The greatest difficulty lies not in persuading people to accept new ideas, but in persuading them to abandon old ones.

John Maynard Keynes

Literature review: Knowledge management and librarians and information managers

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Introduction

Knowledge management as a conscious discipline would appear to be somewhere between five and fifteen years old. It evolved from the thinking of academics and pioneers such as Peter Drucker in the 1970s, Karl-Erik Sveiby in the late 1980s, and Nonaka and Takeuchi in the 1990s. During that time, economic, social and technological changes were transforming the way that companies worked. Globalisation emerged and brought new opportunities and increased competition. Companies responded by downsizing, merging, acquiring, reengineering and outsourcing. Many streamlined their workforce and boosted their productivity and their profits by using advances in computer and network technology. However their successes in doing so came with a price. Many lost company knowledge as they grew smaller. And many lost company knowledge as they grew bigger - they no longer knew what they knew. By the early 1990s a growing body of academics and consultants were talking about knowledge management as the new business practice, and it began to appear in more and more business journals and on conference agendas. By the mid-1990s, it became widely acknowledged that the competitive advantage of some of the world's leading companies was being carved out from those companies' knowledge assets such as competencies, customer relationships and innovations. (Neef, 1999; Chekland and Holwell 1998; Snowdeen 2000; Bhatt 2001; Raub e Ruling 2001). Davenport and Prusak (1998 §1-3) and Sieloff (1999 pp. 47-53) point out that there is a need for companies to know-what-they-know. Managing knowledge therefore suddenly became a mainstream business objective as other companies sought to follow the market leaders. Many of these companies took the approach of implementing knowledge management solutions, focusing almost entirely on knowledge management technologies. However they met with limited success and so questions began to be asked about whether knowledge management wasn't simply another fad that looked great on paper, but in reality did not deliver. In fact for a while, it looked as if knowledge management was destined to be confined to the management fad graveyard (Holtman 1997).However on closer inspection, companies realised that it wasn't the concept of knowledge management that was the problem as such, but rather the way that they had gone about approaching it. Companies spent too much money with little or no return on their investments. Most knowledge management literature was very conceptual and lacking in practical advice, which led to frustration at the inability to translate the theory into practice. Knowledge management was not tied into business processes and ways of working. It was seen as another laborious overhead activity or yet another new initiative. Fortunately companies are beginning to take a different approach to knowledge management.

Of course there are still some sceptics who believe that knowledge management is just a fad. But according to a number of company surveys, it would seem that they are in a minority. Now the most popular point of view is that knowledge management must not remain as a distinct discipline, but become embedded in the way organisations work.

Knowledge and Knowledge Management

There is no consensus on a definition of knowledge. Many authors have avoided epistemological debate on the definition of knowledge by comparing knowledge with information and data (Alavi and Leidner 2001 pp. 107-136.) A commonly held view is that data is raw numbers and facts, information is processed data and knowledge is authenticated information (Dreske 1981, Machlup 1983, Alavi and Leidner 2001). Yet, as Alavi and Leidner highlight, the presumption of hierarchy from data to information to knowledge with each varying along some dimension such as context, usefulness or interpretability is inaccurate. Alavi and Leidner argue that the effective distinguishing feature between information and knowledge is not found in the content, structure, usefulness or interpretability, but rather "knowledge is information possessed in the minds of individuals: it is personalized information (which may or may not be new, unique, useful or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgements". Similarly, Dahlbom and Mathiassen (Dahlbom and Mathiassen 1995) argue that data, information, knowledge and competence correspond to different levels or forms of human activity. They argue that data is a formalised representation of information, and that information is essentially a charting of knowledge within a shared practice. It is only possible to do this by relying on shared practices and experiences of situations. "Think of what a cookbook for a true novice would look like. Every recipe would begin: Turn on the light in the kitchen" (Dahlbom and Mathiassen 1995). A significant implication of this view of knowledge is that for individuals to arrive at the same understanding of data or information, they must share a history or context (Alavi and Leidner 2001). Thus systems designed to support knowledge in organisations may not appear radically different from other forms of information systems, but will be geared toward enabling users to assign meaning to information and to capture some of their knowledge in information and/or data. Tuomi (Tuomi 1999 pp. 103-117) provides an alternative view, arguing that the often assumed hierarchy from data to knowledge is actually inverse. Raw Data does not exist a priori; thought and knowledge processes are always employed in identifying and collecting even the most elementary data. Tuomi argues that knowledge exists which, when articulated, verbalized and structured, becomes data.

So, knowledge management is a business activity with two primary aspects (Barclay and Murray, (2002), Knowledge management pp. 1-4):
1. Treating the knowledge component of business activities as an explicit concern of business reflected in strategy, policy and practice at all levels of the organisation.
2. Making a direct connection between an organisation's intellectual assets - both explicit and tacit - and growth

Considering these two aspects, knowledge management "in practice often encompasses identifying and mapping intellectual assets within the organization, generating new knowledge for competitive advantage within the organization, making vast amounts of corporate information accessible, sharing of best practices, and technology that enables all of the above – including groupware and intranets" (Barclay and Murray). Knowledge management has also been more concisely defined as "the leveraging of collective wisdom to increase responsiveness and innovation," (Koulopoulos and Frappaolo, 1999, pp. 25). Or "Knowledge Management depends less on the amount of information than on the number of connections that link information and people. …it is the navigation between information and people throughout a value chain of activities that constitutes a knowledge chain." (Koulopoulos and Frappaolo 1999, pp. 20). Others have represented knowledge management as "…the process by which the organization generates wealth from its intellectual or knowledge-based assets," (Bukowitz and Williams, 1999, pp. 2-20). Dan Holtshouse, Xerox's Director of business strategy and knowledge initiatives, writes in the forward to Information Technology for Knowledge Management, Berlin Springer-Verlag 1998 (p. 5) that knowledge management "…is about creating a thriving work and learning environment that fosters the continuous creation, aggregation, and use/reuse of both organizational and personal knowledge in the pursuit of new business value."

The usefulness of these definitions is not that they describe knowledge management and establish its purpose but that they illuminate four principles which management must be cognisant of when considering how to manage knowledge for competitive advantage. The knowledge management implications common to these definitions are (Koulopoulos and Frappaolo, 1999, p. 38):

- Knowledge is connected. It is collective wisdom that exists in experiences and perspectives, it's usefulness is derived from its contextual relationships and attributes surrounding its content

- Knowledge is applicable in new environments. Information applied to address a novel situation for which no precedent exists results in new knowledge, competitive action and growth

- Knowledge management is a catalyst. It is an action. Knowledge is always relevant to environmental conditions and stimulates action in response to these conditions

- Knowledge management solutions are dependent on a knowledge sharing culture

These definitions operationalise the concept of knowledge management and communicate the role of knowledge as a necessary constituent for business activities and organisational competitiveness. Furthermore, these knowledge management thinkers have established the framework to conduct an intelligent discussion on the distinction between knowledge management and information management (IM).

Some commentators have been inclined to dismiss knowledge management as a management vogue (Holtham, 1997, pp. 79-92), while others have seen it as partial reincarnation or resurrection of familiar library and information management processes and procedures and others are considering it as a new opportunity for new careers for information professionals (Koenig, 1996; Broadbent, 1997, 1998; Rossion, 1998; Hill, 1998).

There's plenty of evidence that companies, organizations and governments are taking knowledge management seriously. U.S. businesses paid $1.5 billion for knowledge management advice in 1996 and will spend $5 billion annually by 2001. Today on knowledge management there has been an explosion of publications, Internet resources, conferences, workshops and seminars; a search for relevant Websites conducted while the book was being written produced as many as 137,038 sites (Webb, 1998). Terms and titles such as knowledge culture, knowledge-creating company, knowledge-based assets, chief knowledge officer, knowledge architect, knowledge director, knowledge manager, knowledge specialist, knowledge assets, and intellectual capital, now appear regularly in job specifications and advertisements. With the development of a knowledge management approach organisational and corporate information strategy and policy have develop concepts as the learning or knowledge company and the management of intellectual capital (Nonaka and Takeuchi, 1995; Brooking, 1996; Lester, 1996; Wilson, 1996; Chudasama, 1997; David Skyrme Associates, 1997; Skyrme, 1997; Skyrme and Amindon, 1997; Sveiby, 1997; Stewart, 1997; Bonaventura, 1997; Knowledge Management, 1998; Skyrme, 1998; Murray and Myers, 1999; Davenport and Prusak, 2000.)

The number of publications more specifically concerned with knowledge management and libraries and information services is growing steadily. The following are worth consulting: Abell (1999), McGarry (1993), Badenoch et al. (1994), Collier (1994), Koenig (1996, 2000, 2004), Greene et al. (1996), Peters (1996), Abram (1997), Broadbent (1997), Dwiar (1997), Klobas (1997), Koenig (1997), Marshall (1997), Miller (1997), Broadbent (1998), Butcher (1998), Cooper (1998), Corrall (1998), Doyle and du Toit (1998), Field (1998), Fisher (1998), Harris (1998), Hill (1998), Infield (1998), Lank (1998), Pedley (1998), Rossion (1998), Sturges (1998), Foster (1999), Field (1999), Kirk (1999) and Streatfield and Wilson (1999), Earl (2001)

Knowledge Management Strategy

Rebecca O. Barclay e Philip C. Murray writes that the information is the organization's foundation. In a non-stop re-define contest the information is the only worth and the knowledge is the only infrastructure. Karl E. Sveiby (1996 pp. 379-388) has defined a model which suggests an information management by AI experts and a staff management by knowledge expert (philosophers, psychologists, etc.). Michael Earl (Earl 2001, pp. 215-233) proposes seven schools of knowledge management strategy: Systems, Cartographic, Engineering, Commercial, Organisational, Spatial and Strategic. These schools identify the types of knowledge management strategy undertaken by organisations. Earl categorises these seven schools into three broad types: Technocratic, Economic and Behavioural. Technocratic schools approach knowledge management through information or management technologies that support and condition employees in their everyday tasks. Economic schools aim to explicitly create revenue through the exploitation of knowledge as an asset. The Behavioural schools approach knowledge management from a behavioural perspective, stimulating and orchestrating managers and managements to proactively create, share and use knowledge resources (Earl 2001). While these schools provide a useful categorisation of specific approaches, particularly in regard to how technology is used within a knowledge management initiative, it is felt that they

fail to emphasis the epistemological basis of knowledge management strategies, particularly failing to effectively categorise the social aspects. Within Earl's model social interaction is only fully considered within the spatial school. This school focuses on the use of pace within knowledge sharing (Brown and Gray 1995, p. 78) or buildings designed for knowledge sharing (Schultze and Boland 2000; Ward and Holtham 2000). However many authors believe that social interaction for knowledge is more complex than this (McAdam and McCreedy 1999; Nonaka, Toyama et al. 2000; Von-Krogh, Ichijo et al. 2000).

An alternative structure for understanding knowledge management is provided by McAdam & McCreedy (McAdam and McCreedy 1999 pp. 101-112). These authors propose three categories of model for knowledge management; *intellectual capital models* in which knowledge is seen as a tangible asset, *knowledge category models* in which knowledge is identified through categories, and *social constructionist models* in which knowledge is intrinsically linked to social and learning processes. This categorisation is simpler that Earl's. Ulrike Schultze (Schultze 1998 and Shultze and R. Boland 2000 pp. 187-219) applies a framework developed by Burrell and Morgan (Burrell and Morgan 1979) in order to locate theories of knowledge management. In applying this framework to the theory of knowledge she identifies the following two perspectives which are binary opposites:

1) A functionalist perspective.

2) An interpretive perspective.

Such approaches may be seen in authors such as Tenkasi and Boland (1996) and Brown and Duguid (1998). This represents a more subjective or intersubjective perspective, contending that knowledge is continuously shaping and being shaped by the social practices of communities.

Relationship between Data, Information and Knowledge, and Knowledge Application

Generations of philosophers have debated what knowledge means. Data, information and knowledge are often substituted for each other. So, when management attempts to categorise and index data, information and knowledge in a formal content classification system, issues of interpretation often arise. "We cannot manage knowledge directly - we can only manage information about the knowledge possessed by people in organisations. Even then, the information to be managed is necessarily incomplete because the boundaries of personal knowledge are fuzzy and continually changing as individuals get out of touch or extend their knowledge"(Streatfield and Wilson 1999 pp. 67-71).

Data are the signals about the organisation and human activity and has little value in itself. Data is easy to manipulate and store in repositories. Information is what data becomes when humans interpret it and contextualize it. It is also the carrier we use to express and communicate knowledge in business. Information has more value than data and is more ambiguous. Knowledge is information within people's minds and is valuable as new ideas, insights and interpretations can be applied to information in an effort to generate competitive power and value. From a management perspective, employees' knowledge is difficult to administer as it is intangible, therefore stimulating its flow for sharing, use/re-use and capturing it in a

corporate memory relies on human motivation, an individual's ability to articulate their knowledge and apply it. In practice, it is difficult to determine when data becomes information and when information becomes knowledge. For practical purposes managers can consider data, information and knowledge, points along a continuum of increasing value and human contribution, (Davenport and Marchand, 2000). Also Stewart (1999), advocate that managers spend little energy on this debate and a lot of energy on adding value to what they have by advancing it along the continuum. To clarifier this ambiguity, already in 1994 Badendoch et al. gave an important knowledge definition: it is organized information in people's head. They (pp. 9-77) make a distinction between ontogeny and exogeny knowledge: "the use of the term knowledge to describe an internal mental state and an external representation or embodiment of knowledge" and they suggest that knowledge is "personal, individual and inaccessible", but that it does, however, "manifest itself in (and is created and modified by) information". They also emphasise the continuous and dynamic nature of knowledge: "it changes in the course of acquiring information." "Information affects our state of knowledge regarding something (possibly providing justification for a belief) . . . It should be emphasised that this state of knowledge is continuous and dynamic, i.e. existed before the information arrived, and may change rapidly. Thus, knowledge is more than "the sum of its parts", and we cannot seriously consider knowledge to be composed of "units" of information." A successive important issue arrived in 1995 with the Noaka theories.

The works of the philosopher Michael Polanyi (1891-1976) were the first to identify the difference between tacit and explicit. His theories are the foundations of Professor Ikujiro Nonaka's research into knowledge creation process in Japanese organisations. Nonaka and Hirotaka Takeuchi (1995 § 2-9) introduce the "Knowledge Life-Cycle", a theory on how organisations create knowledge. All knowledge management thinkers agree that this abstract process is one of the most challenging aspects of knowledge management. Holtman in 1997 (p. 79) writes: "knowledge is so constrained by culture, style, education, expertise etc. that . . . there must be grave doubts that it is possible or desirable for Western companies to copy Japanese approaches to knowledge management". Some Western organisations such as Hewlett Packard (HP), 3M, General Electric and Xerox have successfully applied Nonaka model. Knowledge creation, application and its use are complex issues determined by corporate culture, reward schemes, structure, strategy, skills, staff, management style, values and the design of processes for knowledge work. The continuous conversion of knowledge into information and information into knowledge is a key element of what companies must do to develop and apply knowledge successfully (Davenport and Marchand, 2000). The combining of tacit and explicit knowledge improves the use and reuse of current knowledge by developing best practices and creating new knowledge through the revision and destruction of existing knowledge. This flowing of knowledge, according to Carneiro (2000 pp. 87-98) and Argyis (1995 and 1998 pp. 20-26) can result in innovative action that produces competitive advantage.

Intellectual capital

Stewart (1998) sub-divides Intellectual capital into *Human capital*, *Structural capital*, and *Customer capital*. *Human capital* is defined as the capital value of the innovation of employees. *Structural capital* is defined as

"the knowledge that doesn't go home at night". Stewart idea is that Structural capital as more important than Human capital. How, already Edvisson and Malone (1997) and Peter Drucker (1994 p. 68) said: "Only the organisation can provide the basic continuity that knowledge workers need in order to be effective. Only the organisation can convert the specialised knowledge of the knowledge worker into performance". Examples of structural capital include legal rights of ownership, patents, technologies, inventions, data, publications, standards, machine settings, strategy, culture, structures and systems, organisational routines and procedures. *Customer capital* is defined as the capital value of an organisation's customers. His Intellectual Capital models give strong emphasis to measurement associated with decomposed elements of knowledge. There is an implicit assumption that such elements may be clearly identified and tightly controlled, as is the case for tangible assets.

Debra M. Amidon (2003 §2) adds "what gets measured gets managed. If it cannot be measured, it isn't considered of value". "The business case must be defined in order to justify necessary investment strategies in the human and social (i.e., interactive) capital of the firm". This is a shift from the concept of knowledge management to the management of intellectual capital or intellectual assets. Now the Intellectual Capital is used to mean not only information, but also such intangibles as the expertise, know-how, experience, competencies, talents, ideas, thought and intuitions of the people in an organisation (Nonaka and Takeuchi 1995, Koenig 1996, David Skyrme Associates 1997, Skyrme 1997, Welch 1997, Chudasama 1997, Stewart 1997, Boisot 1998, Broadbent 1998, Sparrow 1998). Now these intangible assets have been described: market assets, such as brands, licensing and franchising agreements; infrastructure assets, such as technologies, corporate culture, databases of information on markets and customers; intellectual property rights, such as copyrights, patents, registered designs, trade marks; and human-centred assets, such as the talents, skills, expertise, creativity, and problem-solving abilities of employees (Brooking 1996, Knowledge Management 1998).

Effective Knowledge application

As Chris Argyris (1991 §84) says, the successful articulation of tacit knowledge and the creation of new knowledge depends on the ability to escape "Single Loop Learning" and deploy "Double Loop Learning" at the individual and organisational level. Argyris espouses that "Double Loop Learning" moves beyond "Single Loop Learning", which is premised on pre-planned responses to anticipated stimuli, by questioning the appropriateness of pre-planned actions. An example of "Single Loop Learning" is the use of a particular tool to perform a repetitive function that quickly wears the tool out, resulting in the technician replacing the tool. If "Double Loop Learning" were applied the technician would ask, "Why does this function have to be performed?" or "why does this particular design of tool have to be used?" and then explore whether or not the activity could be eliminated or if some other more robust tool could be used economically. Argyris challenges the common assumption that getting employees to learn and share knowledge is a matter of motivation alone and that when people have the right attitude and commitment learning and sharing automatically follows. He contends that incentive schemes and organisational structures designed to create commitment and motivation don't effect employees' cognitive programming. "Double Loop Learning" is a

reflection of how employees and managers think "…that is the cognitive rules or reasoning they use to design and implement their actions". This cognitive programming is the aggregate of a lifetime of experiences, environmental influences and education. The first step towards "Double Loop Learning" is to teach senior managers how to reason about their behaviour in more productive and effective ways. Efforts at double loop learning are be augmented by "Leonard and Strauss's (1997) Creative Abrasion" and by "Nonaka and Takeuchi's (1995) Spiral of Knowledge". So, now there is need of a new professional figure, of a new manager. Karl M. Wiig (1999) writes "There is need of a new management where the professionals are knowledge professional with new skills". Davenport (see Rebecca O. Barclay) defines it as the gold collar. Edmond H. Weiss (see Rebecca O. Barclay), recommends a new figure defined as Chief Knowledge Officer (CKO), a "learned knowledge analyst". David Skyrme Associates hypothesis is that the CKO is an analyst able to work in line sector and able to develop and to do information technology tasks. So, the new hybrid manager and the ***documentalist figure*** result to be very much alike.

Knowledge managemnt and librarianship

"Librarianship, information management and/or information resources management concede that there is much about and the information professionals. Knowledge management is an extension of librarianship"(Koenig, 2002 §1-2).The role of information, knowledge, skills and expertise, are concepts already familiar to librarians and information managers: "Some of us in the library community will be having a slight feeling of déjà-vu - Yes, this is precisely the concept of information mapping that Horton and others in the library community have been promoting for years . . . We may feel, with some justification, that knowledge management is just a new name for librarianship . . . But the librarianship is bringing to knowledge management:. . . a set of tools . . . to facilitate the implementation of knowledge management, the extension of librarianship, thus avoiding unnecessary, wasteful, expensive, and, above all, time-consuming reinventions of the skills and tools we already have" (Koenig, 1996, p. 299). So the knowledge management is librarianship, or at least a direct descendant: documentation was librarianship with a few more components; information resources management was documentation with a few more components; and knowledge management is information resources management with a few more components. Knowledge management has discovered skills associated to librarianship and information science. Knowledge management has already gone through two stages, with a very clear third stage now emerging. Inherent in that third stage is recognition of the importance of librarianship, or at least the skills and assets of librarianship and information science. The initial stage of knowledge management was driven primarily by information technology. The second stage of knowledge management, described simply, is added recognition of the human and cultural dimensions. The third stage showed that for the first time taxonomies emerged as a full-blown, major topic. It is the discovery of LIS in the knowledge management.

Broadbent (1998 pp. 23-32)distinguishes between, on the one hand, "Librarians who are intellectually involved in any of these types of activities . . ." whom she calls "knowledge workers", and, on the other "the person involved in organising things for others to access" whom she describes as coming close to "being an administrative worker rather than a knowledge worker".

"The impetus for expressing these thoughts on knowledge management and knowledge work came from two main sources: invitations to address library and information managers which forced me to articulate the relevance and application of my current research, executive education and consulting activities to library and information management and discussions with and observations of librarians and information management colleagues who are struggling with the notion of knowledge management and trying to link it to what they thought they had been doing all these years. These experiences reminded me of intense discussions with several MBA students with backgrounds as industrial engineers or systems analysts. Both groups thought they had been doing Business Process Redesign (or Design) for years. They had been tackling business processes, but from one perspective only. Similarly, librarians have excellent skills in organizing and codifying information sources and making these accessible to others. This represents the top layer of the knowledge map (information) rather than tacit and explicit knowledge. Librarians are generally driven by a desire to provide access to information sources and match this desire with values that assume information sharing is a good thing. Librarians are involved in a continuing search for excellence in organizing and codifying information sources. This is embodied in efforts to make access to electronic publications "intelligible and accessible". Then the library and information profession rests on "bedrock of very solid and long term values". Both of these attributes are important for the practice of knowledge management. But they are not sufficient. They need to be harnessed in two directions: towards specific organizational objectives that provide greater value to customers and clients; and, second, in the way in which library and information services are themselves managed. Knowledge management is not owned by any one group in an organization, nor by any one profession or industry. But if librarians and information specialists want to be key players in the emerging knowledge management phenomenon, they need to understand the multiple perspectives of the other players. Some of the journal articles referenced at the end of this paper are useful starting points in coming to grips with the language and concepts behind knowledge management. Knowledge management requires a holistic and multidisciplinary approach to management processes and an understanding of the dimensions of knowledge work. Knowledge management should be the evolution of good management practices sensibly and purposively applied." (Broadbent, 1998). Also Rossion (1998 p. 157) warmly welcomes knowledge management initiatives since they seem to require the established skills of information management: "Here is a discipline which highlights our skills, which admits that our job is valuable for the firm's business strategy, which offers us the potential for new development fields and which is strongly supported by top management". Knowledge management World 2001 Conference adds an important corollary: there is one area where information professionals can and should play a central role it is in software selection. The librarian's, information's expertise is central in evaluating most knowledge management software. So, if today the role for librarians in knowledge management in terms of designing information systems, creating classification systems and taxonomies, and implementing and operating those systems is obvious, it is not so obvious the role for librarians in user education and training. A recent study (KPMG Consulting, 2000 see Koening 2002) by KPMG of knowledge management systems implementations reveals an alarmingly high failure and disappointment rate, with more than half of the

failures attributable to inadequate user training and education. Koening (2002): "The immediate fit that should leap to our consciousness is that there is an obvious match here- there is a major problem with knowledge management implementation, inadequate training and user education, and librarians have long been skilled in providing training and user education. We call that bibliographic instruction". So the librarianship has a major contribution to make to Knowledge Management in the area of user education and training. Already Garvin (1993) and Senge (1990, 1999), leading thinkers on the learning organisation, advocate that the opening up of boundaries across the value network is a necessary requirement in order to stimulate the flow of knowledge for innovative purposes. They espouse that an organisation possessing a variety of cognitive and communications styles will not benefit from them if they are contained by functional departmental boundaries, political in-fighting, excessive internal competition and a culture that does not value learning and knowledge sharing. This approach to leveraging knowledge is focused on enabling the organisation to handle new business strategies. It is oriented toward cultural reform of organisational attitudes, structure and practices surrounding knowledge. The learning organisation focuses on team learning through the exchange of tacit knowledge between employees that network with each other and clients. This approach, according to Garvin and Senge, facilitates the flow of knowledge and develops a team knowledge. The objective of the learning organisation is to increase "competitiveness via vigilant environmental awareness and innovation through critical evaluation of corporate paradigms. So, the librarians can not only make the point about the need for user education and training and their ability to make a contribution, they can begin to describe specifically what needs to be done and how they can help accomplish it" (Koening 2002).

Knowledge management: skills and competencies

Hill (1998, p. 149)". . . the recognition of the importance and value of internal information and the need for harmonisation and organisation of corporate capital/information/ memory/knowledge - call it what you will" at senior or board level within organisations means that "There most certainly is a career path in information management for the information professional should he or she wish to take that route: The apparent quiet of the librarian hides the mighty roar of skills and ability harnessed through study and practice . . . The term [knowledge management] is likely to be transient if not faddish, and any rush to incorporate it in long-term documents or courses for the future might indeed be construed as short terms… It will become clear that an information professional will possess not just the tangible skills required (i.e. research, quick reference skills, source knowledge, collection development, Netscape, online, IT) but also the intangible ones (communication, customer services orientation, organisational understanding, business knowledge, interpersonal skills) (Hill, 1998, p. 151). Recent case studies of knowledge management argues similar conclusion (Cooper 1998, Knowledge Management 1998, Lank 1998). For example, the PricewaterhouseCoopers Information and Knowledge Exchange (IKE) described by R. M. Cooper (1998 pp. 42-64) "features a number of so-called knowledge hubs (staffed full-time by knowledge hub managers and knowledge hub assistants), each focused on a key area of organisational knowledge and/or activities such as corporate strategy development and financial systems, key commercial sectors in the company's consultancy

activities, and major client account teams". As well as maintaining the contents of the IKE libraries these hubs support users of the IKE, undertake research and promote what is described as "knowledge-sharing evangelism". The knowledge specialists who staff the hubs are either qualified "information scientists" (formerly referred to as researchers) who previously worked primarily with external information resources, or former senior secretarial staff with extensive knowledge and experience of the consultancy's activities, human resources and organisational culture. Cooper reports, however, that some of the former researchers were hesitant about involvement in the management of internal information, partly because in their professional education and previous experience they had concentrated on external sources of information, and partly because involvement in the management of internal information was perceived to offer little of value in terms of their own career development. Cooper's list of what he considers to be the key abilities, competencies and talents required for such posts resemble to a great extent those mentioned by Hill (1998) and Rossion (1998), namely: the ability to work and empathise with others both inside and outside the organisation; well-developed interpersonal and communication skills; IT skills; the ability to prioritise, structure and organise activities effectively; awareness of organisational structures, processes, markets and strategy; knowledge and understanding of user needs and of information and technical resources; research and analysis skills; and the ability and willingness to act as "evangelists" in positive promotion of the "knowledge sharing culture" at all levels of the organisation (Cooper, 1998).

So, as Corrall (1998) points out "librarians traditional reluctance to move beyond the information container towards analysis and interpretation of its contents has resulted in organisations overlooking their potential contribution, even in areas where their competence should be obvious. Information professionals are seen as service oriented, but not value-oriented -they don't understand the impact they can have on the business". It is a problem of human resource management, too.

Summarizing the most important theories, the LIS profession has focused largely on the acquisition and distribution of external information. Although desktop access to information resources has expanded this focus, the LIS professional often still has narrowly defined information horizons. Similarly, records management, which is gaining a higher profile in knowledge management environments, has developed its own particular discipline. Document management has evolved from IT and workflow routes. At the same time many other functions have developed information management capability. Market research, strategic planning and competitive intelligence departments are examples of information rich areas that often set up their own systems. Equally, customer relations, sales, technical support, research and development, all use information management tools, and IT professionals are particularly strong on key knowledge management skills such as project management.

So a range of skills contribute to the knowledge management information picture. The knowledge management environment can exploit the experience of a number of people, with diverse backgrounds, who relate to different aspects of information management. But the LIS profession appears to have had little impact on knowledge management organisations. The knowledge management presents the LIS profession with a unique opportunity to make an impact in organisations of all sizes and in all sectors. But to take

advantage of that opportunity individual professionals need fully to understand the potential of those skills and the business objectives of the organisations that employ them.

Knowledge management new professional figures

The Commission Métiers et Qualifications, Association des professionnels de l'information et de la documentation (ADBS) has identifies 19 figures, 35 competence rules, 15 skills, and 49 job descriptions (see Réferentiel des métiers-types et compétences des professionnells de l'information et documentation). On other side Sue Hill (1998, pp. 149-156) has presented 4 Km-figures: Senior Researcher, Knowledge management Analyst, Senior Information Professional, K Manager. Than Françoise Rossion (1998, pp. 157-163) has supposed 5 figures: CKO/CLO; Webmaster, K Manager, K Officer, Manager of K projects.

	Sue Hill	ADBS	Françoise Rossion
4	Senior Researcher	Administrateur de service électronique d'information; Analyste-indexeur; Assistant documentaliste; Chargé d'études documentaires; Chargé de recherce d'information; Documentaliste-archiviste; Gestionnaire des données; Gestionnaire de langage documentaire; Iconographe/recherchiste	Manager of K projects
3	Knowledge management Analyst	Chargé de produits documentaires; Consultant en organisation de système d'information documentaire; Documentaliste (généraliste); Einsegnant-documentaliste; Gestionnaire de langage documentaire	K Officer
2	Senior Information Professional	Formateur en information et documentation; Gestionnaire de documents d'entreprise; Informateur-orienteur; Rédacteur-documentaliste	K Manager
1	K Manager	Responsable des ressources documentaires; Veilleur-documentaliste	CKO/CLO; Webmaster

Sandra Ward (1998) says that the changes are not fundamental. The 1958's information practitioner keys are

the same (obviously in the UK world): information management, information sharing, information editing and transmission, information reference, information promotion, information research, information political, information indexation and classification, management of the organization. The Carosella and Valenti Manual (6. ed. 1991) is on the same line.

In January 1999 Inc.com Magazine published a cover story by Leigh Buchanan that gives a good description of what knowledge managers do: the Lisa Guedea Carreño case. Today she is a librarian-knowledge management a "filters, consultants, analysts, early-warning systems and royal data tasters". She "*thinks like a librarian*" and is a hybrid manager, a knowledge manager.

So, in both the private and public sectors, more and more organisations are beginning to take responsibility for managing knowledge as a means to create value.

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Some definitions of present terms:

Cognition: The ability to synthesise diverse sources of information in making a decision. The aspect of KM solutions used to facilitate decision making. Cognition can only occur if knowledge has been transferred. As part of the KM framework cognition is the application of knowledge that has been exchanged through intermediation, externalisation and internalisation, (Koulopoulos and Frappaolo, 1999).

Customer Capital: The Value of an organisation's relationship with the people with whom it does business. This can be conceived as market penetration, market coverage and customer loyalty. Brand equity is an example of customer capital, (Stewart, 1999).

Explicit Knowledge: Formal codified and systematic knowledge that is easily communicated and shared, (Nonaka, 1991).

Human Capital: The ability of individuals and teams to provide solutions to customers' issues and mind-sets, (Bukowitz and Williams, 1999). Human capital is those employees whose competencies create the products and services that are the reason customers patronise an organisation. They are value adding difficult to replace assets; all other employees are labour costs.

Intellectual Capital: The relationship among human, customer and structural capital that maximises the organisations potential to create value that ultimately realised in some form of wealth, (Bukowitz and Williams, 1999).

Knowledge Base: Typically used to describe any collection of information that also includes contextual or

Knowledge Culture: Pattern of behaviours and attitudes that express an organisation's orientation toward knowledge. Knowledge culture can be opened or closed, factually orientated or rumour and intuition based, internally or externally focused, controlling or empowering based. An organisation's knowledge culture can also include a preference for certain types of knowledge channels, for example face to face or e-mail, (Davenport, 1997).

Knowledge Responsibility: Everyone in the organisation is thinking through what knowledge he or she needs to contribute to business processes and what knowledge they should be sharing to contribute to business processes in order to decide what they should be doing and to appraise how well they are doing it, (Drucker, 1998).

Knowledge Sharing: The voluntary act of making knowledge available to others. This should be distinguished from reporting, which is involuntary exchange of information/knowledge on a routine structured basis, (Davenport, 1997).

Structural Capital: The capabilities of the organisation, consisting of codified knowledge from all sources (knowledge bases, business processes, human capital, customer capital, management style, business strategy, corporate culture, shared values and technology), (Bukowitz and Williams, 1999).

Tacit Knowledge: Highly personal, difficult to formalise and therefore difficult to communicate to others. It is deeply rooted in action and in an individual's commitment to a specific context (a craft, a particular technology or activities of a team), (Nonaka, 1991).

Value Chain: A concept popularised by Michael Porter. It is based on the idea that each organisation in an industry can be seen as a chain of activities. Each link in the chain adds value to the ultimate product or service. Companies can gain competitive advantage in one of two ways: by performing value chain activities more cheaply than the competition or by differentiating the value chain activities more desirably than the competition, (Hindle, 2000).