

Knowledge Management or the Management of Knowledge?

Frank Land

Information Systems and Innovation Group, Department of Management,
London School of Economics, London, UK

f.land@lse.ac.uk

Abstract. Knowledge Management has become in the past few decades an important branch of the wider discipline of Information Systems. Its importance is based on the observation that we live in a knowledge society and that knowledge has become a crucial component of a competitive organization. This essay argues that knowledge is a mark of civilization and has been discussed, disputed and managed in most spheres of human activity for all of history. The management of knowledge has been and is associated with control and power. Hence knowledge has been and is manipulated to achieve objectives beyond the ideal of truth. There is a dark side to the management of knowledge as exemplified by censorship, spin and propaganda. A study and understanding of the management of knowledge is needed if we want the discipline of knowledge management to be more than an idealistic rhetoric.

Knowledge is Power (Sir Francis Bacon, 1597)

Power tends to corrupt, and absolute power corrupts absolutely (Lord Acton, 1949)

1 Introduction

This essay sets out to show that what we have come to know as Knowledge Management (KM) as a major topic (or a discipline in its own right some advocates may claim) within the discipline of Information Systems is part of a much broader and older discourse relating to the Management of Knowledge. An interdisciplinary and historically grounded study of the Management of Knowledge has much to offer in helping our understanding of the relatively new, but extensively discussed topic of Knowledge Management. In particular it shows that Knowledge Management has a dark side which needs to be recognised and understood as much as the acknowledged benefits proclaimed for the new discipline. The essay is set out as follows.

A first section attempts to define “knowledge” but indicates the difficulty in finding an acceptable definition despite many attempts to nail the concept down.

The second section provides a brief review of the new discipline of Knowledge Management. This is followed by a section which puts KM into the context of the much older and broader study of the Management of Knowledge. Examples are provided of Knowledge Management from a variety of spheres of human activity.

A brief section on the impact of Information Technology on the Management of Knowledge is followed by Conclusions reached from setting KM into the context of Management of Knowledge.

2 What is Knowledge?

The search for an answer to the question of “what is knowledge?” goes back to ancient times. It has been the subject of philosophical dispute at least since Plato’s definition linking “knowledge” with truth. Epistemology is the label given to its study. The nature of knowledge is discussed within each scientific discipline, and outside science in politics, business and management studies, and religion. Each religion, for example, defines its notion of knowledge in terms of the knowledge of God, of life and death and of the hereafter. Knowledge has a complex and subtle relationship to language.¹ To the Eskimo knowledge about ice is conveyed by using the appropriate word in the Eskimo language. Other languages are not as accommodating and similar knowledge must be conveyed by means of descriptions subject to misinterpretations. Language as a means of communicating knowledge is enhanced by a variety of means including gestures, and intonations, many of which are lost in technology mediated communication.

As a way of understanding the term, knowledge has been categorised under a variety of headings such as “scientific knowledge” which is closely associated with scientific method. Another heading is “practical knowledge” based on skill and expertise. Practical knowledge has been valued through the ages. It is interesting to note the roller coaster history of practical knowledge in the evolution of civilizations. The Romans were noted for the extent of their practical knowledge, much of it lost in the so called dark ages. Did the eighteenth century hand-loom weavers of France and England have more practical knowledge and skills than their successors working in the factories created by the industrial revolution? And arguably the twentieth century progress chaser in a manufacturing business may have had more practical knowledge of his supply chain partners than the modern supply chain manager using the latest EDI technology.

However we look at it those seeking enlightenment from the literature may end up confused. Knowledge proves to be a slippery concept.

Within the modern field of Knowledge Management, knowledge has been defined in many ways and there is no consensus about its characteristics. Some prefer a broad definition. Thus the UK based Open Knowledge Foundation founded in 2004 to promote the ideal of making “knowledge” open and freely available sets out its own Open Knowledge Definition: “The term knowledge is used broadly and it *includes all forms of data, content such as music, films or books as well any other type of information.*”² The definition does not distinguish between data and information and treats both as knowledge. Nor does it distinguish attributes of knowledge such as its relationship to truth, to understanding, and to wisdom.

Others such as Wilson (Wilson, 2002) have a more restrictive view and suggest that knowledge exists only in the human mind and “new” knowledge is created by a cognitive act associating what is in the mind with information perceived via the senses. An attempt to explicate

¹ Take the biblical phrase “to know a women” and note the many levels at which this phrase can be interpreted.

² See <http://www.opendefinition.org/> for definition and <http://www.okfn.org/> for more about the Open Knowledge Foundation.

knowledge merely creates information which requires the mind of another to become knowledge. Wilson argues that much of what is termed knowledge management, cannot be distinguished from information management – knowledge management is merely a re-branding of the older notion of information management. Indeed he suggests that for the bulk of the knowledge management literature replacing the words “knowledge management” by “information management” would enhance rather than reduce the legitimacy of the arguments. Galliers & Newall (2003) echo much of this argument and suggest that the use of IT to facilitate knowledge management should more properly be regarded as the management of information and data.

More widespread is the view that knowledge can be both in the mind and in an explicated form disseminated and stored. As such, knowledge can be regarded as a commodity which can be traded and indeed stolen. When we purchase a cook book we are buying the knowledge of the author embodied in the text. Of course each time a recipe is used the outcome is the sum of the perceived knowledge culled from the cook book plus the understanding (knowledge) the book’s user already has. But does the same apply to the algorithm embedded in a computer program which represents the knowledge of its inventor but is used automatically as part of an optimising process?

Polanyi’s distinction between “tacit” and “explicit” knowledge has been the subject of much debate (Polanyi, 1967) Polanyi noted that human action is often based on what to the observer seems inexplicable reasoning. Polanyi found an explanation in the deeply, often culturally ingrained, beliefs and understandings which we carry with us but of which we are not consciously aware. Hence such tacit knowledge cannot be articulated or explicated. At best as observers we may be able to infer at least some aspects of this knowledge from the behaviour of the subject.

Polanyi’s insight has been taken up by some of the knowledge management and organizational learning pioneers (Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998). They suggested that the conversion of internal tacit knowledge into explicit codified knowledge is the basis of knowledge management and provides the opportunity for sharing knowledge. Although this view is widespread in the knowledge management literature it has been challenged by Wilson (Wilson, 2002) who argues from his interpretation of Polanyi that tacit knowledge, being tacit, cannot be explicated directly by the knower. Instead Wilson prefers the term “implied knowledge” for what much of the KM literature refers to as tacit knowledge.

A deeper form of tacit knowledge is the physiological knowledge which determines all bodily functions such as muscle movements, the sending of chemical signals and so on. This kind of knowledge cannot be articulated, though sufficient is now known about it from medical science that it can be controlled by medication or active intervention such as a pace maker to regulate the heart.

Yet another form of tacit knowledge is the outcome of conditioned reflex. Behavioral psychologists have shown it is possible to modify the behaviour of an individual by associating a signal or stimulus with an action where the failure to act on the signal is associated with some punishment, or acting on the signal yields a reward. In time the subject “knows” that the mere presence of the stimulus requires the action to be taken even if there is no other overt reason for taking the action. Thus soldiers are trained to react automatically to certain signals and their survival may depend on the “automatic” nature of their response.

The problem of defining knowledge and knowledge management is illustrated by the case of the honey bee. A honey bee discovers the location of flowers suitable for collecting pollen and

nectar. It can communicate its knowledge of the location to its fellow bees in the hive with an elaborate dance. In knowledge management terms this is an example of knowledge sharing for the benefit, even competitive benefit, of the community, the hive. To achieve this the honey bee requires many kinds of knowledge including knowledge of what flowers are suitable, knowledge of the location of the flowers and how to share that knowledge with its fellow bees. Yet the process of knowledge discovery and knowledge communication by means of the dance, appears to be partly learned – locating the source of nectar and pollen – and partly instinctive (genetic) – the language of the dance (Tarpy, 2004).

Reviewing the discussions on what is knowledge, it is perhaps safest to adopt the broader definition, and avoid hair splitting disputes as to what constitutes data information and knowledge though this still begs the important question of the relationship between what is deemed to be knowledge and truth, understanding and wisdom.

3 Knowledge Management

Knowledge Management as a domain of study within the general field of the Information Systems discipline has a relatively short history. Wikipedia gives 1995 as its starting date.³ Nevertheless, in the 20 or so years of its distinctive existence it has acquired the status of at least a sub-discipline in its own right with conferences, journals, research and teaching communities, job titles and career positions devoted to it. It is characterized by a rich and rapidly growing literature including its own subject encyclopedias (for example, Schwartz, 2006).

It is not the purpose of this essay to define or review the state of the art. However, a brief note of some of its characteristics are in order.

Its main messages are:

That we live in a world where knowledge is now the most important resource or factor of production and that knowledge provides the leverage for success in a turbulent and competitive global system (Halal, 1999; Alavi and Leidner, 2001). To maintain that leverage in the face of rapid change (turbulence) organizations have to evolve improved ways of learning and in particular learning from experience and from the knowledge embedded within the organization as well as knowledge coming from beyond the boundaries of the organization (Senge, 1990; Nonaka and Takeuchi, 1995; Blackler, 1995; Choo, 1998). But to enable the organization to maximise the returns from knowledge requires a new function – that of the knowledge manager, responsible for knowledge management.

That knowledge management comprises activities related to the creation, representation, storage, and dissemination of knowledge, and that Information and Communication Technologies (ICTs) provide the tools to enable these activities to be performed effectively (Bontis et al., 1999).

That a key ingredient to organizational learning is knowledge sharing. Shared knowledge, it is suggested, can provide synergy and be a catalyst for the development of new knowledge. This

³ See http://en.wikipedia.org/wiki/Knowledge_management.

may require a major shift in attitudes in that in the past knowledge has often been regarded as if it were private property to be protected from being made use of by others. Indeed that is the basis for the treatment of intellectual property rights in law and in practice (Baskerville and Dulopovici, 2007). It should also be noted that many advances and innovations are the result not of sharing knowledge, but spring from the debate engendered by contested knowledge.

4 The Management of Knowledge

Knowledge has value, and knowledge can confer power as Sir Francis Bacon pointed out in a book published in 1597 (Bacon, 1597 quoted in Wikipedia), Both provide the incentive necessary for it to be “managed.”

If it is accepted that a critical management role includes “control” then those who have knowledge in whatever area of endeavour have attempted to exercise some control over its dissemination and use. Similarly those who do not have the knowledge may seek to exercise some control over those who do have it. And where knowledge appears to conflict, each party attempts to secure control over the knowledge of the other. There are many management strategies. Many involve manipulation of the knowledge in question by such means as misappropriation, distortion, hiding, destruction – as when the ENRON auditors shredded documents which might have provided evidence (knowledge) of ENRON’s transgressions – amplification, misappropriation, exaggeration, spin and propaganda (Alter, 2006). The acronym KM can stand for ‘knowledge manipulations’ as much as for the more familiar “knowledge management.”

History provides numerous examples from many fields, and many of the examples were *cause célèbres* at the time they occurred. A well known example still resonates today. Galileo the sixteenth century Italian scientist and philosopher had from his own observations confirmed Copernicus’ discovery that the earth moved around the sun and that the then current notion that the earth was the centre of the Universe with the sun moving round the earth was mistaken. The then all-powerful religious establishment claimed that it had a monopoly of (God given) knowledge disputed Galileo’s claim and claimed that his heliocentric theory defied the truth as given in the scriptures. It arraigned Galileo before the Inquisition and demanded that he deny the knowledge he had gained on pain of dire punishment. Faced with this threat Galileo recanted and accepted, at least in public, that the church’s understanding had more validity than what he knew to be the truth. The knowledge asserted by the church had a greater legitimacy than the knowledge he had gained through observation and rational thinking.

The example provides many lessons. If knowledge is power, then the opposite is also valid. The power and authority of the church made its version of knowledge the only legitimate knowledge and by definition represented the truth. Today much of what is deemed to be knowledge stems from its advocacy by those who have authority and power rather than from rigorous enquiry and evidence. And examples can be cited from most fields of endeavour, including the world of business.

Those who have the power and authority are reluctant to concede that the knowledge which they claim to have and which they may have used instrumentally to serve some purpose, could be false and that in accepting the replacement of their knowledge by the new knowledge they may be also be yielding their position as the authority. Most theologies have tended to deny the legitimacy

of their rival's version of truth and have made strenuous efforts, including torture and warfare, to suppress alternative versions of knowledge.

They have also promulgated the notion that the knowledge they claim to have has to be protected. Thus Pope LEO XIII towards the end of the nineteenth century recognised the value of sharing Bible knowledge by publishing it in the vernacular, but prohibited its publication unless carefully supervised by the authorities, because he felt it could provide an opportunity for people to make their own judgment – an outcome which had to be avoided.⁴

This is not a far step from that to the principle of “need to know,” enshrined in the management theories of Fredrick Taylor (Taylor, 1911). In many ways Taylor could be regarded as a pioneer of knowledge management. He insisted that workers and managers alike were provided with scientifically obtained knowledge about the tasks and procedures they were engaged in. At the same time work processes were broken down into small segments with each worker assigned to a particular segment, and the knowledge given to the worker was limited to that required for the task in hand. An underlying assumption was that more knowledge would act as a distraction. Those in authority decreed what their subordinates were permitted to know based on the principle of “need-to-know.”

Although scientific management has been criticised, in particular by those from the human relations school of management who advocated a sociotechnical approach to industrial systems design (Hill, 1971; Cherna, 1976; Hofstede, 1979), it, or version of it, were widely adopted, and in many ways lay behind the spectacular increases and success of the twentieth century US economy. Today ideas derived from scientific management, including the need-to-know principle, still drive much management practice.

A more recent example provides more lessons. ENRON is one of a number of major corporations who in recent years sought to cheat the community and enrich its owners by disseminating information about its trading performance which gave the market apparent knowledge which proved to be false and criminally fraudulent. Armed with their apparent knowledge of ENRON's performance the credit rating agencies rated ENRON as AAA. ENRON became one of the most “successful” corporations in the energy field and regarded as an example of best practice. Insiders writing after the fall of ENRON note that employees enjoyed working at ENRON because of its knowledge sharing culture (Cruver, 2003). What ENRON exemplified is an example of the use of, of what Thompson defines as “Counterknowledge” (Thompson, 2008).

Perhaps ENRON's use of the shredder was their version of the Mafia's code of honour – the management of knowledge by *omerta*.

ENRON is not, of course, representative of the way business devises (creates) fraudulent knowledge as a way of achieving the objectives of its senior management. Nevertheless there is sufficient evidence to suggest that business and individuals, both in the private and the public sector, regularly manipulate knowledge for purposes which are sometimes illegal and frequently work to fulfill hidden agendas (Bryant, 2006). There is a dark side to knowledge management, well known in the wider sphere of the management of knowledge, which needs to be more widely acknowledged by the advocates of KM and written into their research agenda.

⁴The Guardian Newspaper, 28 March 2008, 36 pp.

The next example comes from the human genome project (Land et al., 2009). A debate on intellectual property rights was triggered by the very different attitudes towards the ownership of new knowledge by the various teams involved in unraveling the human genome. One team headed by John Sulston of Cambridge University (Sulston and Ferry 2002), argued that the human genome belonged to all humanity and the outcomes of the elucidation should be available to all and should not be exploited by sectional interests. But apart from their ethical stance they believed and argued that taking an “open” to all position was of practical value in helping the project to succeed. The project...

...worked so well because the community held an ethos of sharing from the beginning. We gave all our results to others as soon as we had them. From sharing, discovery is accelerated in the community. Research is hastened when people share results freely.⁵

The argument they put forward matches exactly the argument at the centre of the case for knowledge management. The Human Genome Project team in the US, directed by Francis Collins, was working under the auspices of the US Government (the Department of Energy and the National Institute of Health) also held strongly to the view that the discoveries they made should be shared with all (Cooke-Deegan, 1994).

Nevertheless, that view was contested by other workers in the field. Many held that intellectual property rights for the human gene sequence belonged to the organization sponsoring the research and as such their methods and results could and should be patented. Once again a particular ethical stance was bolstered by arguments about the efficacy of the position taken. Indeed a mission statement on the project from the US Government suggested:

An important feature of the project was the Federal Government's long-standing dedication to the transfer of technology to the private sector. By licensing technologies to private companies and awarding grants for innovative research the project catalysed the multibillion-dollar US biotechnology industry and fostered the development of new medical applications.⁶

In May 1998, Craig Venter a senior scientist in the US project announced that he was quitting the Human Genome Project with plans to head up a commercial venture, Celera Genomics, with a mission to bring out the complete sequence three years later, but marketed as a proprietary database.

Collins and Venter eventually shared the outcome of their respective research and together with Sulston the epoch-making Human Genome sequence was published. Venter never gave up on his vision of the supremacy in a free market economy of intellectual property rights. It is ironic that he was fired by Celera Genomics for not being able to deliver the commercial outcomes expected from the project.

However, as Kyle Jensen and Fiona Murray of MIT reported, 20% of the known human genome has, in the USA, been patented mainly by private biotechnology and pharmaceutical companies (Guardian, 14 October 2005). Empirical research (Murray and Stern, 2005) indicated that

⁵ See <http://www.sanger.ac.uk/press/2002/021007/shtml>.

⁶ See http://www.ornl.gov/sci/techresources/human_genome/shtml.

the use of patents in biomedical research had had an impact on reducing the amount of communication between complementary research projects. Nevertheless the debate between those who regard the maintenance of intellectual property rights as a condition for research, discovery and innovation, and those who favour an open stance as encouraging discovery and innovation, rages on.

Both sides in the dispute claim the ethical high ground. Those who favour the legal protection of intellectual property rights regard breaches of their privilege as piracy and the stealing of knowledge. For many years ethics papers have emphasized knowledge theft and software piracy as one of the principal ethical issue to be taught as part of any course on ethics in IS (see for example the section on Property in Mason, 1986).

Two of the most articulate advocates of the opposing view are Richard Stallman⁷ of the Free Software Movement and coming from a very different ideological position Eric Raymond (Raymond, 2000) – Raymond from a libertarian free market stance, Stallman from a liberal humanistic perspective. Both espouse the principle of open source, for which they put forward arguments based on both efficacy and values. Critics have pointed out that in practice successful open source projects have relied on far heavier central control of the process than is suggested by the advocates, whilst others point to problems with accuracy and reliability in open source projects such as Wikipedia (Land et al., 2009).

But can the dispute between those who want to manage knowledge through the legal protection of intellectual property rights as against those who follow the open source and free software stance be settled in one direction or the other? In terms of values and ethics we can each make our choice. In terms of efficacy the jury is still out and it is difficult to see how research can settle the issue.

There are many other examples of the Management of Knowledge as practiced in the business world. Adam Smith, the pioneer of free market theory, pointed out that whenever (business) men gathered in a group they would conspire to subvert market forces for their joint benefit by, for example, fixing prices. And another widely practiced method is by the way knowledge is shared amongst selected companies to restrict competition in order to enhance share holder value. Cartels perpetuate themselves by their strict control over knowledge.

But perhaps the best example is the 2008 credit crunch and the consequent crisis in the financial markets. It could be argued that one of the underlying cause of the collapse is the practice of selling on debts by the process called “securitization.”⁸ This involves salami slicing mortgage debts including the sub-prime debts and enclosing them in packages sold on to other banks and treated by them as assets. The crucial knowledge link between borrower and lender is broken making any assessment of risk a lottery. Is this a deliberate attempt at knowledge management or the unforeseen outcome of manipulating financial instruments?

It also illustrates what knowledge management as advocated by its supporters could achieve. Given a policy of transparency and knowledge sharing the credit crunch might have been avoided and remedial action taken.⁹

⁷ See Wikipedia http://en.wikipedia.org/wiki/Richard_Stallman.

⁸ <http://en.wikipedia.org/wiki/Securitization>.

⁹ <http://www.citywire.co.uk/adviser/-/news/property-and-mortgages/content.aspx?ID=293217>.

The ancient art of advertising and public relations has found its modern incarnation as Customer Relations Management, aided and supported by information technology. Its apologists describe it as a means to improve market knowledge and remove some of the imperfections in the market. Its opponents cite CRM as merely another way of manipulating knowledge for the benefit not of the consumer but of the producer. Both views can be shown to have validity by the use of numerous examples. Again the Management of Knowledge has its dark as well as its light side.

5 Information and Communication Technology

In his keynote address to the IFIP 2006 Congress in Santiago, Chile, Professor Niels Bjorn Andersen¹⁰ (Bjorn-Andersen, 2007) reviewed the impact of ICT on the Organization since the first introduction of IT into business under the title *The never ending story of IT impact on the Organization*. He noted that the current trends in technology, both computing and communications, were radically transforming business models and business practice towards what he terms “organizational re-invention” in the twenty-first century. The “Ambient Organization” applying Ambient Intelligence, is the new model, an organization which uses knowledge intensively (ISTAG, 2001).

The implication of Bjorn-Andersen’s analysis is that the new organization will provide a new era of economic and social advance. But technology is neutral. It can be and is used as the optimists predict. But equally it can be and is used by the corrupt, the criminal, and those with political ends in mind. The same ambient intelligence can be used by the Mafia, the drug barons, the tax avoiders and the terrorist. Perhaps we need to remember the laws of mechanics – every action has a reaction equal and opposite to it.

6 Conclusion

Debate about the meaning and significance of knowledge and its relationship to truth, understanding and wisdom has an ancient lineage. Knowledge in its various forms has been valued and hence managed since civilisation began. Today’s notions of what constitutes knowledge management with its rather narrow focus on business value and the role of the enabling technology has much to learn from the broader study of the Management of Knowledge through the ages and in most fields of human endeavour. The overt optimism suffusing the discussion of knowledge management in the bulk of the KM literature needs to be tempered by taking a look at way knowledge and the use of knowledge can be and is manipulated to achieve both good and bad outcomes.

¹⁰ A version was given as a keynote presentation at the IRIS Conference in Tampere, Finland in August 2007.

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