

Knowledge Risk and its Mitigation

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Knowledge Risk and its Mitigation: Practices and Cases

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Foreword by Leif Edvinsson

The World's First Professor of Intellectual Capital

Twenty-three years ago, I wrote my first book on intellectual capital, followed by several, and have witnessed how the world has changed and learned from the overdosing of the reengineering and traditional scientific management of the Taylor system of approach to solve productivity and efficiency problems in the industrial, business and government worlds. Attention has thus shifted to the understanding of the vital factors needed for the sustainability of enterprises and organizations in the era of uncertainty and chaos.

The unprecedented advancement in information technology and artificial intelligence has gradually renovated the business landscape on how business should be done in the augmented reality. Nevertheless, most of our business values and practices are still heavily resources based, which has led to the unavoidable financial turmoil worldwide repeated at intervals. Under the COVID-19 pandemic period and its aftermath, the marginal return of physical resource worldwide would diminish significantly, such as oil. Despite these changes, apart from academics and researchers, the attention to the knowledge-based view and intellectual capital has still not attracted the kind of attention of business practitioners should devote, and imprinted seriously in many business practices. The importance of knowledge spiral is of less attention than its visible financial part. The global trade of intangible assets is anyhow now growing twice as rapidly as trade of goods and service. Soft assets like culture and relations are being more and more highlighted. The fact is that though nobody will refute the importance of knowledge asset of corporates, they still remain mostly as a theory on papers and bookshelves by senior leaders. Young entrepreneurs grab the opportunity space, for intangible asset trade, such as gamification, music and culture.

This book looks at the corporate knowledge from another perspective. Do we know what we know and what we do not know in an enterprise? How these risks could be managed and mitigated. Sometimes, it is also referred to as ignorance management.

This book is the first attempt of its kind to provide a pragmatic view to launch knowledge risk management at the grassroot level on what should be the mission and practical skills needed for a knowledge management practitioner. Another surprise of this book is the numerous cases, examples and data that are brought about from the real business world.

I had many occasions working with the authors many years ago while I was attached to The Hong Kong Polytechnic University as a visiting scholar, and

enjoyed very much the enthusiasm, knowledge exchange and culture of the research center set up by Prof. Lee and his colleagues. This book is a happy memory of many years of their fruitful work, which I hope can stimulate more alike to come in our knowledge repository.

Happy Future, reading and mind exploring!
September 2020, Sweden

Preface

What is the mostly needed resource to create and sustain a company? Most of the answers would posit that financial or human resources are most indispensable. A few would say knowledge. The fact is that most world's successful companies did not start with adequate financial capital at all, such as Microsoft, Apple or Alibaba. They started with their unique knowledge (not necessarily technical knowledge alone) and were able to grow on it.

The function of a firm is to provide products or services to meet the changing market needs at lower transaction costs. As the life cycle of companies and enterprises is getting shorter and shorter, a firm could only survive with the pace of knowledge it can gather, reuse and innovate in the delivery of their services. Organizations that have developed the right knowledge to their advantage would sustain longer. However, in view of the highly turbulent and unpredictable business environment during and after the COVID-19 pandemic era, risk management on both financial and also nonfinancial aspects becomes essential in running a business. According to a study conducted by Ocean Tomo on intangible market value, as for 2020, 90% of the assets of all Standard and Poor 500 companies are intangibles. This trend has been accelerated by the COVID-19 as the return of most firms based on traditional physical resources diminishes rapidly. Organizations need to reconsider their approach in managing their most valuable assets, that is, their corporate knowledge asset especially during rapid social-economic-technological changes.

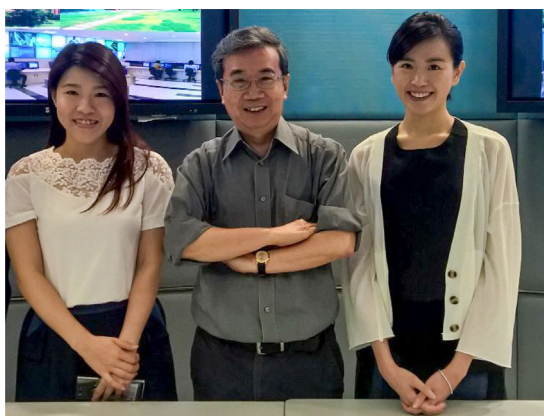
Despite the growing awareness on the importance of knowledge management (KM) among researchers and practitioners over the past decade, it is still not widely practiced among business professionals in industry. What are the underlying reasons? Whereas the exploitation of physical resources bear a diminishing return, the attention is turned on to the most valuable asset of an organization, the intangibles or intellectual asset. However, very often we do not know what we know nor what we do not know. This is where an enterprise risks could arise, not only for individuals, but also for the organization as a whole.

This book provides not only a solid framework of what should constitute the core business value of KM, but also practical methods and tools to assess knowledge risk and its mitigation. Traditional KM programs which emphasize how to capture, organize and share organizational knowledge among its stakeholders often fail to attract the attention of senior management, as the return on investment or any tangible benefits of applying KM could not be felt in a short period of time. To overcome such lack of incentives, we redefine what should be basic

role of a KM practitioner. The book is the first of its kind to present a systematic assessment of knowledge risk and its mitigation, and reify practices with real-life cases and data from a macro down to the micro scale of implementation. These include detailed knowledge elicitation cases, retention strategy as well as the long-term task of fostering a knowledge sharing culture by building a learning organization. Last, but not the least, the yardsticks commonly employed to measure the success of a KM program are highlighted. These form the core skills expected of KM practitioners.

Most books on KM are rather conceptual, building on theoretical framework or grand theories on what KM is and how it should be achieved. Instead, this book summarizes the work conducted by the authors as a result of more than 15 years of research and consultancy conducted at the Knowledge Management and Innovation Research Centre of The Hong Kong Polytechnic University. We avoid making this book as a research monogram, keep the academic referencing to a minimum, but emphasize the practical and real-life cases for readers to experience themselves. In the field of KM, the business world is our real-world laboratory. The content introduced could form a rich base of case repository for use in a business education curriculum and for management consultants and KM practitioners to understand and apply the KM techniques to mitigate knowledge risks in business.

Rongbin W. B. Lee, Jessica Y. T. Yip and Vivien W. Y. Shek



(From left to right Vivien W. Y. Shek, Rongbin W. B. Lee, and Jessica Y. T. Yip)

Acknowledgments

This book although authored by three of us, actually records the knowledge management (KM) journey of The Knowledge Management and Innovation Research Centre (hereinafter referred to as the Centre) of The Hong Kong Polytechnic University since its establishment in 2007. The Centre has made a significant impact in Hong Kong and the neighboring region in the promotion of its education (first MSc in KM), research and practices into KM. Staff of the Centre had been aggressively building a strong KM consulting practice in both private and public sectors – not as sidelines for their professors and teachers, but as a kind of action research learning experience for both the clients and the KM group itself. Through all these efforts and projects, the Centre has truly demonstrated the application of KM tools, techniques and systems in a wide range of industries including engineering, IT, transportation, financial services, healthcare, education, public service, social work, manufacturing and hospitality sectors.

A lot of people have been involved in different aspects behind the work leading to the publication of this book. Such a large pool of projects and data presented here would not have been possible without the contribution of many colleagues, research staff and students, as well as external professionals associated with the Centre. In particular, I would like to thank my colleagues Prof. Eric Tsui, Prof. Benny Cheung, Ms Nicole Sy, Ms Dora Chung, Ms Cherie Lui and Dr W. M. Wong for their professional and technical support of numerous projects, and Dr Tracy Zhou, Dr Irene Fan, Dr Percy Chan, Ms Amy Luk, Ms Lora Liu, Ms Eva Su, Dr Farzad Sabetzadeh, Ms Haley Tsang and Dr Nikolina Dragičević for their contribution at various stages of the development of the Centre from teaching, research to consultancy practice. Behind all these, the dedication from Ms Jenny Chan, Autumn Lin and Trista Lai is indispensable for the smooth running of the Centre including the Global MAKE and MIKE Award schemes. Special mention is made of the following research graduates who brought about the various valuable case studies to Chapter 7 of this book, notably Dr K. C. Ko on centre of excellence, Ms Erin Kwong on reliability management, Mr C. W. Kong on near miss and Dr Wang Yong on dynamic taxonomy, as well as the contribution from Ms Haley Tsang on her research in knowledge risk assessment. We would also express our heartfelt thanks to Dr Wu Qinghai of Pioneers Alliance Technology Co. Ltd. and ex-CKO of Siemens (China) Co., Ltd. for his input on KMMM, Mr Stephen Selby, former Director of Intellectual Property Department of the Government of the Hong Kong Special Administrative Region on intellectual capital risks, and Mr Ludo Pyis, Mr Peter Welch and Mr Brad Meyer from the Areopa Group International on intellectual capital accounting.

Snapshot of some memorial photos of the Knowledge Management and Innovation Research Centre of The Hong Kong Polytechnic University:



The Third Asia-Pacific International Conference on Knowledge Management 2006. From Left, **K.-E. Sveiby**, **Z. T. Wang**, **U. M. Fayyad**, **P. Lambe**, **L. Edvinsson** and **D. Snowden**.



K.-E. Sveiby lecturing on collaborative culture.



L. Edvinsson mind-storming over a cup of tea.



Conferment of Adjunct Professor to **D. Snowden**.



Photo with **C. Argyris** at Action Science Workshop.



Nonaka at the Asian MAKE Award Presentation and Global MIKE Award launching ceremony 2018.



Brown bag lunch meeting at Research Center



MSc in KM, 10th Anniversary Dinner 2014.

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Chapter 1

Introduction

Is Knowledge Management a Fab - On a New Understanding of Knowledge - Typology of Knowledge - What Should be the Core skills of a KM Professional

In assessing attempts to define knowledge it can be helpful to remember that the human mind has often been seen as capable of two kinds of knowledge – the rational and the intuitive. (Steve [Denning, 2016](#))

Why does a firm exist? Ronald [Coase \(1937\)](#) raised this question and provided an answer that made him the 1991 Nobel laureate in economics. Firms exist to lower the transaction cost, and grow till the point of diminishing return, a point at which cost rises and the firm makes more mistakes in resources allocation with increasing transactions. These resources referred to are financial, human, organizational, informational, and relational in the resource-based view of firms, leading to the creation of competitive advantage up to the extent that the firm is able to protect against resource imitation, transfer, or substitution. Apart from the financial assets, all the others are intangibles, knowledge assets, or intellectual capital as we used to call them nowadays. In addition, the knowledge-based view emphasizes that the primary goal of organizations is the creation of knowledge to deliver goods and services, and knowledge is the major sustainability factor. A major characteristic of knowledge is that it does not obey the law of diminishing return. With the rapid progress in information and communications technology, Industry 4.0, and sophisticated applications of artificial intelligence (AI) and big data in the business world, most traditional industry structure and competitiveness theories no longer hold. The issues to be explored in this book are: in terms of managing an organization's valuable asset, that is, knowledge, what are the mistakes that are commonly made which limits the growth of a firm; what knowledge management (KM) is and why it has not received the kind of attention from business professionals, the corporate boardroom, and the stakeholders that it should have received; how we can avoid the mistakes and risks in the old economy; and what practices and examples are mitigating enterprise knowledge risks?

We know a lot about managing human resource, finance, production, projects, quality, and financial risks. What does it mean to manage knowledge? The meaning of knowledge to most people is as different as to how life is defined is to biologists, or consciousness to psychologists. There are no fixed answers. You need to find out yourselves the one that makes the most sense to you. In this book,

we shall guide you through the diversified concepts of what do we understand by knowledge and its management, and what should be the core skills of KM professionals to mitigate knowledge risks from risk assessment, identification of knowledge asset, knowledge audit, knowledge elicitation, and building a learning organization to performance measurement.

Is KM a Fad?

KM means different things to different people. KM has been taught in some universities. There are very few formal degree level study programs in KM. KM is mostly taught as only a course or a subject in business programs. Enthusiasms in many trendy business topics usually grow rapidly and reach a peak after about five years, and then decline almost as rapidly as they emerge. KM, however, still keeps its momentum as there are still many researchers and KM articles published in academic journals.

There are other related disciplines such as knowledge science and knowledge engineering. The former deals more with epistemological aspects of knowledge on topics such as semantics, taxonomy, and ontology, whereas the latter focuses on the construction of knowledge repository, knowledge mining, knowledge portals, KM systems, etc. Then what is KM?

There are opposite views that there is no clear cut identity of what is KM. Some people consider KM is just “emperor’s new clothes.” For example, Professor T. D. Wilson (2002) of Sheffield University is of the view that what was being “managed” in the 1990s by the so-called KM was in fact not knowledge, but only information. The core knowledge of KM is borrowed from other disciplines. He was of the opinion that knowledge is an ambiguous and dynamic phenomenon, intrinsically related to meaning, understanding, and contextualizing, and is therefore difficult to manage. The fact is that we often do not even know what we know.

Professor K. Sveiby (2001), known as the father of KM, considers KM as a poor term. The term he uses more frequently is intangible asset or intellectual capital. Peter Drucker (1959), the twentieth century management guru, though he coined the words knowledge economy and knowledge worker, was reported to have said that knowledge could not be managed. I. Nonaka (1991), the author of the influential book *Knowledge Creating Company*, also did not use the term KM in his book, but rather explains how Japanese firms create the dynamics of innovation.

Wilson pointed out that in the 1990s, the term was driven mainly by consultancy firms due to the use of information technology provided by the newly born internet to share knowledge across organizations, thus avoiding inventing the wheels. The first use of the term KM as a new compelling product appears to have been at McKinsey & Company in 1987 in an internal study on their information handling and utilization, followed by Ernst & Young Global Ltd. (EY) organizing the first conference on KM in 1993 in Boston. Most of the big consultancy companies took knowledge and information as equivalent, though some companies (such as EY and KPMG) refer more to the managing of intellectual assets or intellectual capital. He concluded that “knowledge management” might not have much significance to the world of business practice. We shall find out if

this statement is true in the following discussions. However, before we do that, let us explore further what knowledge is.

On a New Understanding of Knowledge

Knowledge decides what to say; skill decides how to say; attitude decides how much to say, and wisdom decides whether to say or not!

Do you agree with the above statement?

If yes, you are still holding the view that knowledge is just information and is always explicit. What are these skills, attitudes, and wisdom? They are all the tacit part of our knowledge.

Information contains knowledge, but not all knowledge is information. Knowledge is a dynamic linking and delinking of concepts to make sense of the world!

What is knowledge, a simple but difficult question that has no universally accepted answer?

To define what is knowledge is as difficult as for a biologist to define life and a psychologist to define consciousness. A dictionary would refer knowledge as *facts, information, and skills*, whereas skills are know-how demonstrated through our five senses, sometimes referred to as practical knowledge. This is to a large extent synonym to information in everyday language. On the contrary, information is knowledge received or given, or facts about a situation, people, or event. It comes to no surprises in early days that information management (IM) and KM are almost indistinguishable.

What is the relationship between data, information, and knowledge? Fig. 1.1 shows the well-known data–information–knowledge (DIK) model (Fig. 1.1a). The traditional view is that data at the bottom of the pyramid is a set of discrete

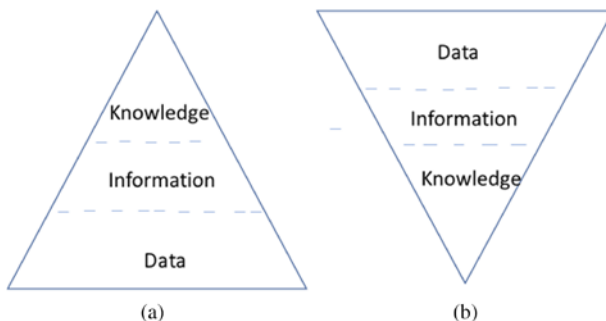


Fig. 1.1. (a) The DIK pyramid. (b) Inverted pyramid. Dotted lines indicate that there is no sharp boundary.

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facts about events. The organization of data becomes information and further processing of which becomes the knowledge. Wisdom was the end of a continuum made up of data→information→knowledge→wisdom, which is also called the DIKW model. Compared with knowledge, wisdom is more context sensitive and situation dependent.

We gather a lot of knowledge from our education and books. However, no matter how much we know we cannot simply claim we have wisdom. Why? A simpler answer is that wisdom deals with the right things we ought to do. What can we know falls into the category of epistemology whereas what we ought to do falls into ethics. This is the life pursuit of the most influential German philosopher Immanuel Kant.

Does all knowledge start from data and information, or data and information that we sense, collect, and organize depend on the prior knowledge we have in our mind. To certain extent, this is true as the idiom says “we can only see what we wish to see.” Here, seeing means the screening, filtering, and selection of data that meets our thinking habits. Our ability to identify and see data and information depends strongly on our prior knowledge. This is shown in the inverted DIY pyramid which is made up of knowledge→ information → data. Therefore, it is safe to assume that data, information, and knowledge are intrinsically related and their relationship is again nonlinear. The traditional sharp distinction between information and knowledge becomes blurred. The advent of AI also throws light to the human aspects of conscious reasoning. We can ask the following question: does a machine which builds on an advanced learning algorithm possess knowledge or intelligence? Still further, going back to the DIKW model, does machine intelligence can decide what ought to do?

The same set of data can give rise to different knowledge. In a stock market, the data can be the date and the stock index. If a series of data are tabulated, this can show whether a market is rising or falling, that is, information. Based on such information, knowledge becomes the decision or action strategy to be taken, which is to sell or buy based on our conscious reasoning or intuition. We could base our decisions on our intuition, some heuristic rules, or complicated statistical or investment theories. The knowledge which you are likely to hold to guide your action is usually the one which you believe is most beneficial to you based on your value system. The reasoning or theory to buy or sell once if coded then becomes your explicit knowledge. Different people may use the information differently and come up with a different “knowledge” of the market that is highly context and value dependent. That explains why in KM literature, we emphasize the use of stories to convey meaning, value, and context, and not just the facts or information.

There is no sharp boundary between data, information, and knowledge. Belief and reasoning could be labeled as knowledge, but once these are codified and documented, these then become explicit knowledge. There are no great differences if you call them information or knowledge. The question is, even with the same piece of data and information, the decision taken (such as in the stock market scenario) may not be the same for everyone, as the decision and action is often very context, people, and value dependent. In addition, the decision that would

be chosen is usually the one that the decision-maker thinks would bring the most benefit to him. With regard to what would be considered as beneficiary, this is considered as a value judgment. In other words, knowledge arises from information, but is dynamic, often fuzzy, context sensitive, value dependent, and may not be universally the same for everyone. These properties of knowledge differentiate itself from information, especially when the former has not been documented in explicit form. The difficult question of whether knowledge is only subjective is discussed in later paragraphs.

What is Knowledge?

Exploring deeper, what is knowledge and how does it differ from information? From a psycho-kinetics and phenomenological viewpoint, our cognition and comprehension (making sense) of the external world around us start with the naming process since our childhood. Human is unique having the ability to create symbols to represent the experience and simulate reality. We start to learn about “names” to physical objects, human faces, and then to events and even emotions such as happiness and sadness. These naming are *concepts* which may be associated with a visual image, a sound, a smell, or a feeling. These concepts are then consolidated and frozen into a symbol, words or a phrase, or even a mathematical formula in the language we are brought up or being acquainted with. When these concepts are linked together with a *purpose or intention*, then *meaning arises*, and *they impart and constitute the content of the knowledge* (Fig. 1.2). When these concepts are systematically grouped under a designated and structured theme, this would result in a taxonomy which is the science of naming and classification of the objects under investigation. When various concepts are linked together graphically, they form a concept map which is used to show the interrelationships of events.

Knowledge is a very inclusive name. Is all knowledge a kind of subjective construct? Such a subjective construct could have many names: concept, thought, idea, opinion, belief, or truth. When these constructs are agreed upon and accepted by most of us, these become objective knowledge. Can there be objective knowledge that is independent of the knower and universally true? To

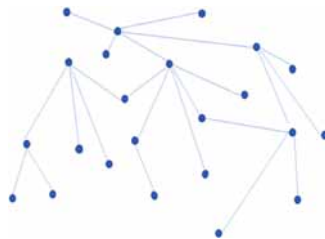


Fig. 1.2. Knowledge as linkage of concepts. Each circle represents a concept. The circles are connected to form the content of the meaning. The configuration of the networks can be static (do not change with time) or dynamic and is the equivalence of the thinking process.

understand the issue better, we have to understand how meanings arise. Meanings are communicated through language, conversations, facial expressions, body gestures, and actions. Books, movies, and paintings have no meaning in themselves, as information is divorced from meaning. According to Ludwig Wittgenstein, who inspired a generation of philosophy of language and logical positivism which imposes strict constraints on what is knowable, we assess the actions and responses to our use of words and look at the actions of the one to whom we have spoken to determine if the recipient has understood. Meaning is thus closely related to the concept of “intent” which is the director of an action toward some future goal that is chosen by the actor. Inanimate machines cannot create meaning unless they have intentions of their own. Meanings are socially constructed when people work, sing, and play together. Meanings are assimilated or shared when we act together. Assimilated meanings form the basis of *culture and belief systems* in all social, political, and religious groups. This explains why knowledge is also sometimes defined as justified belief. As knowledge is conceived by human mind and socially constructed, there could be no universal intrinsic knowledge that would be agreed by all, even including mathematics and logic. The conditions under which the piece of knowledge conveys meaning depend on the *context*. That is why in KM, we always emphasize that the useful knowledge is highly context dependent. When the context changes, the meaning also changes. The essence is that knowledge is only *intersubjective*. We shared meanings in our interactions with one another. When a distinct set of concepts or thought patterns of some things and phenomena (theories, standards, postulates, etc.) has been deeply rooted and accepted by many people, then a paradigm is established.

The ways in which the links are arranged reflects our thinking process, which is similar to the linkage used in a concept map (see the case on the use of concept map in Chapter 7). New concepts could be derived from old concepts, and grow like trees in a forest. Likewise, new knowledge can be derived or transformed from existing knowledge by process such as internalization, eternalization, combination, and socialization described in the knowledge transfer model of Nonaka (see Chapter 5 on SECI model). On the contrary, data (especially visual, verbal, or audio) are also a discrete form of preliminary concepts, like the gene of a living cell. Once concepts are created and linked, a piece of knowledge is formed. When the linkage multiplies and forms a sophisticated level, usually the meaning structure is almost frozen and it is quite difficult to reconfigure them without much effort. This explains why unlearning (reconfiguring the meaning structures) could be so difficult. *Learning* is a process to link up these concept structures, and *relearning* is to find a new way to reconfigure the linkages. When we say *unlearning*, we refer to the demolishing of the old meaning structure and start to build a new one (see also Chapter 6 on unlearning). When the structure is simple, static, and linear, very often they could be expressed easily. When the network (linked structure) is complex, entangled, dynamic, and nonlinear, the content and its meaning could not be expressed easily. The latter can be referred to as knowledge that is tacit (see next section on tacit and implicit knowledge).

From this perspective, we can conclude that knowledge is more than a piece of information per se, an object, or a stock, like a bucket of water that can move

from one person to another person. Knowledge is better understood as a flow. This means that its content and thus meaning may be constantly changing (or reconfiguring) and may be modified by both the sender and the recipients. Thus, knowledge is highly context sensitive and situation dependent.

There is a good analogy of the above model of knowledge as linkage of concepts to the knowledge graph and its graph database which capture the meaning of data through their relationships, and become now a core technology commonly deployed in AI. In this world, everything is interconnected. In Fig. 1.3, the relationship is shown by the straight line (called edge) which connects the circles (called nodes, pieces of information). Unlike a relational database which only stores data in a fixed tabular way of seeing the world, a graph database has no fixed format and is flexible. Fig. 1.3 shows various patterns of graph database from simple to complex.

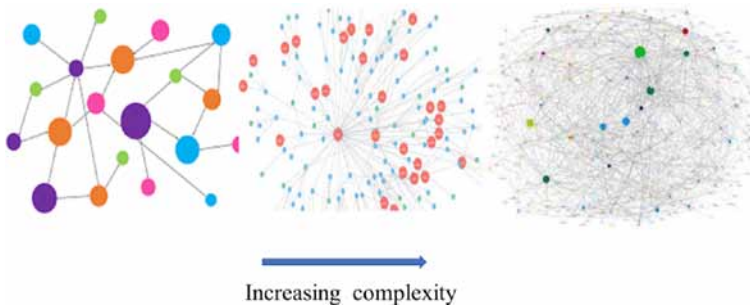


Fig. 1.3. Graph database from simple to complex.

The above understanding of knowledge as a dynamic linkage of concepts is closely related to the connectivism of learning, phenomenology, and constructive post-modernism. In connectivism, dynamic knowledge resided in the network of people interaction, stored in a variety of digital formats, and distributed across an information network. Learning is the recreation of network. As network grows, knowledge also grows exponentially. The information or knowledge embedded in such a complex network could now be analyzed by various AI tools, such as the use of graphical database to retrieve and correlate data, information, events people, and also their perceptions, judgment, and even emotions. That is why in future dictionary, for example, a table can no longer be defined as a flat surface with four legs, but represented from a big pool of digital data set which includes texts, images, and human judgment trained from millions of users on the internet. This has a great implication to knowledge representation and elicitation practice as discussed in Chapter 5.

Typology of Knowledge

In KM literatures, there are many ways to classify knowledge. The most common classifications of knowledge are tacit and explicit. Tacit knowledge is the one which resides in the head of people and is difficult to express in tangible form. According to Polanyi's words: "We can know more than we can tell." The tacit

What is tacit knowledge?

The alignment of spindle axis on the headstock and tailstock mounted on the two ends of a slideway is a very critical step in assembling a precision drum lathe. At the final stage, the technician may use a small hammer to tap very gently on the machine to adjust a very small displacement. He would gently tap here and there, give a smile, and then the spindle axis is fixed. Can the tapping process be documented so that his fellow colleagues can follow?

The answer is both yes and no. Do not ever underestimate the importance of experience.

knowledge is hidden, even from the consciousness of the knower. It is related to various mental awareness processes such as creativity, intuition, comprehension, perception, believing, and mental model construction (Table 1.1). These could also be called mental knowledge processes, as the word aware literally means having knowledge of something. Some of these processes such as creativity and intuition are more tacit than the others and even today they are far from being fully understood. Two thousand and five hundred years ago, the Chinese scholars began to be aware of the nature of different kinds of knowledge. As *Yi Jing* (*Book of Change*) said: “We could not fully write down what we want to say; and we could neither express fully what we are aware.” For example, esthetics is the study of the mind and emotions in relation to the sense of beauty. It can be a kind of knowledge that can be learned and examined in a university curriculum. However, beauty itself is something we may experience but could not be described in full. Once spoken, it is no longer there, and becomes a “map” only to guide us to talk about beauty.

Fig. 1.4 shows that there is a wide spectrum of diminishing explicitness (see the gradual transition) from what we can say to what do we intent.

Table 1.1. Various Awareness Processes.

Mental process	Description
Creativity	Originating ideas to create something
Intuition	Understanding something without conscious reasoning
Comprehension	Recognizing something with reasoning
Perception	Realizing something through the five senses
Believing	Accepting something to be true without proof
Mental model construction	Representation and explanation of relationship of parts and events