

**EVOLUTION FROM DATA TO LOVE: TEACHING MANAGEMENT OF
KNOWLEDGE ASSETS IN THE CHRISTIAN BUSINESS CLASSROOM**

Richard J. Martinez
Department of Business Administration
Cedarville University
937-766-4993
rmartinez@cedarville.edu

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Introduction

In the marketplace and in the business education classroom, we are increasingly confronted with the role of knowledge in modern society. We have heard that “knowledge is power,” and indeed it seems that organizations that manage knowledge assets well have some important advantages. Many firms are creating positions for “knowledge specialists.” Textbooks dedicated to the subject of knowledge management are just now emerging¹. Even still, it is not entirely clear how to present these ideas to our students. It is not always clear how knowledge is different than information, and it is not clear how this translates into occupational capital. Most educational institutions do not (yet) have courses dedicated to understanding the management of knowledge assets (making the few existing textbooks almost irrelevant), and thus such ideas may show up in a number of other courses, often in disjointed fashion. It is also not entirely clear how this subject ought to be approached from an intentionally Christian perspective. While I have no penultimate panacea for such curricular problems, I do share in this paper the pedagogical approach I have developed for introducing business students to the critical role that knowledge and its management plays in modern business practice.

It should be noted that I personally have taught this material in courses on strategic management and organization theory (or organization design). The material, as I am presenting it here, can be covered in as little as one (jam packed) week of class meetings, or it can be stretched over two or three weeks, depending on the level of interaction between instructor and students, and

¹ E.g. Madanmohan Rao, *Knowledge Management Tools and Techniques: Practitioners and Experts Evaluate KM Solutions*, Elsevier Publishing, 2004; Helen Rothberg & G. Scott Erickson, *From Knowledge to Intelligence: Creating Competitive Advantage in the Next Economy*, Elsevier Books, 2004.

additional materials brought into the discussion. It is possible that future iterations of knowledge management sections could be the subject of an entire semester course, but more materials will need to be developed for this to be the case. At this stage in the development of knowledge management studies, the materials can be covered as part of an existing management (or information systems) course.

My approach to teaching management of knowledge assets is under girded by the Christian humility that arises from two specific passages of scripture – 1 Cor. 1:18-31 and Jeremiah 9:23-24. As we explore the nature of knowledge and its role in business practice, students are reminded through these passages that it is God who defines knowledge and truth, and while He provides these for our use, we are cautioned to remain humble in their application.

The sessions on Management of Knowledge Assets – and the sections of this paper – proceed according to three basic “chapters.” First, we explore and discuss “what is knowledge.” A definition emerges from a larger discussion of truth and reality. This simple working definition is then contrasted with similar concepts, and an evolutionary model emerges in which knowledge is placed in the context of data, information, knowledge, intelligence, wisdom, and (ultimately) love. Each of these elements is also considered according to its ability to provide a firm with a competitive advantage, as will be discussed below. Having developed an understanding of what knowledge is (and its role in developing competitive advantage – hence the impetus for managing knowledge assets), we turn secondly to exploring “knowledge about what?” or the factors about which firms must be knowledgeable. I have narrowed these down to three categories, discussed below. Finally, once we know what knowledge is, and we know what we

want to know, we discuss several steps for managing knowledge assets. These steps are also discussed below.

Defining the Current Knowledge Age – Subjective, Objective and Socially-constructed Realities

I typically begin the discussion by asking students what they know to be True, with a capital “T.” After playfully countering their assertions, I explore the nature of truth as understood in a Christian worldview and contrast that with post-modern portrayals of truth. In this section, I intend to make use of (and provide some contrast with) Richard Chewning’s treatise on knowledge and wisdom².

Reality - In order to conceive of knowledge and understanding, students must first consider the subjective nature of “reality” as perceived by humans in social settings, including organizations. On the path to constructing reality (Berger & Luckman) we make sense of the world around us in order to make decisions and enact our environment (Weick)³. This is one of the most critical things managers can do (Pfeffer)⁴. Ultimately, it seems to make sense to students that organizations whose *subjective* rendering of reality is closest to *objective* reality will have an advantage, and can make better decisions.

² Richard Chewning, “God is infinitely WISE: We have access to His wisdom,” *Journal of Biblical Integration in Business*, Fall 2003, 35-53.

³ Berger, P.L. & Luckmann, T. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, Garden City, N.Y.: Doubleday; Weick, K.E. 1979. *The Social Psychology of Organizing*, (2nd ed.), New York: McGraw-Hill.

⁴ Pfeffer, J. 1980. Management as symbolic action: The creation and maintenance of organizational paradigms. In L.L. Cummings and B.M. Staw (Eds.), *Research in Organizational Behavior*, 3: 5-52, JAI Press: Greenwich, CT.

One tool I have found useful in helping students to understand this distinction (subjective vs. objective reality) and its importance is a very simple “knowledge box” (or K-box). As indicated in Figure 1a, the K-box is a simple rectangle with square grids. The box in its entirety represents knowledge about a given subject or issue, while each grid square represents information leading up to that knowledge. As explained below in more detail, *knowledge* is defined in terms of understanding about a subject, and it derives from various sources of *information*. Thus, to the extent that the K-box is completely filled in, this would represent perfect, objective knowledge, or objective reality (see Figure 1b). To the extent that only some boxes are filled in, and some more filled in than others (representing the fact that we always have incomplete and imperfect information), this represents subjective knowledge, or subjective reality (see Figure 1c). When organizational actors are able to make decisions on the basis of knowledge that is closer to objective reality than are their competitors – that is, their K-boxes are more completely and accurately filled with information – these organizations will have a distinct advantage.

With that in mind, we can then turn to a discussion of how knowledge represents this level of understanding and how firms with greater knowledge have a competitive advantage.

Elements of Knowledge

In essence, we can talk about the interaction between several similar concepts in order to create a meaningful pattern of knowledge development. Concepts that we often use interchangeably or in an overlapping sense have important distinctions that impact their role in organizational decision-making. I have identified six elements of understanding that are interrelated and seem to represent an evolutionary pattern in business history and future thinking. Data, information,

knowledge, intelligence, wisdom, and love (yes, love) are relevant to organizational decision-making and success, now, in the past, and in the future. Other authors and thinkers have arranged these elements in different ways, but the elements tend to be consistent, with the exception of adding love to the equation. For example, Richard Chewning focuses on wisdom as the ultimate stage of these factors. In his examination of wisdom as it relates to God's nature, Chewning combines information and knowledge into one construct, while he separates out understanding from knowledge. As can be seen below, I have separated out information from knowledge and have defined knowledge in terms of understanding. What remains most important is that the hierarchy is consistent across these models. In my courses, the elements are discussed according to the following pattern;

Data – Data are facts and figures that initially lack context or meaning. In early to mid-20th century, data and data processing technologies provided competitive advantage, as in the rise of IBM. Large firms that relied on data (banks, insurance, etc.) could purchase the expensive machines and thus were able to store and retrieve such data in ways that smaller firms could not. (One could show or make reference to the entertaining movie, *Desk Set*, starring Katherine Hepburn and Spencer Tracy here) Eventually, as the technology disseminated, most firms had access to data processing capabilities and, thus, data could no longer be a source of sustained competitive advantage. Data, then, becomes the source of information.

Information – Information results from data made meaningful through some operation (aggregation, average, mathematical function, analysis, etc.). Informational elements become the basis for decision processes. For much of the mid- to late-20th century, information had the

potential to provide firms with a competitive advantage, as some firms had access to more and better information than did others. This was a result of the “information revolution,” and reflected some firms’ superior information technologies and IT human resource assets. At some point (probably with the advent of personal computers and the internet), information technologies ceased to be largely proprietary, and information is in the process of becoming a commodity. As a result, little sustainable competitive advantage arises strictly from information or information technologies in the 21st century. Information then becomes the source of knowledge.

Knowledge – Knowledge results from information sources combined to create understanding. Information from various sources in the environment can be combined to create an understanding of aspects of that environment, thus leading to “knowledge” about that aspect. This, in the business context, may be related to the firm’s customer demand function, competitor intentions and capabilities, likelihood of success of various strategic actions, environmental changes that require firm responses, paths to valuable innovation, etc. It is knowledge that is currently the source of much of competitive advantage in the modern marketplace. Firms that manage knowledge assets well will be able to make decisions that best exploit competitive opportunities and avoid competitive threats.

While we must acknowledge the important role of knowledge in business, we must also point out that there are even more important factors. Futurist Alvin Toffler wrote in his 1990 book *Power Shift* that the source of power throughout human history has shifted/evolved from strength

(force/violence) to wealth to knowledge⁵. Presumably, wealth can buy strength, and knowledge creates wealth. Hence the phrase, knowledge is power. Students will be comfortable with this idea, so it is at this point that we may introduce Jeremiah 9:23-24, which indicates that Toffler's wonderful epiphany was acknowledged and humbled by God thousands of years ago.

This is what the LORD says: "Let not the wise man boast of his wisdom or the strong man boast of his strength or the rich man boast of his riches, but let him who boasts boast about this: that he understands and knows me, that I am the LORD, who exercises kindness, justice and righteousness on earth, for in these I delight," declares the LORD.
(Jer. 9:23-24, NIV)

We can note that, while Toffler identified strength, wealth (riches), and knowledge (wisdom) as the sources of power in modern society (and business), the Lord indicates that we ought not boast of (or be overly impressed by) such things, as knowing God is better, and that He delights more in kindness, justice, and righteousness, which He models for us. This is also consistent with Proverbs 1:7a, "The fear of the Lord is the beginning of knowledge" (NIV).

Having made this point, we note that, as business and academia continue to develop sophisticated (and cheaper) knowledge systems, knowledge will over time become more disseminated and less unique as a source of competitive advantage. When and how this will occur is speculative. However, when such knowledge parity occurs, competitive advantage will most likely come from intelligence.

⁵ Alvin Toffler, (1991). *Powershift: Knowledge, wealth, and Power at the Edge of the 21st Century*. Bantam Books.

Intelligence – information and knowledge that reaches a point of perpetuation or self-learning.

We will in the future rely on “intelligence systems” in organizations. This is consistent with creating the learning organization as discussed by Peter Senge (*The Fifth Discipline*) and others⁶.

It is also likely that an understanding of how artificial intelligence systems work will enter the discussion, as will allusions to other intelligence systems, such as human intelligence (HumInt), signals intelligence (SigInt), and electronic intelligence (Elint) currently utilized by “intelligence agencies,” such as the CIA. Meyer and Davis (2003) point to a coming age of the molecular economy, in which technologies such as nano-technologies represent intelligent production components, learning on their own as they are engaged in the processes of production⁷. [ethical implications?] Exactly what competitive advantage looks like in this realm is also speculative, as the age of intelligence lies in the future. Meyer and Davis refer to the potential evolution of intelligence related to biotechnological advances as “the adjacent possible,” and they agree that it is at best speculative to guess the details of this future state, although they make more general predictions. At some point, however, existing intelligence will become (relatively) commoditized through evolving technology and systems, clearing the path for wisdom to be paramount.

Wisdom – superior to knowledge, wisdom is an understanding of how and when to use the knowledge we have. It is an understanding of the consequences of organizational actions, and it comes with experience (and as a gift of God – see James 1:5, “If any of you lacks wisdom, he should ask God, who gives generously to all without finding fault, and it will be given to him.”).

At some point, we may envision “wisdom systems” being the main source of competitive advantage. While a Christian perspective may define wisdom in terms of God’s will, it is

⁶ Peter M. Senge, (1991). *The Fifth Discipline*, Doubleday.

⁷ Christopher Meyer & Stan Davis, (2003). *It’s Alive: The Coming Convergence of Information, Biology, and Business*, Crown Business.

possible that a secular marketplace will define wisdom quite differently, and act accordingly. For example, wisdom (when and how to employ knowledge assets) may be defined as that employment of knowledge assets which most creates financial wealth and weakens or destroys competitors. On the other hand, since a market in which wisdom is the main source of competitive advantage is still speculative, we might envision wisdom as pertaining to ethics, sustainability, and social responsibility. [more on wisdom here] As we study, and think about, and learn more about wisdom, we will begin to see how wisdom is based on, and under girded by, love. A Christian understanding of when and how to use knowledge is guided by what most demonstrates love to our fellow humans. Thus, in the post-wisdom society, we can hope for a new society in which God's wisdom has led us to love.

Love – While I make no attempt to trivialize the concept of love by including it in the same discussion as sources of competitive advantage, I do sense that beyond wisdom is a society and a marketplace in which decisions are made on the basis of love. What does competitive advantage mean in this context, and has it thus become irrelevant? There are numerous scriptural elements to be incorporated here. If marketplace activities and decisions have been (or will be) guided alternatively by the variable (across firms) availability of data, information, knowledge, intelligence, and wisdom, then we can understand in each phase what guides managers. In some future state, is it possible that managerial decisions will be based on which actions best demonstrate love toward organizational constituents? Is love a realistic basis for organizational action and decisions?

Knowledge of what?

In this section, I will explain how the class discussion next turns to consideration of the factors about which firms must be knowledgeable. If the current market environment rewards knowledge, and decisions based on superior knowledge assets are most likely to convey competitive advantage, then we must consider what knowledge is important. Three categories are explored in this paper (and in the class discussions). These include:

Environmental factors – Firms (i.e. managers, employees, decision-makers) must have knowledge about – and understanding of – the environment in which they operate. All aspects of the environment are important. The general environment requires knowledge about economic conditions, demographic factors, legal and regulatory trends, socio-cultural trends, and technological boundaries/opportunities. In the firm's more specific environment, knowledge about organizational culture, employee morale, strategic strengths and weaknesses, supplier relationships, customer preferences, etc. becomes a source of advantage. Firms must also be aware of conditions, factors, and trends in their industry and among their competitors. Knowledge of rivals' intentions and weaknesses can certainly be advantageous. At the same time, organizations must have self-knowledge – that is, they must have insights about their own strengths and weaknesses, such as is common in the typical SWOT analysis with which business professors will familiar.

Processes – In order to have an advantage in the marketplace, firms must have knowledge about the processes relevant to their operations. These processes include, but are not limited to, manufacturing processes (possibilities), management processes, marketing and sales techniques,

motivation, innovation, creativity, regulatory compliance, financing, accounting, public relations, etc. Essentially, managers must have knowledge about the management of each type of resource utilized by the firm. Human resources must be hired, trained, motivated, and managed. Financial resources must be acquired, allocated, and accounted for according to established legal and systemic principles. Physical plant and equipment must be coordinated and controlled. Processes exist for each of these elements of economic life, and firms must have knowledge of these processes to be successful. Beyond this, processes for relationships with external entities must be known and mastered. Regulatory processes, promotional processes, negotiation processes, and others require knowledgeable managers.

Cause and effect relationships – Firms must also have knowledge about why things happen the way they do. Senge (1991) notes that organizations that understand systems (engage in systems thinking) move in the direction of becoming learning organizations. This involves understanding numerous relevant cause and effect relationships. For every desired organizational outcome, firms must understand (have knowledge about) how to get from point A to point B. What is the *cause* of the outcome (*effect*) desired? And for every organizational action considered (cause), what are possible effects that may not normally be anticipated? For example, if a firm has a problem with employee turnover, knowledge of what *causes* turnover will be necessary before the problem can be solved. Not all firms have such knowledge in equal proportion. If a firm wishes to be more successful at innovation, knowledge about what *causes* innovation will be required. At the same time, firms considering shifting jobs to foreign facilities must have knowledge about the multiple *effects* such a move will have. Organizational change actions also

bring about a complex multitude of effects that firms should seek to understand as much as possible in order to anticipate problems in the process.

Having considered these categories of factors about which firms must be knowledgeable, we would move next to a consideration of steps in the process of managing knowledge assets.

Management of knowledge assets

If knowledge is the most prevalent source of competitive advantage in modern markets, then firms must consider what steps are necessary to manage knowledge assets. In my courses, I have simplified this into six steps. The process can be expanded and made more complex, depending on how much time the instructor is devoting to the subject.

Determine what specific information and knowledge is critical – For OUR firm, what specific knowledge is critical to our success, given our industry and our position and our strategy. What must we know to succeed? And what informational elements are necessary to create this knowledge? This process may require representatives from all parts and levels of the organization coming together for the specific purpose of its consideration. This is not a typical point of discussion in organizational meetings, and thus its inclusion in the knowledge management process is critical.

Determine sources of information and knowledge – Having agreed in general on the things that we must endeavor to have knowledge about, we must then consider the sources for this information and knowledge. As human assets represent a firm's greatest knowledge assets, much

of our knowledge is found in existing employees. Some knowledge we must acquire may be found through the hiring of employees with the knowledge we need. We must also consider informational sources necessary to create knowledge. Various media are critical here, including information systems; online news sources; trade and industry publications; training, development, and education; etc.

Disseminate information and knowledge – We next must determine how to disseminate knowledge throughout the organization. Intact knowledge, and information necessary to create knowledge, must be disseminated to the right person (people) at the right time, given the time-sensitive nature of information. At the same time, firms must consider whether boundaries ought to be placed on dissemination of information and knowledge in order to ensure the next step in the process. For example, executive information systems represent efforts to ensure specific people have access to specific knowledge and information resources at specific times.

Store and protect information and knowledge – Firms must develop systems and procedures to ensure that information and knowledge are stored for speedy retrieval when necessary, and that these assets are protected from destruction, theft, or over-dissemination. There is also the consideration of what to do with information or knowledge that seems to be of little present value, but which might have great value in the future. Firms that have the ability to store and retrieve information in order to turn previously useless information into valuable knowledge at some future point are said to have transformative capacity (Garud & Nayyar, 1994) a potential source of competitive advantage.⁸ For example, information regarding a rivals competitive

⁸ Garud, R. & Nayyar, P.R. 1994. Transformative capacity: Continual structuring by intertemporal technology transfer. Strategic Management Journal, 15: 365-385.

capabilities may be acquired in the course of gathering information about other factors. Such a piece of information may not make sense in the present context, but if it is stored, catalogued, and retrievable, the information may become a critical piece of information in the knowledge creation process at a later time when it becomes evident that this competitor is preparing for strategic moves.

Use knowledge – Having developed, disseminated, stored, and protected the firm's information and knowledge, we must discuss the use of knowledge. As a valuable organizational asset, knowledge must be used in order to bring about any potential advantage. Organizational actors must be able to recognize where knowledge assets are best employed. What decision scenarios require which knowledge assets. This is where wisdom begins to make a difference in organizational action. Employing knowledge assets in organizational processes sets in motion the forces that lead to competitive advantage, yet wisdom about when and how to best use these assets brings even more advantage.

Knowledge turnover – As noted earlier knowledge and information are time sensitive. Firms must manage knowledge assets to ensure proper turnover. Knowledge – or the understanding of how the world (or markets or other processes, etc.) works – is derived from informational elements, and information can become outdated quickly. To the extent that knowledge is based on information that represents “the state of things,” it will soon be obsolete as the state of things changes. Organizational decisions made on the basis of consumer surveys collected in 1972 are likely flawed. The discussion of knowledge management, thus, ends with the subject of ensuring the freshness of information and knowledge.

Conclusion

As one might imagine, the discussion of management of knowledge assets can be quite complex. I offer in this paper a roadmap of how it might be done, and I offer some of the insights I have incorporated regarding integration of our Christian faith and scripture in this discussion. I welcome and look forward to insights from other teachers and scholars on how this subject might proceed and take shape in the Christian business classroom.

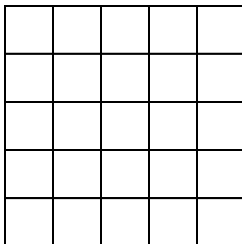


Figure 1a

Basic
Knowledge
Box

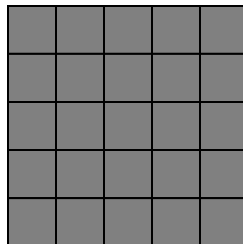


Figure 1b

Objective
Knowledge
Box

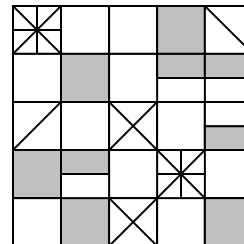


Figure 1c

Subjective
Knowledge
Box