakes E., & Jack G., (2003) *Beyond Knowledge Management* Hershey, PA: IRM Press

Lehrer K. (1974) *Knowledge* Oxford: Oxford University Press

Lei, D.T., (1997) Competence-Building, Technology Fusion and Competitive Advantage: The Key Roles of Organizational Learning and Strategic Alliances *International Journal of Technology Management* (14)2/3/4 pp.208-237

Leidner DE., (1998) Understanding Information Culture: Integrating Knowledge Management Systems into Organisations *Insead Working Papers* Cedex, Fontainebleau

Liebenau J., & Backhouse J., (1990) *Understanding Information: An Introduction* London: MacMillan

Liebowitz J & Suen CY., (2000) Developing Knowledge Management Metrics for Measuring Intellectual Capital *Journal of Intellectual Capital* (1)1, pp.54–67.

Liebowitz J and Wright K., (1999) Does Measuring Knowledge Make 'Cents'? *Expert Systems with Applications* (17) pp. 99-103

Liebowitz, J et al., (2000) Knowledge Audit *Knowledge and Process Management* (7)1 pp.3-10

Liedtka, J., (1999) Linking Competitive Advantage With Communities Of Practice *Journal of Management Inquiry* (8)1 pp. 4-16

Littlefield D., (1999) Anything Goes *People Management* pp.46-48 25 Mar

Lloyd B., (1998) Understanding the Power, Responsibility, Leadership and Learning Links: The Key to Successful Knowledge Management *Journal of Systemic Knowledge Management* January available at http://www.tlainc.com/article3.htm

Low J., (2000) The Value Creation Index *Journal of Intellectual Capital* (1)3 pp.252-262

Lucas, E., (2000) Creating a Give and Take Culture *Professional Manager* (9)3 pp.11-13

Lyytinen, K., Robey, D., (1999) Learning Failure in Information Systems Development *Information Systems Journal* (9)2 pp.85-103

Lucier, C., Torsilieri, J., (1997) Why Knowledge Programs Fail? *Strategy & Business* 4th Quarter available at http://www.strategy-business.com/press/article/13007?pg=0

Lynn BE., (1999) Culture and Intellectual Capital Management: A Key Factor in Successful ICM Implementation *International Journal Of Technology Management* (18)5-8, pp.590 -603.

Malik K., (2001) Knowledge Transfer at BICC Cables *Business Strategy Review* (12)3 pp.46-52

McGrath, R.G. (1996) *Academy of Management Proceedings* pp. 101-106.

Malone D., (2002) A Model for Organizational Learning, International Journal of Accounting Information Systems, (3)2, 111- 123 August

Martin W., (2000) Approaches to the Measurement of the Impact of Knowledge Management Programmes *Journal Of Information Science* (26)1 pp.21 -27

Masoulas V., (1998) Organizational Requirements Definition for Intellectual Capital Management *International Journal of Technology Management* (16)1-3 pp.126- 143

Massey AP, Montoya-Weiss MM and Holcom K., (2001) Re-engineering the Customer Relationship: Leveraging Knowledge Assets at IBM, *Decision Support Systems* (32)2 pp.155-170 December

Mayer, R.C., Davis, J.H., Schoorman, F.D. (1995): An Integrative Model of Organisational Trust, *Academy of Management Review*, (20)3, pp. 709-715.

Mayo A., (2002) A Thorough Evaluation *People Management* (8)7 p.36

McKenna B., (1999) Communities Shaped by Technology *Online & CD - ROM Review* (23)2, pp.111-113 April

McKenna, S., (1999) Storytelling and "Real" Management Competence *Journal of Workplace Learning* (11)3 pp. 95-104

Meyerson D., Weick K.E., Kramer R.M. (1997) Swift Trust and Temporary Groups in R.M. Kramer & T.R. Tyler (eds) *Trust in Organisations: Frontiers of Theory and Research* Thousand Oaks, CA.: Sage pp166-195

Mintzberg, H., Lampel, J., Ahlstrand, B. (1998), *The Strategy Safari*, San Francisco: Jossey-Bass

Mitroff, I. and Kilmann, R.H. (1975), Stories Managers Tell: A New Tool for Organizational Problem Solving, *Management Review*, July, pp.18-28

Mouritsen J, Larsen HT and Bukh PND., (2001) Intellectual Capital and the 'capable Firm': Narrating, Visualising and Numbering for Managing Knowledge Accounting, Organizations and Society (26)7-8 pp.735-762 October-November

Mouritsen J., (1998) Driving growth: Economic Value Added versus Intellectual Capital *Management Accounting Research* (9)4 pp.461-482 December

Nahapiet, J., Ghoshal, S. (2000): Social Capital and the Organizational In E. Lesser (ed.), *Knowledge and Social Capital*, Oxford and Boston, Butterworth-Heinemann, pp.119-157.

Newell S, Huang JC, Galliers RD and Pan SL, (2003) Implementing Enterprise Resource Planning and Knowledge Management Systems in Tandem: Fostering Efficiency and Innovation Complementarity, Information and Organization, (13)1 pp25-52 Jan

Ng, K-C. (2001): Using E-Mail to Foster Collaboration in Distance Learning, *Open Learning,* (16)2, pp. 192-200.

Nonaka I., (1991) The Knowledge Creating Company *Harvard Business Review* (68)6 pp. 96-104).

Nonaka I., and Konno N. (1998) The Concept of 'Ba': Building a Foundation for Knowledge Creation *California Management Review* (40)3 pp.40-54 Spring

Nonaka, I., Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation,* Oxford, Oxford University Press.

Nunamaker JF Jr, Romano NC Jr and Briggs RO., (2002) Increasing Intellectual Bandwidth: Generating Value from Intellectual Capital with Information Technology *Group Decision and Negotiation* (11) pp.69-86, March

O'Hara M., and Johansen R. *Global work - Bridging Distance, Culture and Time* San Francisco: Jossey-Bass

Orlikowski, W., Walsham, G., & Jones, M.R. (1996). Information Technology and Changes in Organisational Work: Images and Reflections. In W. Orlikowski, G. Walsham, M.R. Jones, & J.I. DeGross (Eds.), *IT and Changes in Organisational Work*, pp.1-10. London: Chapman & Hall.

Pan, S.L., & Scarbrough, H. (1999). Knowledge Management in Practice: An Exploratory Case Study. *Technology Analysis & Strategic Management,* 11(3), 359-374.

Pan, S.L., and Leidner, D.E. (2003). Bridging Communities of Practice with Information Technology in Pursuit of Global Knowledge Sharing. *Journal of Strategic Information Systems,* (12), pp. 71-88.

Pedler, M., Burgoyne, J., Boydell, T. (1991), *'The Learning Company: a Strategy for Sustainable Development*, London: McGraw-Hill

Pedler, M., Burgoyne, J., Boydell, J., (1994) *Towards the Learning Company* Maidenhead UK : McGraw-Hill

Peppard J and Rylander A., (2001) Using an Intellectual Capital Perspective to Design and Implement a Growth Strategy: The Case of APioN, *European Management Journal,* (19)5 pp. 510-525 October

Peters, T. and Waterman, R. [1982], *In Search of Excellence*, New York: Harper Collins]

Petrash G., (1996) Dow's Journey to a Knowledge Value Management Culture *European Management Journal* (14)4 pp.365-373 August

Petty R, Guthrie J., (2000) Intellectual Capital Literature Review Measurement, Reporting and Management *Journal of Intellectual Capital* (1)2 pp.155-176

Pfeffer J., Sutton, R.I., (1999) Knowing "What" To Do Is Not Enough *California Management Review* (42)1 pp.83-107

Pollock J. (1986) *Contemporary Theories of Knowledge* Totwa NJ: Rowman and Littlefield

Prusak, L. (1997), *Knowledge in Organizations*, Oxford:Butterworth-Heinemann

Quintas P, Lefrere P and Jones G., (1997) Knowledge Management: A Strategic Agenda *Long Range Planning* (30)3 pp.385-391 June

Quong, T., Walker, A., (2000) Using Stories to Shift Attitudes: The Case of Bullying *International Electronic Journal for Leadership in Learning* (4)4 http://education.uncc.edu/cpflower/rsch6101/quong_v4n4.html

Random House (1967) *Dictionary of the English Language Unabridged* New York: Random House

Reich B.H. and Kaarst-Brown M.L., (2003) Creating Social and Intellectual Capital through IT Career Transitions, *The Journal of Strategic Information Systems* (12)2 pp.91-109 July

Rodov I. and Leliaert P., (2002) FiMIAM: Financial Method of Intangible Assets Measurement *Journal of Intellectual Capital* (3)3 pp.323-336

Roos G. and Roos J., (1997) Measuring Your Company's Intellectual Performance *Long Range Planning* (30)3 pp.413-426 June

Roos J., (1998) Exploring the Concept of Intellectual Capital (IC) *Long Range Planning* (31)1 pp.150-153 February

Rowley J., (2000) From Learning Organisation to Knowledge Entrepreneur Journal *of Knowledge Management* (4)1 pp.7-15

Ruggles, R., & Holtshouse, D. (1999). *The Knowledge Advantage: 14 Visionaries Define Marketplace Success in the New Economy* Oxford: Capstone.

Russell B. – [see Clark R.W.C. (1975) *The Life of Bertrand Russell* London: Cape, Weidenfeld & Nicolson] and [Jager R (1972) *The Development of Bertrand Russell's* Philosophy London: Allen and Unwin]

Saint-Onge, H., (1996) Tacit Knowledge: The Key to the Strategic Alignment of Intellectual Capital *Strategy & Leadership* (24)2 pp. 10-15

Santosus M., and Surmacz J., (2001) The ABCs of Knowledge Management http://www.cio.com/research/knowledge/edit/kmabcs.html accessed Feb 1st 2004

Scarbrough, H. (1995). Blackboxes, Hostages, and Prisoners. *Organizational Studies*,16(6), pp.991-1019.

Scarbrough, H. (2003). Why your Employees Don't Share What They Know. *KMReview,* 6(2), pp.16-19.

Scarbrough, H., Swan, J., Preston, J., (1999) *Knowledge Management: a Literature Review* in Series Issues in People Management, London : Institute of Personnel and Development

Schmid, A., Robinson, L. (1995), Applications of Social Capital Theory, *Journal of Agriculture and Applied Economics*, (27) pp.59-66

Schmidt J. and Lines S., (2002) A Measure of Success *People Management* (8)9 pp.32-34, 2 May

Senge PM., (1990) The Leader's New Work: Building Learning Organisations *Sloan Management Review* (32)1 pp.7-22, Fall

Senge, P.M., (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization* New York: Doubleday/Currency

Shape R. (1983) *The Analysis of Knowing* Princeton NJ: Princeton University Press

Schein, E. (1984), Coming to a New Awareness of Organizational Culture, *Sloan Management Review* (25)2, pp. 3-16

Shukla, M., (1997) *Competing Through Knowledge: Building a Learning Organization* Thousand Oaks CA : Sage, Response Books

Sieloff CG., (1999) "If only HP Knew what HP knows": The Roots of Knowledge Management at Hewlett-Packard *Journal of Knowledge Management* (3)1 pp47-53

Smith, A.C., (1998) Systemic Knowledge Management: Managing Organizational Assets for Competitive Advantage *Journal of Systemic Knowledge Management* April 12

Smith, A.C., (1999) The Learning Organization Ten Years On: a Case Study *The Learning Organisation* (6)5 pp8

Smith, M.K., (2002) Howard Gardner And Multiple Intelligences, *The Encyclopedia Of Informal Education*, http://www.infed.org/thinkers/ gardner.htm (accessed February 2004)

Stewart T.A., (1997) *Intellectual Capital: The New Wealth of Organizations* New York: Currency Doubleday

Stewart T.A., (2003) The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organisation London: Nicholas Brealey Publishing Ltd

Storck J, Hill P.A., (2000) Knowledge Diffusion through "Strategic Communities *Sloan Management Review* (41)2, pp. 63-74 Winter

Storey, J., Barnett, E., (2000) Knowledge Management Initiatives Learning from Failure *Journal of Knowledge Management* (4)2 pp.145-156

Sussman L., Adams A.J., and Raho L.E., (2002) Organisational Politics: Tactics, Channel and Hierarchical Roles *Journal of Business Ethics* (40) pp.313-329

Tebbutt, J., (2000) Who Determines the Value of your Business? *Information Societies Technologies Conference* Nice: European Commission

Teece DJ., (1998) Capturing Value from Knowledge Assets: The New Economy, Markets for Know How, and Intangible Assets *California Management Review* (40)3

Tovstiga G., (1999) Profiling the Knowledge Worker in the Knowledge-Intensive Organization: Emerging Roles *International Journal of Technology Management* (18)5-8 pp.731-744

Tuck, J., (2000) Why KM is Today's Business Imperative *Knowledge Management* p8 April

Ulrich D & Smallwood N., (2002) Seven Up *People Management* (8)10 pp42-44 16 May

Ulrich D., (1998) Intellectual Capital = Competence x Commitment *Sloan Management Review* Winter (39)2, pp.15-26

Van Buren M.E., (1999) A Yardstick for Knowledge Management *Training and Development* (53)5 pp.71-73,75

Vestal W., (2003) Ten Traits for a Successful Community of Practice *Knowledge Management Review* (5)6. p.6 Jan/Feb

Vit Beijerse, R.P., (2000) Knowledge Management in Small and Medium-Sized Companies: Knowledge Management for Entrepreneurs *Journal of Knowledge Management* (4)2 pp.162-179

Walther J.B. (1997) Group and Interpersonal Effects in International Computer-Mediated Interaction *Human Communication Research* (11) pp.342-369

Warnecke, H. (1993), *The Fractal Company: a Revolution in Corporate Culture* Berlin: Springer-Verlag

Watson, Burton, (1964) *Chuang-Tzu Basic Writings* NY: Columbia University Press.

Webster (1986) Third New International Dictionary Springfield MA: Merriam Webster Inc

Whitehead, M., (1999) Collection Time *People Management* (5)21 pp.68-69, 71

Wiig K.M. (1998) Perspectives on introducing enterprise knowledge management in U. Reimer (ed) *Proceedings of the Second International Conference on Practical Aspects of Knowledge Management* (PAKM) 29-30 Oct Basel

Wiig K.M., (1997) Integrating Intellectual Capital and Knowledge Management *Long Range Planning* (30)3 pp.399-405 June

Wiig, K., Odem, P., (1999) Benchmarking Unveils Emerging Knowledge Management Strategies *Benchmarking: An International Journal* (6)3 pp.202-212

Zack MH., (1999) Developing a Knowledge Strategy *California Management Review* (41)3 pp.125-145

Zack MH., (1999) *Knowledge and Strategy* Boston MA: Butterworth Heinemann
Zack MH., (1999) Managing Codified Knowledge *Sloan Management Review* (40)4 pp45-58.
Zdrahal, Z., Mullholland, P., Top, J., Warren, C., Phillips, S., (2001) The Role of Ontologies in Knowledge Management http://www.knowledgeboard. com/cgi-bin/item.cgi?id=50466 Accessed May 2004
Zuboff, S. (1988), *In the Age of the Smart Machine* New York:Basic Books

APPENDIX II. SHORT CASE STUDIES

This appendix lists case studies found in the information systems and knowledge management trade press. Information about the sources is given in Table A2-1. The articles are listed in Table A2-2.

Table A2-1. List of Sources for Cases Listed in Table A-2

Source	Web Address or Identification
American Productivity and Quality Center	http://www.apqc.org
Chevron Speech Archives	http://www.chevrontexaco.com/news/archive/chevron_speech/ (January 11,1999)
CIO Magazine	http://www.CIO.com
Computerworld	http://www.computerworld.com/
Darwin	http://www.darwinmag.com/
Fast Company	http:// www.fastcompany.com
ICASIT	http://www.icasit.org/km/resources/kmcases.htm
ICIS	International Conference on Information Systems; available only to members of AIS
IMD	IMD International Business School, Switzerland; http://www01.imd.ch/
Information Week	http://www.informationweek.com/
Journal of Business Strategy	http://www.managementfirst.com/strategy/journals/business_strategy.php
KM Review	http://www.km-review.com/
KM World	http:// www.KMWorld.com
Knowledge Management	http://www.kmmagazine.com/
Organizational Dynamics	Journal no longer publishes; owned by www.emerald-library.com/
Siemens	http://se.siemens.com/newsind/ cohallof.html
Sloan Management Review	http://web.mit.edu/smr/

TABLE A2_2. CASES FROM THE INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT TRADE PRESS

Company	Authors	Date	Title	Source
3M Corporation	Kauth, K.K.	1999	Marketing Genius	Knowledge Management, Jan.
Bank of Monteal	Harris, K	1999	Case Study: Exploiting Knowledge at Bank of Montreal	Knowledge Management, November
Bay Networks	Fabris, P.	1999	I Think Tomato, You Think Tomahto	CIO Web Business, April 1
Booz Allen	Tristram	1998	Common Knowledge	CIO Web Business, September 1
BP Amoco	Collison, X.	1999	Connecting the New Organization	KM Review, March/April 1999
British Telecom		2001	Dial K for Knowledge	CIO , June 15
Broderbund	Elliott, S.	1998	Broderbund Builds Strong “Case’ for Internal, External Knowledge Sharing	American Productivity and Quality Center, 4th Quarter
Buckman Laboratories	R.H. Buckman	1998	Knowledge Sharing at Buckman Labs	J. of Business Strategy, Jan-Feb
Case Corporation	Elliott, S	1997	Case Corporation’s Pilot Effort Proves Value of Knowledge Management	American Productivity and Quality Center, October/November
Chevron	Velker, L	1999	Knowledge the Chevron Way	KM World, February
Chevron Texaco	Kerr, D.T.(Chairman, Chevron Texaco)	1999	Managing Knowledge the Chevron Way	Chevron Speech Archives, Chevron Texaco
Chevron, Texaco	Santosius, M.	2003	Chevron Texaco’s Soft Sell	CIO, March 4
CIA	Caron	2000	The Langley Files	CIO, August 1
Ernst&Young Cap Gemini	Ezingeard, J, Leigh, S, and Chandler-White,R.	2000	Knowledge Management at Ernst & Young, UK:	Proceedings of ICIS 2000,
European Space Agency	Loekken, S. et al.	1997	Corporate Knowledge Management and Related Initiatives at ESA	European Space Agency Bulletin 92, November
Frio Lay	Shein, E.	2001	The Knowledge Crunch	CIO, May 1
GM	Coles, W.	2002	Learning from Our Mistakes at GM	Knowledge Management Review
Hewlett Packard (HP)	Mariny, M.	1998	Knowledge Management at HP Consulting	Organizational Dynamics (27)2m Autumn
J.P. Morgan Partners		2001	A Project Win	CIO, September 1
Ketchum (PR firm)		2001	KM Works Magic for Ketchum	CIO, August 20
Kodak	Kontzer, F	2002	Tentative Steps into Knowledge Management for Kodak	Information Week, November 11
Marconi	Ficket, L.	(2001	Know-It-Alls	CIO , November 1
Microsoft	Rao, M.	(2002	KM at Microsoft	Knowledge Management, April 1
Mitre Corporation	Field, T.	(1999	Common Knowledge	CIO, February 1
Naval Sea Systems Command	Overby, S.	(2002	Build a Better Battleship	CIO, May 1,

Company	Authors	Date	Title	Source
Northrup Grumman		2001	Thanks for the Memories	CIO, September 1
Nucor Steel	Gupta, A. K., Govindarajan	2000	Knowledge Management's Social Dimension: Lessons from Nucor Steel	Sloan Management Review, Fall
PeopleSoft	Alexander, S.	1998	Knowledge Bases Raise End-User IQ	Computerworld, Jan 26
Sequent (now part of IBM)	Odem, P. and O'Dell, C	1998	Invented Here: How Sequent Computer Publishes Knowledge	J. of Business Strategy, Jan-Feb. 1998
Sevin Rosen Funds		2002	Trickle Up Theory	CIO, April 19
Siemens	Santosus, M.	2003	How Siemens Keeps KM Blooming	CIO, February 10
Siemens	Siemens (press release)	2003	Siemens Makes Knowledge Management Hall of Fame	URL:se.siemens.com/newsind/ cohallof.html
SkandiaBanken	Paddack, K	2002	Skandiabanken: Developing Information Capabilities for Effective Customer facing Strategy	IMD working paper GM 1036, Oct. 15
Tenn. Valley Authority	Hildebrand, C.	2000	Knowledge Fusion	CIO, June 1
Texaco	Warner, F.	2001	He Drills for Knolwledge	Fast Company, September
Tufts Medical School	Genusia, A.	2001	Rx for Learning	CIO Feb 1, 2001
United Technologies	Hildebrand, C.	2000	Case Files: United Technologies	CIO, February 1
Workers Safety and Insurance Board,	Gednusa, A.A.	2000	Chaos Theory	CIO, Dec. 1
Xerox	Mitchell, M.	2001	Share and Share Alike	Darwin, February
Xerox	Power, V.J.	1999	Xerox Creates a Knowledge Sharing Culture Through Grass Roots Efforts	American Productivity and Quality Center, 4th Quarter

ABOUT THE AUTHOR

Elayne Coakes is a Senior Lecturer in Business Information Management at the Westminster Business School, University of Westminster. Her research interests lie in the sociotechnical aspects of information systems in particular in relation to knowledge management. She is actively involved in a research cluster, at her university, looking at Knowledge Management in general and in particular she is currently researching KM for succession planning. She has published a number of books on KM and in the sociotechnical field as well as conference papers and articles in journals such as *Information and Management, Management Decision, Knowledge Management Practice and Research* and *Communications of the AIS*, as well as several chapters in books. She is also on the editorial boards of a number of journals. Her PhD related to an insufficiency in Stakeholders and Boundaries for Strategic Information Systems Planning.

Communications of the Association for Information Systems

ISSN: 1529-3181