A VERY SHORT, FAIRLY INTERESTING AND REASONABLY CHEAP BOOK ABOUT KNOWLEDGE MANAGEMENT

JOANNE ROBERTS

A VERY SHORT, FAIRLY INTERESTING AND REASONABLY CHEAP BOOK ABOUT KNOWLEDGE MANAGEMENT

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Chris Grey asserts his right to be recognized as founding editor of the 'Very Short, Fairly Interesting and Reasonably Cheap Book about...' series.

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For John

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Joanne Roberts is Professor in Arts and Cultural Management and director of the Winchester Luxury Research Group at Winchester School of Art, University of Southampton, UK. She has held posts in the business schools of Newcastle, Durham, and Northumbria Universities, UK. Her research interests include the internationalization of knowledge-intensive services, knowledge transfer, innovation and creativity, and critical perspectives on knowledge in organization and economy. She is currently investigating knowledge and ignorance in the field of luxury. Joanne is a member of several national and international scholarly networks, for example the Academy of International Business, the Critical Management Studies network, the British Academy of Management (BAM), and the Dynamics of Institutions and Markets in Europe (the DIME network of excellence). From 2009 to 2011 she chaired BAM's annual conference track on knowledge and learning.

Joanne has written extensively in the fields of business and management. She has published articles in a wide range of international journals, including the *Journal of Knowledge Management*, *Journal of Management Studies*, *Journal of Business Ethics*, *International Business Review*, *Management Learning*, *Research Policy*, and *The Service Industries Journal*. In addition, Joanne is author of *Multinational Business Services Firms* (Ashgate, 1998) and co-editor of three books: *Knowledge and Innovation in the New Service Economy*, with A. Andersen, J. Howells, R. Hull and I. Miles (Edward Elgar, 2000); *Living with Cyberspace*, with J. Armitage (Berg, 2002); and *Community, Economic Creativity and Organization*, with A. Amin (Oxford University Press, 2008). Joanne is also the co-founder and co-editor of the award-winning journal *Critical Perspectives on International Business*; an editor of the journal *Prometheus: Critical Studies in Innovation*; and member of the editorial board of several journals, including *Luxury: History, Culture and Consumption*. She is currently co-editing *Critical Luxury Studies: Art, Design, Media* with John Armitage for Edinburgh University Press.

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Should You Buy This Book?

This book, like others in the 'Very Short, Fairly Interesting and Reasonably Cheap Book about' series, conceived by Chris Grey, is designed mainly for university students – who in this case would be studying knowledge management as part of an undergraduate or postgraduate degree programme in the field of business and management, or else in computing studies, information management studies, or other related areas. This is not a textbook; it is much shorter, more interesting, and much cheaper than a standard text on knowledge management. What's more, it's a lot lighter: it can fit into your pocket and be read in a matter of hours rather than days (it's ideal for a long train journey or international flight).

The book might also appeal to academics who study in the field and would like to see a less conventional account of the knowledge management story. Moreover, academics from other disciplines who may wish to have a quick introduction to the field of knowledge management will find the book of value. Although it assumes a certain level of existing knowledge, this text is sufficiently accessible for the general reader keen to gain insight into knowledge management and an understanding of the implications of the shift towards a knowledge-based economy. Hence people who have encountered knowledge management in their workplace or through media reports and are curious to find out more about it will also profit from this book.

If you do buy this book and wish to take issue with anything you discover in its pages, or if you have experiences of knowledge management practices that can add to our understanding of the field and would like to share your knowledge, please get in touch. I would be delighted to hear from you, so please contact me at J.Roberts@soton.ac.uk

1

Introduction: The Rise of Knowledge Management

Where is the Life we have lost in living?

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?

T. S. Eliot

The purpose of this book is to provide a short – but interesting and, importantly, critical – account of the rise of knowledge management and its current place in and implications for contemporary management theory and practice. To achieve this purpose it is necessary to explore where knowledge management comes from, what it is, why it is significant and where it is going. This will reveal the value of studying knowledge management in the global business environment. The book is not written solely for prospective or practicing managers – rather it is of relevance to everyone; for knowledge management is not something confined to large private or public sector organizations. Knowledge management of one sort or another is widespread. We are all touched by knowledge management systems of some description. From the Tesco supermarket checkout to hospital appointment systems, from the online booking of flights to the university or college admissions system, organizations collect information about us, analyse it, and use it to create knowledge about our purchasing habits, our travel preferences, our health, our qualifications – and much, much more.

Related to the idea of knowledge management is the popular debate on the knowledge economy, which, replete with associated concepts such as knowledge workers, knowing communities, and knowledge systems, pervades contemporary discussions of the competitiveness of organizations and of national and regional economies. The imperative to manage knowledge derives largely from the desire to improve competitiveness through innovation and through increased productivity, which in turn should arise from the creation and application of knowledge-based assets.

This introductory chapter focuses primarily on creating a context for later chapters by showing where knowledge management comes from. I begin with some initial observations on knowledge in general before exploring knowledge in the economy. I will then turn to knowledge in organizations and the rise of knowledge management. Then I will pause to elaborate a little on my motivation for writing this book before I proceed to a brief overview of the remaining chapters.

Knowledge: a few initial observations

The challenge of defining knowledge has given rise to a whole branch of philosophy that is concerned with it: epistemology – that is, the theory of knowledge. It would not be possible to explore this immense field in a short book – and the present one has a different purpose.[1] Nevertheless, a working definition of knowledge is required. According to the *Oxford Dictionary of English* (2003: 967), knowledge may be defined as 'facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject … the sum of what is known'. As this formulation indicates, there are several different types of knowledge, for example theoretical and practical. The varied nature of knowledge will be considered in the next chapter. For now, it is useful to begin our exploration of knowledge by drawing a clear distinction between data, information, and knowledge.

First, what is meant by the term 'data'? Data may be defined as series of observations, measurements, or facts – presented for example in the form of numbers, words, sounds, and/or images. Data have no meaning, but they provide the raw material from which information is produced. Information is defined as data that have been arranged into a meaningful pattern. Data may result from conducting a survey; information results from the analysis of these data in the form of a report, or of charts and graphs that give them meaning. Knowledge may be defined as the application and productive use of information. Knowledge is more than information, because it involves an awareness or an understanding gained through experience, familiarity, or learning. Yet the relationship between knowledge and information is symbiotic. Knowledge creation is dependent upon information, but the development of relevant information requires the application of knowledge. The tools and methods of analysis applied to information also influence knowledge creation. The same information can give rise to a variety of different types of knowledge, depending on the nature and purpose of the analysis.

To illustrate these differences between data, information, and knowledge, let's take a numerical example:

1 7 5 9 6 4 2 7 0 3 9 8 5 4

Here we have data in the form of a set of numbers. But what does the set mean? It could be a series of recorded observations – say, the number of times 10 individuals are able to catch a ball without dropping it:

17, 5, 9, 6, 4, 27, 0, 39, 8, 54

Combining this information with our existing knowledge, we can perhaps infer that those individuals with a higher number of catches have better hand–eye coordination than those with a lower number. Alternatively, by interpreting the numbers as one whole number, adding a dollar sign, and applying our knowledge of the USA's economy, we can take this set of numbers to represent the USA's outstanding public debt in July 2014 (TreasuryDirect, 2014):

$17,596,427,039,854

Imposing some form on the series of numbers transforms the raw data into information. Knowledge takes this process further. To produce knowledge from information, we need to combine this information with our existing understanding of the world, so that we can interpret the former and situate it in a context that gives it meaning.

The transformation of data into information and then into knowledge, as described above, illustrates a rationalist perspective on knowledge formation. Such a linear process may go beyond the stage where data constitute the raw material for information production and information provides the input for knowledge, to a stage where knowledge becomes the basis for 'wisdom' or 'meta-knowledge' – which includes beliefs and judgements (Figure 1.1). Importantly, wisdom recognizes the limits of knowledge and the uncertainties in the world (McKenna, 2005). Hence this is the point where our ignorance must be acknowledged.

In contrast to this linear representation, the relationship between data, information, knowledge, and wisdom (DIKW) is often represented in a hierarchical form, particularly among those concerned with the management of information. The exact origin of this representation is open to debate, and the DIKW hierarchy has been subject to much consideration and critique (see, for instance, Rowley, 2007, and Frické, 2009). Each tier of the hierarchy is thought to include all the categories below it (Figure 1.2).

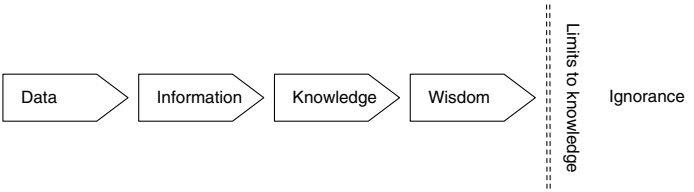

Figure 1.1 A linear process of knowledge formation and its limits

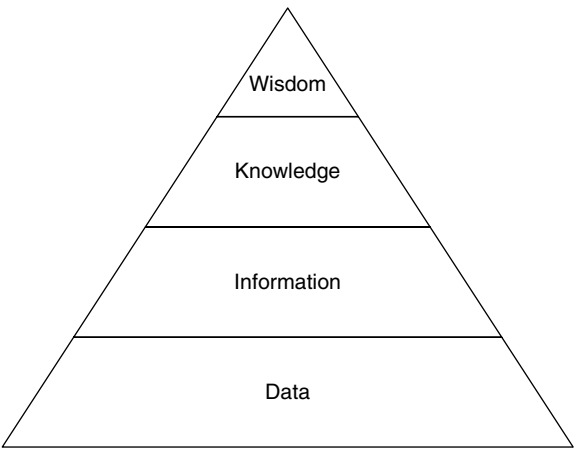

Figure 1.2 Data–information–knowledge–wisdom (DIKW) hierarchy

However, as noted above, the relationship between knowledge and information is symbiotic. Indeed the collection of data is also dependent on information and knowledge. Linear or hierarchical interpretations of the interactions between data, information, knowledge, and wisdom fail to employ wisdom in their construction. Acknowledging the full complexities of these interactions and transformations requires recognition that they may be multidirectional, recursive, and/or random. For instance, in the quotation at the beginning of this chapter, which comes from T. S. Eliot's Choruses in *The Rock* (Eliot, 1934), the poet and playwright suggests a reversal of the linear process of knowledge transformation outlined above.

In relation to our understanding of the knowledge we acquire from information, we must always be aware that our interpretation is dependent

on our past experience and on our worldview. Moreover, in the western philosophical tradition knowledge tends to be defined as 'justified true belief'. For someone to have knowledge of something, that knowledge (or what is to count as such) must be true, and the person must not only believe it to be true but be justified in holding it – that is, their belief must be subject to empirical validation. But what counts as 'justified true belief' is open to question and very much dependent on the perspective from which we interpret empirical evidence. Such perspectives can change over time and in different contexts. Hence knowledge may be viewed as socially constructed.

For instance, before the heliocentric theory of the Renaissance astronomer Nicolaus Copernicus was accepted, it was commonly believed that the earth was the centre of the universe. Copernicus' theory, published just before his death in 1543, in *On the Revolutions of the Celestial Spheres*, contradicted accepted understandings of the position of the earth in the universe. Importantly, heliocentrism conflicted with the biblical account, which was of course supported by the powerful Roman Catholic church. Hence the dissemination of this new knowledge was impaired by the social and political structures of the time. Indeed in 1633 Galileo Galilei, the philosopher and astronomer credited with the introduction of significant improvements to the telescope, was tried by the Roman Inquisition for supporting heliocentrism. He was suspected of heresy and placed under house arrest for the remainder of his life.

This example illustrates two important points about knowledge. First, although we may believe that there are certain factual elements of knowledge that are true beyond doubt, we must remember that knowledge is socially constructed and dynamic in nature. Moreover, if we are wise, we will recognize, like the Greek philosopher Socrates, that our own ignorance is always vastly greater than our knowledge. Technological developments like the improved telescope in the early 1600s or the Internet in the twenty-first century can extend the scope of our knowledge; but they do not diminish our ignorance, since with new technologies come new unknowns. In addition, what is recognized as knowledge (or not) is highly contested. And this leads me to the second point: power influences what counts as – or is accepted as – real knowledge. In the seventeenth century the Roman Catholic church had the power to suppress knowledge that conflicted with its own dogma, according to which the earth was stationary and situated at the centre of the universe and the sun and stars rotated around it; and that dogma was accepted as real 'knowledge'.

The word 'knowledge' also possesses positive connotations. For example, who could disagree with the idea that knowledge is good, or that more knowledge is better than less? If knowledge is good, its accumulation and

management must also be a good thing. It is this positive view of knowledge that permeates many business texts on knowledge management. Knowledge certainly does have a positive impact, as advances in medical knowledge over the past century demonstrate. Nonetheless, it is essential to recognize that there are negative aspects to it too. For instance, in recent years, major advances in knowledge of the human genome have provided a wide range of medical tests that can inform us about our predispositions to various life-threatening conditions; yet few of us wish to gain such knowledge. Perhaps sometimes ignorance is bliss. We might also question the value of knowledge of how to produce nuclear weapons, or the benefit of an excess of knowledge if it prevents timely decision making.

Hence knowledge is far from neutral; and, as I have already shown, what counts as knowledge is open to debate. The idea that 'knowledge is power', first articulated by the sixteenth-century English philosopher Francis Bacon, was later inverted into 'power is knowledge' by the twentieth-century French philosopher Michel Foucault (see Foucault, 1979). When considering knowledge, then, it is essential to recognize the power that access to it provides, as well as the way in which power itself can give legitimacy to knowledge claims. Moreover, as the philosopher and historian of science Thomas Kuhn noted, knowledge that reinforces or sits easily with our existing knowledge system is more readily accepted than one that requires a paradigm shift in our worldview (see Kuhn, 1996). Similarly, in societies dominated by rational modes of thinking, knowledge claims based on myth or faith will carry less weight than knowledge claims based on scientific reasoning. Clearly knowledge is complex, and through the pages of this book I will frequently return to the challenges and opportunities that such complexity presents for those who are seeking to manage it.

Knowledge in the economy

In today's world we are regularly bombarded with media messages telling us how important knowledge is; how we now live in a knowledge economy, where knowledge work is the primary occupation of most of the productive workforce. Nations, organizations, and individuals, we are told, must now live in a globally competitive knowledge environment. National and international organizations – for instance, the Work Foundation, the World Bank, the Organization for Economic Cooperation and Development (OECD) – regularly urge policymakers to develop knowledge resources though investments in education and in research and development (R&D). It is against this background of an increasing emphasis on knowledge in the economy that any study of knowledge management must be set.

We might ask: 'Why the sudden focus on knowledge? After all, hasn't knowledge always been important?' And, of course, we would be right. Knowledge has always been an important resource. From the earliest human societies until today, knowledge – be it awareness of the habitat and behaviour of prey in hunter-gatherer communities or our ability to contain infectious diseases in the advanced world – has been crucial to survival. As civilizations developed through specialization, trade, and agriculture, the types of knowledge that were available and relevant to the smooth functioning of society expanded and deepened. Methods of recording information in the form of counting devices became necessary. Early systems of writing, such as Egyptian hieroglyphs, emerged around 3000 BC; they were of the pictographic–ideographic variety (Figure 1.3). These forms of writing permitted the recording of a broad range of information, which supported the economic and political structures of the societies in which they developed. The Phoenicians' introduction, around 2000 BC, of alphabetic writing enabled the expression of any concept that can be formulated in language. The record-keeping requirements associated with the extensive trading activities of the Phoenicians very probably helped to stimulate this innovation: the documentation of knowledge has always been closely aligned to economic activity, whether to count sheep or to control and organize international trade.

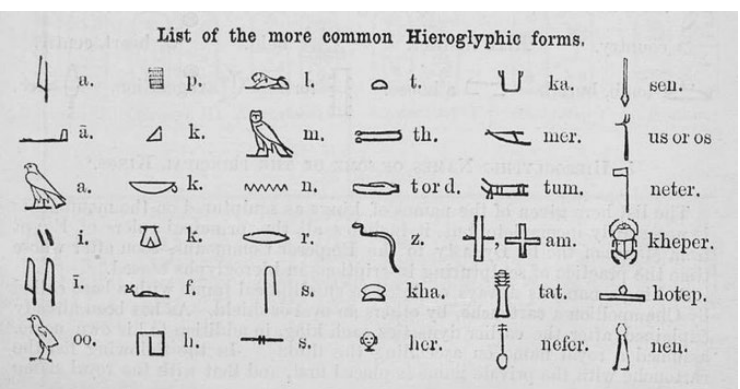

Figure 1.3 Common hieroglyphic forms

Source: *A Handbook for Travellers in Lower and Upper Egypt*. London: John Murray, Albemarle Street. Paris: Galignani; Boyveau. Malta: Critien; Watson. Cairo and Alexandria: V. Penasson. 1888. P. 069. Available from *Travelers in the Middle East Archive (TIMEA)*. Available at http://hdl.handle.net/1911/13077 (accessed 31 July 2014). This work is licensed under the Creative Commons Attribution 2.5 Generic License. To view a copy of this license, visit http://creativecommons.org/licenses/by/2.5/ or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

These early means of recording information and preserving knowledge can be viewed as primitive or incipient knowledge management systems. Prior to their development, information and knowledge would have been passed on through oral traditions and through learning by doing. The central purpose of passing on knowledge – in writing or verbally, through explanation or through demonstration – is to ensure that the recipient does not spend time rediscovering it. And, of course, there is no guarantee that knowledge, once lost, can be easily restored. For instance, after the fall of the western part of the Roman Empire in the fifth century, Western Europe was plunged into a long period (often labelled the 'Dark Ages') during which much knowledge was lost – roughly until the Renaissance in the fourteenth century. Transferring knowledge can be more difficult than merely giving a verbal explanation or demonstration. I am sure that, like me, you have occasionally listened attentively to a lecture and yet failed to grasp what the professor seemed to be imparting in an eloquent and seemingly successful manner to other members of the audience. Knowledge transfer, let me repeat, is not a simple process. I will elaborate on this in Chapter 4.

The evolution and persistence of human civilization as we know it today depends on a vast accumulation of knowledge over several millennia and on the continued transfer of this knowledge from one generation to the next. Without the vast knowledge that the human race has stored and continues to gain, we would rapidly sink back into a primitive society. That is not to say that the hunter-gatherer societies that still exist today in remote places like the interior of the Amazon rainforest do not need, use, and transfer knowledge from one generation to another. Their knowledge of plants and wildlife is immense. However, it is also very specific and limited to a particular spatial and social context. In advanced societies the application of specialization and the division of labour in the production, reproduction, and distribution of knowledge account for the vast scale and scope of knowledge available today. Such division and specialization are only possible once the activities of a society produce sufficient surplus to sustain the development of knowledge through craft, experimentation, discovery, and scholarship. The application of new knowledge developed from these activities enables the more productive and efficient use of resources, thereby allowing us to enjoy a high level of material well-being. Furthermore, the application of appropriate knowledge can help us to optimize the use of limited material resources and to ensure their sustainability.

Clearly knowledge is important, and this has been recognized for several millennia. It has been preserved in ancient libraries (like the famous one constructed in Alexandria in Egypt by Alexander's successor Ptolemy Soter in the third century BC), revered by religious orders,

protected and transferred through guilds, and – in Europe – taught and developed in universities since the eleventh century. More recently, knowledge has been collected, collated, analysed, and distributed on an unprecedented scale by global database providers. So why is there such an emphasis on knowledge and knowledge management at this point in time? Why has the spotlight fallen on this area in a way that is new? What is the difference between, say, knowledge in the nineteenth century and knowledge today? And why has knowledge become entangled in discussions of the economy in a way that was unknown until quite recently?

In the past, knowledge of production techniques, of resource availability, of market demand and supply conditions is what occupied centre stage. For instance, knowledge of crop rotation is vital to maintaining productive agriculture. Knowledge of identifying, efficiently extracting, and refining raw materials like oil, coal, and iron ore is central to industrialization. Knowledge of manufacturing methods, such as the float glass process for the mass production of glass, is vital for the manufacturing sector. Knowledge of market conditions ensures that products reach appropriate markets at the right time, in the required quantities, and in the best possible condition.

According to basic economic theory, there are four key resource endowments: capital, labour, land, and entrepreneurship. Until the late twentieth century, it was accepted wisdom that a country's economic wealth – and, by association, that of its people and organizations – came from combining these resources in the optimum fashion, given all other conditions. Consequently natural resource endowments, stocks of labour, capital, and entrepreneurial skills were central to competitiveness. But today natural resources derived from land are no longer a guarantee of competitiveness, since such resources can be acquired easily on global commodity markets. What is more, capital resources are now highly mobile, so they cannot be relied upon to secure a nation's competitiveness. Supplies of labour can no longer do that either, because low-skilled jobs – and, increasingly, high-skilled jobs too – can be offshored to low-cost locations in countries like India, Indonesia, Vietnam, and China. Today competitiveness is therefore embedded in highly skilled workforces, national endowments of entrepreneurial skills, as well as systems of knowledge; and these support and sustain competitive capacities in particular locations. At a national level, systems of knowledge and innovation creation and diffusion – which involve knowledge workers and appropriate institutional structures, from educational systems to regulatory and policy environments – are essential assets for nations that seek to secure economic competitiveness in the twenty-first century. The economist Chris Freeman described these systems as national systems of innovation in his seminal book *Technology Policy and Economic*

Performance: Lessons from Japan (Freeman, 1987). Building on his work, a substantial body of literature has developed that focuses on systems of innovation at national, regional, and sectoral levels. This literature is devoted to understanding the source of competitiveness in knowledge-based economies (see, for example, Lundvall, 1992; Edquist, 1997). Importantly, economic competitiveness is no longer determined by resource endowments, but rather by the ability to use such endowments to engage in innovation and creativity, in order to secure a proprietary claim over the most valuable, though often intangible, aspect of production. The competitiveness of firms is increasingly based on the ability to secure a profitable return on the intellectual property embodied in goods and services that may be produced and delivered by low-cost providers anywhere in the world.

Today, then, it is not knowledge so much as 'knowledge about knowledge' that has become a central economic resource. Indeed, the management guru Peter Drucker has argued that knowledge has become the only resource that can create a continuous competitive advantage for a firm or a nation (Drucker, 1993). Interestingly, Drucker was already exploring the changing nature of knowledge in the economy in the late 1950s, when he coined the phrase 'knowledge workers' for those whose work is primarily engaged in the creation, analysis, and application of knowledge and information (Drucker, 1969). Indeed analysis of knowledge in economy can be traced back to Alfred Marshall's (1890) study of the economies of agglomeration, which arose from the accumulation and circulation of skills and other knowledge resources in specific industrial districts in the late nineteenth century. Moreover, in 1945, Friedrich von Hayek elaborated on the use of knowledge in markets and in the economy. The phrase 'knowledge economy' originally emerged in 1962, in Fritz Machlup's *The Production and Distribution of Knowledge in the United States* (Machlup, 1962). This, together with other studies – including Daniel Bell's (1974) *The Coming of Post-Industrial Society* and Marc Porat's (1977) *Information Economy* – highlighted the growth of knowledge and information in the economic activity of the advanced economies and the dramatic rise in the value placed upon intellectual capital and intangible assets such as brands and intellectual property.

The knowledge economy

The economic historian Joel Mokyr (2002) traces the historical origins of the knowledge economy to the Enlightenment and to the Industrial Revolution that followed. The Enlightenment of eighteenth-century

Europe was a wide-ranging phenomenon that touched upon philosophical, social, cultural, and economic aspects of life. In terms of the development of knowledge, it marked an embrace of rational thinking, empiricism, and the use of the scientific method in combination with a secular approach to inquiry. Its relevance to the development of knowledge can be illustrated, in some senses, by the publication of the great French *Encyclopédie*: *Encyclopedia, or a Systematic Dictionary of the Sciences, Arts, and Crafts*. This general encyclopedia, edited by the French philosophers Denis Diderot and Jean le Rond d'Alembert and published in France between 1751 and 1772 in 17 volumes, was an attempt to provide a systematic record of human knowledge.

Over the past three centuries there has been a transformation not only in the amount of technical knowledge but also in its accessibility through publishing, universities, and professional networks. This improved access has brought about a continuous process of new-knowledge production and, subsequently, of sustained economic growth. Throughout the twentieth century social and technological developments intensified the use and the production of knowledge in economy and in society at large. At the beginning of the century the public provision of education became widespread in the rapidly industrializing nations, thereby increasing the knowledge capacities of their workforces. As the century progressed, the number of years that people spent in full-time education increased. Alongside this growth in the provision of education, technical advances – and most notably the development of the computer from the 1940s on – have transformed the capacity to collect, collate, analyse, create, and distribute new knowledge. In particular, the past three decades have seen improvements in our access to knowledge through the widespread application of information and communication technologies (ICTs) that facilitate the acceleration of new-knowledge production and the rate of technological change.

The notion of the 'knowledge economy' entered popular debate in the 1990s. It recognizes that the advanced economies derive a high proportion of their economic wealth from the creation, exploitation, and distribution of knowledge and information. In the past 20 years the role of knowledge in economic activity has received much attention from policymakers and management scholars. Yet there is no firm consensus on the definition of the knowledge economy. Indeed some even question whether such a phenomenon actually exists, or whether it is anything new. For instance, Smith (2002: 6) argues that the knowledge economy 'is at best a widely used metaphor, rather than a clear cut concept', while Roberts and Armitage (2008) question the validity of the notion by suggesting that the contemporary economy is

characterized by ignorance as much as by knowledge. Godin (2006), for his part, suggests that the knowledge-based economy is simply a concept, promoted mainly by the OECD in order to direct the attention of policymakers to science and technology issues of relevance to the economy. Nevertheless, various efforts to define the knowledge economy have been made.

According to the OECD, knowledge economies are economies

> which are directly based on the production, distribution and use of knowledge and information. This is reflected in the trend in OECD economies towards growth in high-technology investments, high-technology industries, more highly skilled labour and associated productivity gains. (1996: 7)

Alternatively, Powell and Snellman define the knowledge economy as

> production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence. The key components of a knowledge economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process, from the R&D lab to the factory floor to the interface with customers. (2004: 201)

Given such definitions, it is clear that a knowledge economy is very much a characteristic of advanced nations rather than a global phenomenon (Roberts, 2009).

When considering the knowledge economy, it is vital to recognize that knowledge is different from other commodities. Crucially, knowledge has a scarcity-defying quality. This arises from the public good nature of much knowledge. A public good is one that is non-rivalrous and non-excludable. The consumption of immaterial knowledge, information, ideas, and other abstract objects of thought is non-rivalrous in the sense that, if I share my knowledge with you, your gain does not diminish my stock of knowledge. Moreover, once new knowledge is shared and made public, it is difficult to exclude others from using it. The marginal, or extra, cost involved in acquiring it is virtually zero, because such knowledge is freely available and does not have to be rediscovered by each new consumer. Nevertheless, depending on the nature of the knowledge, the recipient may incur costs in order to develop the ability to understand and use it effectively. The public-good

nature of much knowledge presents challenges for organizations that seek to profit from its development and exploitation. Securing a proprietary claim over knowledge can be difficult. If knowledge is publicly rather than privately owned, how can it be controlled and managed? We will return to the challenges arising from the nature of knowledge in Chapter 3.

From knowledge in organization to knowledge management

Alongside the growing recognition of the importance of knowledge in the economy, there has developed an awareness of knowledge in organizations. Organizing is about arranging, coordinating, or structuring resources to achieve a particular end. It is, then, about managing tangible and intangible resources with a view to achieving certain material or immaterial outputs. As organizations grow in size, the management and coordination of information and knowledge between their different parts become increasingly complex. In a sense, organizations are all about managing information and knowledge concerning inputs and outputs. Of course, since the rise of ICTs and the reduction in cost of telecommunications, we have seen some significant changes and developments in organizational forms, from hierarchical multidivisional organizations to flatter networks or virtual organizations. Nevertheless, fundamentally, the task of these organizational forms is to facilitate the effective management of information and knowledge so as to ensure the efficient operation of the organization.

Although, in the early twentieth century, organizations were concerned with using information and knowledge to facilitate the production of material goods, the importance of knowledge activities was already recognized. For example, in 1921 Frank Knight drew attention to the importance of knowledge activities in *Risk, Uncertainty and Profit* (Knight, 2010). Yet it was not until Edith Penrose (1959) put management control and development of knowledge resources at the heart of her *Theory of the Growth of the Firm* that the significance of knowledge as a resource – rather than as a means of managing other resources – gained recognition among economists and management theorists.

The ability to collect, collate, create, and distribute knowledge is now central to the competitiveness of many different kinds of organizations. In the 1980s and 1990s, the resource-based view (RBV) of the firm came to the fore in the field of strategic management; it was a view developed initially by Birger Wernerfelt (1984) and further elaborated

upon by Jay Barney (1991) among others. This approach argues that the competitiveness of a firm is based on the application of the bundle of valuable resources at its disposal; and such resources include knowledge and information. Building on this, Robert M. Grant (1996) proposed the knowledge-based view (KBV) of the firm, arguing that knowledge is the firm's most strategically significant resource. Because knowledge-based resources are usually difficult to imitate, especially when they are embedded in organizational routines and practices, they can be a major source of sustained competitive advantage.

It is this turn towards a knowledge-based approach to understanding the resources of a firm, together with the growing emphasis on knowledge as a key source of competitiveness in national and regional economies, that has stimulated an interest in the active management of knowledge. Knowledge management includes 'any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organizations' (Scarbrough, Swan, and Preston, 1999: 1). The adoption of knowledge management practices became widespread in the 1990s and, by the end of the decade, many large corporations and some smaller ones had appointed chief knowledge officers (Earl and Scott, 1999), signalling the central importance of knowledge to the organization. However, a number of corporations have since abandoned the role of chief knowledge officer, as they found that giving responsibility to one person absolved others of concern over the management of knowledge. Such developments have encouraged critics to argue that knowledge management is just another fad, along with other management fashions like total quality management, management by objectives, or business process re-engineering. I will return to the idea of knowledge management as a management fad in Chapter 7. For now, though, I want to say a few words about my own perspective before closing this chapter with a brief overview of the rest of the book.

Where I am coming from

As an academic studying organizations for over 20 years, I have observed with interest the transition of the leading economies from ones based on industries that produce tangible outputs to ones based on the production of intangible knowledge-based services – in other words, the transition from the industrial economy to the knowledge economy. This shift was typified in the UK by the decline of heavy industries like steel and shipbuilding in the 1980s and the rise of service industries, the burgeoning of the financial industries after deregulation in the 1980s, the emergence of

call centres, the proliferation of retail parks, and, of course, the significant expansion of higher education since the early 1990s. Indeed my doctoral research was centrally concerned with this economic shift, focused as it was on the internationalization of knowledge-intensive business services such as advertising, accountancy, management consultancy, and computer service firms (Roberts, 1998). In the last three decades, ICTs have transformed production, distribution, and consumption activity, causing significant organizational change and new working practices. Alongside all these developments there has been an unprecedented process of globalization. With the liberalization of markets, the rising levels of international trade and investment, the increasing mobility of labour, and, of course, the rise of the Internet, knowledge and information can travel across the globe in an instant. All of these developments are intricately linked to the story of knowledge management.

I cannot elaborate in detail on all these changes in such a short book. Nevertheless, I can use them as a rich backdrop against which I will elucidate the rise of knowledge management and its key drivers and dimensions. In so doing, I will provide a critical appreciation of the foundations of knowledge management, the challenges of managing knowledge, and the key approaches adopted in knowledge management practices. From a management perspective, knowledge management appears as a technique to improve organizational performance. Nonetheless, its application, like that of any other management technique, can have a range of both positive and negative effects. My purpose in writing this book is to take a critical view of knowledge management. In the complex society in which we live, the management of knowledge, in one form or another, is essential. Nevertheless, I do want to question the theory and the practice of knowledge management. Indeed I want to challenge orthodox perspectives on the history, nature, and future of knowledge management. In this way I seek to offer an alternative to existing knowledge management texts. Moreover, through a critical engagement with extant research, I aim to provide readers with the means to question and evaluate contemporary knowledge management practices for themselves.

Importantly, I shall raise questions about what knowledge is created, captured, shared, and applied and for what purpose, for whose benefit, and at what cost. For instance, in relation to the drive to acquire and capture knowledge, I will question both the source of the knowledge acquired and the mechanisms through which it is captured. What, for example, are the implications of knowledge capture through the enforcement of intellectual property rights (IPRs) like patents and copyrights? Can improved organizational learning and performance be best achieved through the protection of proprietary knowledge? Or could

an open approach to knowledge be more successful? Can a focus on knowledge lead to the neglect of other, equally significant aspects of management? Does knowledge management result in greater diversity of knowledge, or can it increase the tendency towards path dependency and the production of only a narrow range of knowledge? Today much of the most valuable organizational knowledge resides in the heads of employees. The challenges of managing such knowledge are significant. Is knowledge management a new strategy to manage knowledge workers? Or is it a sophisticated means of extracting knowledge from those same workers through a process of deskilling, as was elaborated by Harry Braverman (1974) in relation to workers in the 1960s and 1970s? Do knowledge management practices promote innovation and creativity, or do they prevent them? What are the limits of knowledge management? It is these and similar questions that I will raise throughout this book as I aim to provide readers with a fresh and innovative perspective on knowledge management.

How this book is organized

As this is a short book, I will not spend too much time elaborating on its contents here. Nevertheless, this final section will offer a very brief overview of what is to follow. Knowledge management is related to a number of academic and practitioner fields, namely organizational knowledge, organizational learning, and the learning organization. All of these fields are underpinned by the dependence of organizations on information. Chapter 2 will situate knowledge management within these competing, often overlapping, and yet complementary fields. This is followed in Chapter 3 by a reflection on whether knowledge can actually be managed. Here it is necessary to spend some time exploring different types of knowledge in order to assess the extent to which its various forms can be purposefully managed. Particular attention will be given to the distinction between explicit and tacit knowledge.

Following a broad overview of knowledge management, Chapter 4 will examine the central management issues concerning the acquisition, retention, and transfer of knowledge. These include efforts to capture and anchor knowledge within the organization – for instance, through IPRs and company-centred communities. The challenges of exchanging knowledge both within and beyond the boundaries of the organization will also be explored. Chapter 5 focuses on the importance of knowledge in the field of creativity and innovation. It begins by considering the nature of these two capacities; it outlines the challenge of organizing

knowledge to support creativity and innovation; and it highlights the different organizational structures that are evident in various innovation contexts. This is followed by an examination of the knowledge-creating company and of the role of communities of practice as facilitators of creativity and innovation.

Chapter 6 explores issues related to knowledge management that are often given only scant attention in traditional knowledge management textbooks or are completely neglected, namely ignorance, forgetting, and unlearning. The high degree of specialization in the advanced economies ensures that, while individuals may be very knowledgeable in a certain field, they will also be deeply ignorant of many other areas. Yet ignorance, forgetting, and unlearning may offer opportunities for creativity, because existing knowledge might act as a barrier to new-knowledge development. This chapter will demonstrate the need to manage ignorance, forgetting, and unlearning alongside knowledge and learning.

The final chapter draws the book to a close by recognizing the limitations of such a very short volume even as it seeks to provide an interesting account of the dominant themes in knowledge management literature and practice. Diversity is rarely considered in the mainstream literature, and therefore a short reflection on its significance for knowledge management is provided. The chapter also offers some speculation on the future of knowledge management. Importantly, in this book I don't want to take for granted the positive connotations associated with knowledge. Rather I intend to take a critical stance on the value of knowledge management. The book will not provide a set of instructions on how to develop a knowledge management system; it will rather offer a set of questions that need to be asked of knowledge management practices. My aim is to offer you an appreciation of, and an ability to evaluate, the opportunities and challenges presented by knowledge management. I hope that, when you finish this book, you will have gained an understanding not only of what knowledge management is as a management technique, but also what it means for you as an individual, as a student, as an employee, as an entrepreneur, as a manager, as a consumer – and, above all, as a citizen.

Note

1. Suggested readings for those interested in exploring epistemology are provided in the Recommended Reading section of the Appendix.

2

Situating Knowledge Management

A place for everything, everything in its place.

Benjamin Franklin

Knowledge management is situated within a broader field of academic and practitioner interest in how organizations acquire and manage resources. In particular, the creation and acquisition of knowledge involve the managing of information and learning. Consequently, it makes sense to clarify here, at this early stage, how knowledge management is related to these other areas of academic and practitioner interest. By situating knowledge management within the broader study of organizations, it will be possible to identify its antecedents and to specify how it differs from and is related to the concepts of information management, organizational learning, the learning organization, and organizational knowledge.

The chapter begins by considering the place of information in the organization; then it goes on to explore the ideas of organizational learning and the learning organization. Next it outlines the emergence of organizational knowledge and knowledge management as academic and practitioner fields. Then it examines the relationship between knowledge and learning perspectives. The relevant areas of overlap between these academic and practitioner fields are then identified and examined; this will situate and clearly delineate the scope of knowledge management. The chapter concludes with an assessment of knowledge management as an academic field and management practice.

I begin, then, by exploring the relationship between information and organization.

Information and organization

Information is an essential element required in the organization of all living entities. Consider the complex organizations that occur in the insect world. Ants, for instance, live in colonies ranging in number and size from small to large – and the latter can have upwards of a million individuals, depending on the species. A division of labour operates

within ant colonies such that work is allocated between various groups. Large colonies consist mostly of sterile wingless females who form castes of workers – nurses, soldiers, foragers or other specialized groups – such as a small number of fertile males called 'drones' and one or more fertile females called 'queens'. Ants are highly socialized insects. To coordinate their efforts, they communicate information through the exchange of pheromones – chemicals that trigger a social response in members of the same species. Moreover, they not only exchange information but are also active in collecting it. Worker ants outside the nest, such as scouts and patrollers, relay to foraging ants information about food sources or dangers by exchanging pheromones through physical contact or by leaving pheromone trails. Hence information and its dissemination and collection are of central significance to the form of organization that underpins the survival of ant colonies.

Information is equally important to the survival of humans, which is no less underpinned by the form of organization they live in. One of the features that distinguishes humans from other life forms is their sophisticated ability to communicate information across various media, most importantly through language. Using language, humans are able to share and develop complex abstract understandings of the world. The development of writing systems, some 5,000 years ago, permitted the externalization of such abstract appreciations of the world. This facilitated the spread of ideas across time and space and the extensive interrogation of, reflection upon, and combination and adaptation of concepts – as well as the development of theoretical constructs.

Information and its communication in the coordination of human interaction have been subject to much theoretical and practical investigation by information theorists and business and management scholars. Notable early contributions to theories of information include Norbert Wiener's (1948) *Cybernetics: Or Control and Communication in the Animal and the Machine*, and Claude Shannon and Warren Weaver's (1949) *The Mathematical Theory of Communication*.[1] Moreover, as many scholars like the Nobel prize-winning economists Ronald Coase (1937) and Friedrich von Hayek (1945) have shown, comprehending the role of information is fundamental to understanding the economics of organizations and markets. In his seminal article on 'The nature of the firm', for instance, Coase (1937) attributes the existence of firms to transaction costs, which include the costs of information and search.

The management of information has occurred ever since people began to keep records of activities and, as noted in Chapter 1, recording often arose from a need to keep track of commercial activities. In short, information management entails acquiring, maintaining, organizing, and retrieving information in various forms, from paper files to electronic-based digital records. A library, for example, represents a form

of information management system, as does a Rolodex rotating file device or a digital personal organizer used for storing business contact details. Similarly, the activities of governance, whether economic or political, create a need for information management in the form of the construction and maintenance of records – for instance, concerning accounts of stocks, sales, debts, profits, tax revenues and collections, population census data, and land registration. The need for such activities gives rise to bureaucracy, that is, to an administrative system that is responsible for the management of information and resources according to predetermined rules and procedures. As economies develop, governance activities become increasingly complex and information management becomes a widespread necessity.

An early example of an information management exercise is the survey commissioned by William the Conqueror in 1086 to assess the land and the resources owned in England with the purpose of determining the amount of tax that could be raised. The comprehensive scale of the process and the irreversible nature of the information collected led people to compare the survey to the Last Judgement; hence it became known as *The Domesday Book*.[2] This negative view of the collection process reflected people's concerns about the nature of the information collected, the use to which it would be put, and its accuracy. Such concerns are equally relevant today. For example, an incorrect entry on our financial records can result in a poor credit rating and therefore in difficulty securing a mortgage.

In today's world the management of information is not confined to the bureaucracies of government and business. We all engage in it: we manage growing amounts of personal information concerning our own lives and interactions with family, friends, and actual and prospective employers. The paper-based diary, the address book, and the curriculum vitae as personal information management systems have given way to the ubiquitous computing embedded in mobile telephones, tablets, Internet-based personal blogs, or social and professional networking sites like Facebook and LinkedIn. Our personal information is no longer stored in tangible objects that we possess, but rather in cyberspace, where it is accessible through the Internet and cloud computing. Combined with the rise of web-based recreational activities, the development of digital personal information management systems embedded in mobile telephones, with their ability to interface with social and workplace networks and multimedia digital recording devices, has resulted in an upsurge in personal information management activity. While online data storage facilities may seem ephemeral to their users, in fact tangible resources facilitate them. The Internet allows for the centralization of data storage in huge computer server farms, such as

the one owned by Google in the town of The Dalles, Oregon, USA, which is two stories high and approximately the size of two football fields (Markoff and Hansell, 2006).

The task of organizing is itself all about managing information. Organizing involves making decisions on the basis of the available information. As James G. March and Herbert A. Simon note:

> Organizations are systems of coordinated action among individuals and groups whose preferences, information, interests, or knowledge differ. Organization theories describe the delicate conversion of conflict into cooperation, the mobilization of resources, and the coordination of effort that facilitate the joint survival of an organization and its members. … These contributions to survival are accomplished primarily through control over information, identities, stories, and incentives. *Organizations process and channel information*. (1993: 2; emphasis added)

The management of information, then, lies at the heart of the organization. When organizations are small, simple organizational structures – like a peer group or a simple hierarchy – can facilitate the efficient management and communication of information through direct interactions between members. Nevertheless, decision making is more time-consuming in a peer group, as all members may be involved in evaluating the information upon which the decision is made, whereas in a simple hierarchy

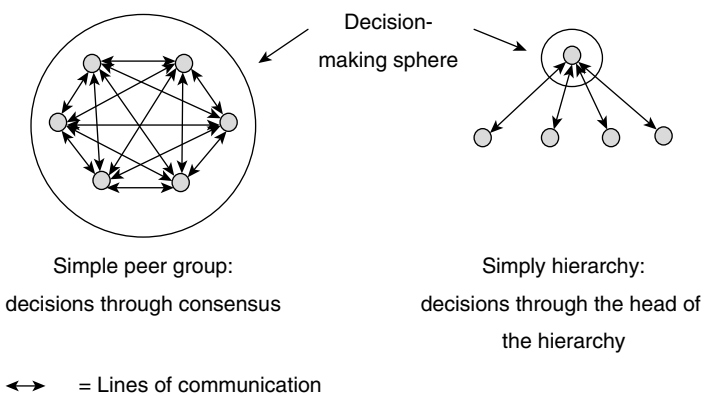

Figure 2.1 The communication of information and decision making: simple peer group versus simple hierarchy