

---

# The art and practice of being a revolutionary

---

Verna Allee

---

## The author

Verna Allee is President at Integral Performance Group, USA

---

## Keywords

Intellectual performance, Knowledge management, Performance measurement

---

## Abstract

Knowledge management professionals have a unique opportunity to help organizations shift from the mechanistic linear thinking of the industrial age to a more dynamic view of the world being ushered in by discoveries in the new sciences and human behavior fields. Intellectual capital and balanced scorecard approaches are still rooted in industrial age business models. An expanded perspective goes beyond human capital, structural capital and customer capital, to consider social capital and environmental capital. In this more dynamic view the value chain model of the enterprise is superseded by the idea of a value network operating on the principle of fair exchange of not just goods, services and revenue, but also knowledge and intangible benefits.

If we have learned to appreciate one thing in the remarkable groundswell of interest in knowledge, it is that what we create arises from what we value, desire, believe and conceptualize in the mysterious recesses of our hearts and minds. As knowledge management practitioners, we above all, must be attentive to the quality of our own thinking, our value foundations, and our collective meaning making as we gather together, compare notes, create models and suggest practices to our organizations and each other.

People working in the field of knowledge management find themselves living the paradox of having our feet in two worlds. One foot stands rooted (some would say stuck) in the corporate world of management practice as it has existed for several decades. The other foot stands in the fast moving but somewhat murky new waters of intangible assets and knowledge as the new economic foundation of organizations and companies. In the body of thought and practice loosely called knowledge management one can clearly see both perspectives in play. This gives knowledge management a unique flavor as a field of practice and also provokes confusion as we struggle with shaping our theories and practice.

## The knowledge paradigm shift

The underlying principles and concepts embodied in current theories of intangible assets and knowledge management represent a potentially profound shift of thinking about the world of enterprise and value creation. I say potentially because it is not at all clear at this point whether the field of knowledge management will genuinely embrace new thinking or be usurped in service of old management principles. The field is divided among those who are truly pushing the boundaries of thought and those that think they are doing something new, but are really coming from an old mindset.

Whenever a truly new and different body of thought arises, a peculiar social dynamic begins to take place, according to Michael Boisot in *Information Space*. Any radical alternative to the existing symbolic order appears in its early formative stages as a deviation, perhaps even a depravity or illness. When this happens, then "the social system will move to neutralize it either by

downgrading its ontological status, by making a special effort to incorporate it in existing schemes, or by attacking it outright” (Boisot, 1995).

Those of us who have been beating the knowledge drum since before the topic became popular are only too familiar with being used for target practice through outright attack, having our work derided as “too theoretical” or, worse yet, downgraded as “flavor of the month”. In light of such attacks, an incurable revolutionary simply stays the course, holds true to their work and lets such chips fall as they may. Eventually, ideas prove their own worth in application by achieving results or prove themselves as theories by offering a better explanation of how the world works. As ideas become validated gradually the attacks subside. Currently, such attacks come largely from those who know very little about the field and they are lessening all the time as companies achieve dramatic business results and strategic advantage from applying knowledge management principles.

The social phenomenon that is much more complex and harder to deal with is the subtle tug to incorporate a new perspective into existing schemes. This tendency is certainly alive and well in the field of knowledge management. Even those of us who are convinced we are introducing something dramatically new and different can fall back into what is tried, true and familiar. We may rearrange the deck chairs on our thought world with new language, but we have not at all made the leap from surface “ship” to “atomic submarine”. Too much of what we see in knowledge management, both as models and as tools, stems from old ways of thinking and old mechanistic engineering-based approaches. People unconsciously try to simply stretch their old perspectives and tools to encompass the new ideas, then wonder why they are not getting the results they hoped for.

We see this played out both in metaphors, models and analogies that are used by practitioners and in the analytical tools, intangible asset indexes and measures that become management tools and guides. It is easy to settle on analogies or frameworks without close examination, only to realize far down the road that we have in fact created a trap for ourselves that may seriously hamper our attempts to understand or communicate subtleties and complexities. At their worst,

bad analogies and metaphors may even badly mislead people or completely subvert the very principles we are trying to espouse.

It is vital to remember that the fundamental principles underlying knowledge management are dramatically different than the way we have traditionally thought about how value is created and what makes organizations successful. If we are not constantly on guard against old thinking we will fail to realize all the potential that the knowledge perspective can bring. It takes courage and persistence to continue to move forward from a new set of values and a profoundly different worldview.

### A larger global paradigm shift

Knowledge management is actually the current phase, possibly only a transitory one, in the evolution of Western thought from the Cartesian mechanistic worldview based on Newtonian physics to a more dynamic interconnected view that corresponds to insights gleaned from quantum physics, complexity theory, behavioral science, and living systems. Knowledge management practitioners can play a powerful role in helping the economic and business world translate this new understanding of life that has emerged in recent years in terms of what this means for the way we do our work and how we manage organizations. We are uniquely poised to help heal the split between strong human values and old business models where they are irrelevant. However, we can only do this if we are clearly grounded in the new principles ourselves. Many people practicing as experts in knowledge management have little understanding of these new theories or the implications for their own practice.

Marilyn Ferguson and Fritjof Capra described this larger emerging paradigm shift in the early 1980s (Ferguson, 1980; Capra, 1982). Somewhat later, Willis Harman, founder of the Institute of Noetic Sciences, explored the implications of this shift for business leadership in his book *Global Mind Change* (Harman, 1988). Even though the roots of knowledge management thinking are not directly attributed to this powerful global shift in consciousness, clearly the way the thinking around knowledge and enterprise is evolving is more and more compatible with a dynamic systems perspective of the world.

Peter Drucker (1993), Paul Romer of Stanford University, Charles Goldfinger and others have articulated this shift in terms of the knowledge economy in various ways. The core thread of insight weaving through all their work is that knowledge simply does not behave like natural resources. Knowledge and ideas can replicate and multiply endlessly; material resources do not. Natural resources deplete with use. Knowledge expands with use. If a natural resource is sold or given to another it is at the expense of whoever had to give it up. However, sharing knowledge allows both parties not only to retain the resource but to amplify and expand it through the exchange process itself. This multiplier effect of knowledge as a resource means significantly different economic equations must be brought to bear than in the past.

Further, the business practices and management principles that we are learning to operate by are very different as well. The industrial era enterprise models are no longer adequate to meet the dynamic conditions of an ever-changing world market. Knowledge intensive enterprises are calling forth a new approach to work, organizations, accounting, and business. In light of this economic shift, Table I demonstrates a sampling of some of the ideas that are emerging.

Along with this there is a corresponding shift that can be seen running throughout recent management literature. The threads of this new body of management thought

demonstrate more human values and the perspective that people must be treated with respect and dignity to foster their highest creative efforts. This new thinking is also pervasive in the way knowledge management practitioners approach the social dynamics of knowledge creation, sharing and renewal (Table II).

The difference between these two worlds is readily apparent with this comparison chart. They are rooted in very different sciences and thus originate from quite different assumptions and perspectives. Both perspectives are useful for understanding events. Newtonian physics did not become totally obsolete just because we now understand quantum physics. It does, however, limit our understanding when we try to apply its principles to the behavior of complex systems such as organizations. Now that we understand more about complex systems our challenge is to successfully and appropriately apply the insights and principles of both Newtonian physics and quantum physics.

At the enterprise level this shift to new fundamentals is causing a reevaluation of virtually every aspect of organizational and economic life from how we define value to questions of ownership through the quest to find meaning in our work and even “spirit” in the workplace. Consider though that almost every analytical method and tool used in business and economics came out of the old industrial model and its underlying

**Table I** Evolution from industrial age to new economy

Regarding ...	Old thinking	New thinking
<b>Resources</b>	Only finite resources of materials available from earth's crust	Finite and potentially infinite resource of ideas created by human minds
<b>Creation principle</b>	No increase in actual sum total of material things	Increases actual sum total of knowledge and ideas
<b>Employing law of</b>	Diminishing returns due to scarcity of resources resulting in increasing costs per unit	Increasing returns as replication of discoveries leads to falling costs per unit
<b>Markets</b>	Commodity markets based on same products and resources	Value-added markets based on distinctly different products
<b>Ownership</b>	Property rights of things in perpetuity	Limited-time property rights of patents
<b>Goals</b>	Goal is efficient production, extracting efficiencies from labor and machines	Goal is bolstering future discovery through development of human creativity and knowledge
<b>Organization of labor</b>	Division of labor	Peer-to-peer networks
<b>Operative system dynamics</b>	Tragedy of the commons when people share and deplete same resource	No diminishment of resource when ideas are shared
<b>Value creation</b>	Value chain of simple relationships	Value networks of complex, interdependent, dynamic relationships

**Table II** Complementary shift in organizational and managerial thinking

Regarding ...	Old thinking	New thinking
<b>Scientific foundations</b>	Newtonian physics, engineering	Quantum physics, natural and behavioral science
<b>Management focus</b>	Predictability and control	Understanding, insight, coherence
<b>Employment</b>	Employee based	Contract based
<b>Information</b>	Ultimately knowable	Infinite and unbounded
<b>Knowledge</b>	Individually focused on single learner	Collectively, collaboratively, organizationally focused
<b>Ethics</b>	Competition and individual survival	Cooperation and survival of the network
<b>Law of success</b>	Competition	Cooperation
<b>Inner life</b>	Not relevant	Very important
<b>Feelings are</b>	Interference	Feedback, source of insights
<b>Time is</b>	Monochronic (linear, one thing happening at a time)	Polychronic (non-linear, many things happening at once)
<b>We understand by</b>	Dissecting into parts	Seeing wholes and dynamic relationships
<b>Growth is</b>	Linear, manageable	Organic, chaotic
<b>Organization is</b>	By design	Emergent
<b>Governance should be</b>	Directed from the top	Distributed, democratic
<b>Workers are</b>	Specialized, segmented	Multi-faceted, adaptive always learning
<b>Motivation is from</b>	External forces and influence	Intrinsic creativity and core beliefs
<b>Change</b>	Something to worry about	All there is

Newtonian worldview. Too often in exploring these very new ways of looking at the world, we fall back on mechanistic analogies and production line tools such as flow charts. How many consultants, I wonder, eagerly tell their clients they are going to help them “do” knowledge management and then begin with a flow chart – a tool that originated to address linear, mechanistic processes? This dynamic new world of knowledge and value will require a very different new generation of tools and lenses.

In knowledge management we are particularly challenged to come at our work with new thinking. We are as guilty as anyone of falling into mechanistic models and mindsets. We will explore some of the popular models in both intellectual capital and knowledge management to see if we are really supporting the shift to something new or have fallen into the trap Boisert describes of trying to pull the new thinking back in to the way we already operate.

### **Intellectual capital and balanced scorecards: is our view still too small?**

As the new knowledge economy forces a radical rethinking of corporate value, we are beginning to realize that a company’s value consists of more than what is shown in its traditional income statements and value

sheet. Hidden or intangible assets are playing a more important role as companies now trade at multiples of their book value. What investors are valuing is that company’s future financial capital based on their mostly intuitive assessment of its competitive position, growth record, brand image, partnering capability, innovation potential and management practices. These value judgments factor in intangible assets such as employee competence, computer systems, work practices, relationships, customer lists and trademarks rather than physical assets such as property and equipment.

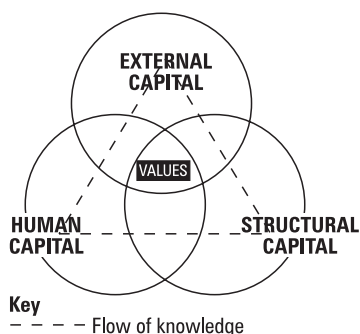
Our understanding of intangibles has taken a dramatic step forward since the mid 1980s when Karl-Erik Sveiby introduced the concept of intangible assets to managers in Northern Europe and Scandinavia (Sveiby and Risling, 1986). A number of new accounting approaches have since been proposed to explain, measure and manage these hidden assets. Among these are the intellectual capital methods of Karl-Erik Sveiby (1997) and Leif Edvinsson (Edvinsson and Malone, 1997), and in the USA we have seen the balanced scorecard approach of Norton and Kaplan (1996). There are also a number of other experiments such as Kanavsky and Housel’s (1995) system for calculating knowledge valued added, as well as considerable progress in calculating economic value-added or EVA. Important work in this area

includes the Brookings Institution project in intangible assets spearheaded by Baruch Lev of New York University and Steve Wallman, former Commissioner of the American Securities and Exchange Commission. These are serious attempts to develop new indexes, equations, measures and analytical approaches for calculating knowledge assets and understanding intangible value creation. All this adds up to a serious attack on traditional accounting and enterprise models that only regard revenue and physical assets as “valuable”, and that regard people as liabilities rather than important resources and investments.

However, a closer look at some of these more popular approaches reveals a view of enterprise that still holds serious limitations if we attempt to follow the new thinking out a bit further. For example, a number of innovators (including Karl-Erik Sveiby, Hubert Saint-Onge, Gordon Petrash, Charles Armstrong, Leif Edvinsson, and Patrick Sullivan) use some variation of Figure 1 to describe the components of intellectual capital or the intangible assets of a corporation. (The Skandia Navigator model of Leif Edvinsson also considers renewal and development as a separate category.) This early model is quite robust as a way to express many of the fundamental concepts and is spreading widely in practice.

The basic idea is that value is generated through facilitating the flow of knowledge across the enterprise and converting that knowledge to value in the form of relationship capital, human capital and structural capital. Maximizing knowledge flow and value creation is dependent upon key enablers such as technology, culture and measurement. Organizational capability requires the ability to see knowledge patterns and build systems that free people to do what they do best, with

**Figure 1** Popular model of intellectual capital



appropriate networked technologies and information systems. At the core of the framework one often sees the word, “values”, suggesting that there are a set of core values, such as respect for individuals or trust, that support knowledge creation and value conversion. Adopting such values widens the pipeline so to speak and increases or constricts the movement and exchange of knowledge. The goal is to convert knowledge to value or “capital” throughout the enterprise (see Table III).

In this view of intellectual capital or intangible assets (Figure 2), the interplay of the three types of capital generates business value, as enabled by knowledge flows and a culture of learning. The model captures the sense of a company in motion as it converts skills and knowledge into wealth and competitive advantage. The quality of the synergy among these three components and the capacity for leveraging the flow of knowledge determines a company’s capacity to generate sustainable value.

### Compared to the balanced scorecard

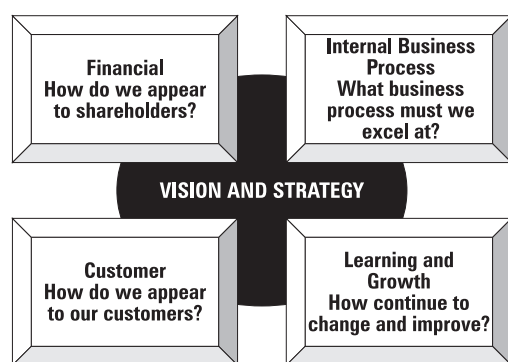
Another popular approach for expanding organizational performance indicators is the balanced scorecard of Norton and Kaplan (1996). In this approach four measurement categories are integrated with a company’s strategy and vision. One typical way of picturing this is as four boxes or categories as shown in Figure 2.

In comparing these two models, the balanced scorecard does not appear to be based on a dynamic model of value creation but rather on a “balance” model. As long as comparable weight is given in each of the quadrants the basic purpose of the model has been achieved. The Intellectual Capital model, on the other hand, suggests that the dynamic flow or utilization of knowledge increases capital accumulation in the areas of external, internal and structural capital. It therefore suggests a theory of knowledge and value creation that is a more dynamic model than the balanced scorecard.

Both of these approaches have expanded our thinking about value creation and organizational performance metrics in very important ways. Both have emerged in response to a felt need to see, measure and understand more of a company’s dynamics

**Table III** An emerging model of intellectual capital (or intangible assets)

External capital	Human capital	Structural capital
<b>Alliances and relationships with customers, strategic partners, suppliers, investors and the community. Includes brand recognition and goodwill</b>	Individual capabilities, knowledge, skills, experience and problem-solving abilities that reside in people in an organization	Systems and work processes that leverage competitiveness. Includes IT, communication technologies, images, concepts and models of how the business operates, databases, documents, patents, copyrights and other "codified" knowledge
<b>Other terms used for external capital include "customer capital" or "stakeholder capital"</b>	Other terms used for human capital are "human competence" or "people"	Structural capital is often referred to as "internal capital"

**Figure 2** Balanced scorecard of Norton and Kaplan

than can be experienced through financial measures alone. However, they do not quite yet capture the essential nature of the knowledge economy because both are still too focused on an old idea of enterprise with traditional boundaries about what is "inside" and what is "outside". The old thinking about the enterprise assumes a company to be a relatively closed system except for very specific supplier inputs and outputs where there is direct revenue exchange with the customer. The intangible asset model begins to expand this view, but only in a limited way.

### Beyond the boundaries

Creating more measurement categories within the old corporate "walls" still falls short of what might be possible if we are really embracing the new thinking. A truly dynamic, whole system view of the enterprise extends far beyond the boundaries of the company. Companies do not exist in a social or environmental vacuum. However, rarely do business models include dynamic exchanges with larger society or with the earth and its

resources. This is a dangerously narrow view of both economics and enterprise as both social and environmental factors are increasingly impacting businesses in dramatic ways.

There is a definite progression toward thinking about the enterprise at least from a more sociological perspective. For example, we are beginning to appreciate that companies are actually composed of multiple overlapping "communities of practice". A community of practice, as defined by John Seely Brown, Vice President of Xerox, is composed of peers in the execution of real work. What holds them together is a common sense of purpose and a real need to know what each other knows. Top practice companies in knowledge management have evolved from a narrow view of knowledge as documents and artifacts to knowledge as a dynamic living social phenomenon. Companies such as British Petroleum, Johnson & Johnson, Buckman Laboratories, General Motors, Pillsbury, The World Bank, Hewlett Packard, the large consulting groups, Xerox, and Chevron are all achieving outstanding business results by focusing on these internal communities. Some internal knowledge managers are even starting to embrace knowledge networks in their job titles. However, even here we see a company-bound idea of community.

Companies are also located in and interact with external communities, both locally and globally where they act as corporate nodes in the larger social system. Peter Drucker (1992) goes so far as to describe society in any developed country as a society of organizations, meaning most if not all tasks are done in organizations, whether public or private. This implies an interdependency between organizations and society that is largely

ignored in management and business models, particularly in the USA Social concerns do play a somewhat stronger role in Europe. Even there, however, addressing social capital issues has only recently evolved to being considered as vital to corporate success and not as “interference” with the business agenda.

Enterprises and organizations are not only the fabric of larger society, they are in turn dependent on that larger social system for employees as well as direct customers and a larger consumer community. An example of this interdependency is a recent concern expressed by Silicon Valley companies that the poor quality of the school system is beginning to severely impact their businesses. Not only can they not get the qualified knowledge workers they need, people are leaving the valley because they do not want to raise their children there. Such dilemmas underscore that we cannot continue to view the larger social system as something that is disconnected from everyday business concerns.

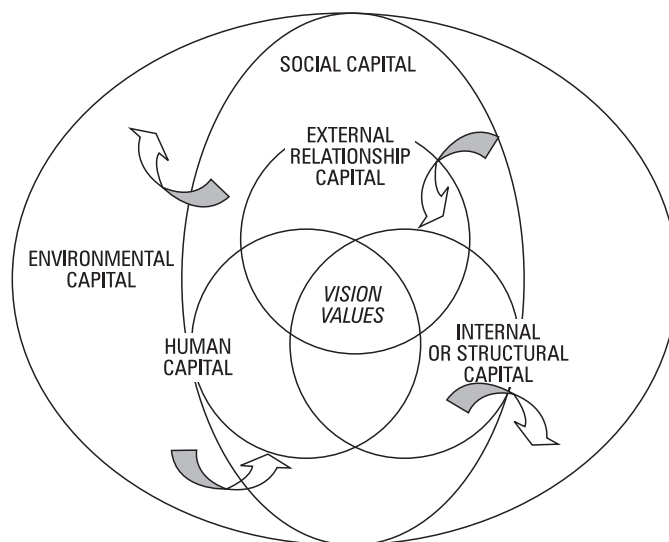
At an even higher macro level, we have traditionally viewed environmental concerns as basically unrelated to our business models, other than in regard to relationships with regulatory bodies. This is also an unrealistic blind spot in our business model. How can a pharmaceutical company not be concerned with biodiversity? How can any business thrive if the quality of life is so poor that most of the world’s population is struggling for their daily food? We are beginning to be much more aware of the precarious perch we are creating for ourselves in the larger ecosystem and the trend toward “green” business practices will undoubtedly continue. Already many companies are demonstrating that it is possible to be successful while embracing management practices that are grounded in social responsibility and sustainable environmental practices. In light of these emerging issues it only makes sense to bring both society and the earth into the enterprise value equation. Without addressing these concerns, we are in danger of creating yet one more view of enterprise and economic activity that is disconnected from the web of life.

If we embrace this larger perspective then the business model of value creation would include both social and environmental capital as well as the other categories of human, structural and customers. Social capital

would refer to the quality and value of relationships enjoyed with larger society through the exercise of corporate citizenship as a member of local, regional and global communities. Attending to environmental capital would mean finding ways to calculate the true costs of resources consumed by an organization and determining equitable exchange or renewal of expendable resources through contributions to the health and sustainability of the environment.

This larger perspective, at first glance, would appear overwhelming to address in most companies. Yet, I am finding that people respond positively to this framework at a fundamental human level. It is not so much a question of whether or not these things are important; clearly they are. The real question is how will we address them? Can we bring coherence and integrity to our business models in light of the higher values that we hold dear? For us as knowledge management practitioners and potential revolutionaries, the question is whether we will stay cozily in our own comfort zones or whether we will have the courage to address these difficult and complex questions. Can we approach our work from a larger more holistic perspective? Can we stretch our own boundaries of practice and our value models to integrate the good work that has gone on in view of social responsibility and sustainable enterprise fields for decades? (see Figure 3).

**Figure 3** An expanded view of Enterprise Value Domains. Arrows represent dynamic value exchanges that are multi-directional and extended across all domains



## Knowledge flow or dynamic exchange?

The dotted line in the Ven diagram for Intellectual Capital (Figure 1) denotes the flow of knowledge as the primary vehicle for value creation. Even within the limited scope of thinking around the knowledge based enterprise, viewing knowledge in this way has led people to focus on processes for knowledge creation and sharing across the enterprise, based on the belief that enhancing the flow of knowledge will lead to greater enterprise value. Following this logic, people are developing new measures for knowledge sharing, as well as metrics for increases in external, internal or human capital.

Let's take a closer look at this idea of "knowledge flow". This term comes easy for knowledge management advocates, but it is problematic when we try to regard it as the critical factor for knowledge creation. The flow of knowledge is no more useful than the flow of electricity through the walls of a house. Only as that electricity is applied to operate specific appliances does it become useful or valuable to the occupants of the house. In terms of enterprise, knowledge flow is only relevant when it contributes to the process of converting knowledge to value. If we are to understand the knowledge conversion process, then we must learn to understand how specific exchanges, applications or transactions contribute to value and what conditions enhance those processes. This is much more complex than simply tracking or measuring "flow".

Another aspect of knowledge that presents a challenge in analysis is that knowledge does not flow or exchange in the same way as other materials. If I hold an apple in my hand then give it to you, I no longer have it. With knowledge there is seldom such a pure exchange. If I give you my knowledge, I still have it to use for my own purposes. Further, in the very act of exchanging our knowledge, we amplify it and expand it, perhaps we even create new knowledge, thus expanding the resource. From this standpoint too, what I call the amplifier effect, the concept of "flow" becomes cumbersome.

Nowhere in knowledge management does the clash of old thinking and new thinking show up more vividly than in the way people attempt to address knowledge flow and converting knowledge to value. Most of our flow analogies and metaphors arise from the

physical world, such as the flow of liquids. Especially pervasive in this field is the language of "stocks and flows" that has its origins in system dynamics. System dynamics assumes that organizational behavior is determined by structure and is best understood in terms of underlying flows instead of in terms of separate functions. This was an important advancement in managerial thinking and I in no way want to diminish the importance, relevance or helpfulness of system dynamics in thinking through many organizational and knowledge management issues. I do believe, though, that we need to seriously question how readily we attempt to apply it as an analytical tool to the social processes of knowledge creation and the way we convert knowledge to value. The flows that are commonly worked with in system dynamics: material, money, people, capital equipment, orders and information behave very differently than the mostly tacit knowledge that resides in an organization.

Since the popular model of intellectual capital has the flow of knowledge as its key dynamic, people have fallen rather easily into a leap of logic around this idea of stocks and flows. The thinking goes that if we simply increase the level, rate or quality of knowledge flow in the organization that accumulation of intellectual capital "stock" in the form of human, structural or relationship capital would naturally follow and that value will increase. This leads to all sorts of strange models and analogies that simply fail to communicate how wealth or value actually accumulates. I have seen one consultant go so far as to pour water into a glass saying knowledge is like water and all we need to do is increase the absorptive capacity of the organization to soak up more knowledge and that will increase intellectual capital. Others talk about how trust "widens the pipeline" so that more knowledge can flow. While these analogies are useful to a point, they do little to help us understand how knowledge flow really contributes to value creation. The reason we focus on knowledge is not to have "more, better, faster", knowledge – but to create value. We might even find that converting knowledge to value has more to do with "less" and "slower" in some way that we can't yet begin to imagine or explain.

The idea of flows still is useful for understanding certain aspects of knowledge, such as the flow of messages, information or data.

However, the flow concept alone is far too limiting. In addition, I find two other concepts useful. The first is to expand the concept of flow to the consideration of dynamic exchanges. This is much more in line with new thinking about an interconnected universe of complex interdependencies. Flow suggests only one direction, while the idea of exchanges suggests that for every action or transaction, there is some sort of response, a more immediate impact or reaction that can be understood appreciated, and perhaps even measured in some way.

Further the idea of exchange allows us to expand our thinking to yet another concept – that of the field. A few individuals are beginning to wonder how what we understand about various types of energy fields might relate to organizations. What are the dynamics of the “field” in which the exchanges take place? At British Petroleum they are addressing the “field” when they focus on “right conditions” for knowledge sharing. In the intellectual capital model, values help shape the knowledge sharing “field” of the organization. Related to this idea, using insights from Gestalt psychology, we can begin to view knowledge creating communities of practice as “the ground” from which the knowledge “figures” or explicit knowledge objects emerge. When we start to put these three concepts together: flow, exchange and field, we have a much richer set of analogies and metaphors that bring us closer to the language and concepts of the new sciences.

### Value chains or value networks?

Another pervasive linear, mechanistic concept that seeps into our work is the traditional model of enterprise value creation as the value chain. Value chain is the term used to describe the way raw goods or materials are shaped through the production process. The beginning point is raw material and the end point is delivery to the customer. There are many variations of this model in business literature. More recently we have seen the concept of the value chain applied to knowledge products and service, described as the virtual value chain by Jeffrey Rayport (1995). The virtual or knowledge value chain turns raw information into services and products that are unique to the information world. This model is still based on the industrial

production line of inputs, processing, and outputs. However, it is a step forward into the world of knowledge in the sense that knowledge and information are processed to add value, rather than raw physical materials.

This concept of the value chain is an important one in modern management thinking. However, even with the inclusion of knowledge or information as the input, it is still a mechanistic worldview. It stems from a linear business model that is rooted in the industrial age production line. Despite much hype in recent years about the networked economy, whenever we speak of value the term in common usage is still “value chain”. Because it is so familiar, it is particularly tempting to try to “stretch” this old way of thinking to apply it to the idea of knowledge and value creation. However, it is useful for only a very limited range of knowledge products and falls far short as a way to think about knowledge in a larger sense.

It is inevitable that this value chain model will be superseded by the idea of the Value Network. All the variables of knowledge and value exchange both within the firm, with its extended stakeholders and industry partners, as well as across the extended enterprise domains of society and the environment encompasses an enormous amount of complexity. Our old ways of modeling the enterprise: value chains, organizational charts, process diagrams and workflow are woefully inadequate, slow and cumbersome when we attempt to address the key business question of “how can we understand knowledge and value creation?”

Before we can understand the dynamics of a value network we must first move to a new definition of value. We must consider value beyond monetary value, which people have already acknowledged is far too limiting. An expanded definition of value would be a tangible or intangible quality, good, knowledge, benefit or service that is desirable or useful to its recipient so that they are willing to return a fair price or exchange. Each of these types of value are themselves a medium of exchange, not just money. In other words we may exchange knowledge directly for knowledge. We also might exchange knowledge for tangible goods, services or money. We could also exchange knowledge for an intangible value such as customer loyalty, a strategy Sun Microsystems employed by giving away its Java programming language in

order to build a loyal web of users for Java technology.

A value network generates economic value through these complex dynamic value exchanges between one or more enterprises, its customers, suppliers, strategic partners and the community. Such networks operate on the principle of fair exchange for all types of value. Within a value network there are many non-monetary exchanges of knowledge and benefits as well as revenue exchanges. This means value flows are not simply one directional, but are interwoven, interdependent and multidirectional. The value flows cycle and loop back in a complex series of exchanges, encompassing many threads or chains of value. When we model a Value Network we produce a view of the world that looks much more like spaghetti and meatballs than an engineering schematic, value chain or flowchart. Yet, new modeling approaches can be every bit as rigorous as analysis tools of the past, and can actually encompass much more complexity.

Shifting to this larger perspective of the Value Network is more in line with the way the nature of business relationships is changing from close intimate and formal ties to more general, free flowing, informal and constantly changing relationships. Contractual worker relationships, strategic alliances and creative partnerships are challenging the old boundaries of where one enterprise stops and other begins. The social, economic and political ramifications of this new order of enterprise will be enormous. Policy makers, legal experts, and business leaders will be challenged in reconfiguring not just the enterprise, but also the existing laws and supporting social structures.

Today, people are beginning to appreciate that quality relationships and trust lie at the core of a successful value network. This means values, principles, and ethics are critically important to the success of a value network. Core values such as integrity, honesty, responsibility, inclusion and respect contribute heavily to creating the "right conditions" for fair exchanges to take place. In the old competitive business environment, one could sacrifice a relationship for the sake of a short-term gain. In this more complex and open world of Value Networks, such actions tear at the fiber of the social fabric and damage a company's standing and trust, impacting its value creating capacity at

multiple levels. Consider the very different ethical responses of Johnson & Johnson with the Tylenol poisoning incidents and that of Exxon regarding the Valdez oil spill in Prince William Sound. Johnson and Johnson took actions that preserved trust in the company, while Exxon's belated and grudging response heavily damaged its customer goodwill. The ethical behavior of the two firms decidedly impacted their profitability and valuation over the months and years following each of these incidents.

In a world of Value Networks, concepts such as knowledge flows, exchanges and "fields" all begin to make more sense. Exactly how we will understand these networks and their dynamics and what tools will prove most useful is yet to emerge, although a few practitioners have made promising early progress. Many insights and breakthroughs most likely will come from discoveries about complexity and self-organizing systems. A number of different disciplines have explored various aspects of networks, such as the body of research in social networks and collaboration, but we have yet to integrate their discoveries into knowledge management practice in any significant way. Being a true revolutionary means looking outside the current models and mindsets to encompass new thinking and discoveries across a wide variety of disciplines.

## Conclusion

Knowledge management professionals have a unique opportunity to help organizations shift from the mechanistic linear thinking of the industrial age to a more dynamic view of the world being ushered in by discoveries from a wide variety of scientific and human behavior fields. Knowledge managers must work closely with business leaders to question and rethink underlying business models in order to incorporate the new fundamentals for successfully leveraging knowledge to create value. As we reshape assumptions, beliefs and mental models of what constitutes success, we can begin to reconcile the split between the urge to include more holistic perspectives and higher values in the world of work with outdated business models that simply make that impossible.

We can only succeed in this if we are constantly alert to the quality of our own thought and the way we practice our

principles and beliefs. Linear out-dated thinking currently is pervasive in the field in the language of the value chain and the engineering-based tools and metaphors that are popularly employed. However, we have the opportunity to be true revolutionaries and constantly push the boundaries of our own thinking, reach for our highest and best values, and discover new analytical approaches that will truly bring us closer to the holistic worldview that is so powerfully emergent in this era. Only then can we realize the potential of this movement to open up the world of enterprise and commerce to questions that truly matter as we struggle for a sustainable and healthy future on the planet.

## References

- Boisot, M. (1995), *Information Space: A Framework for Learning in Organizations, Institutions and Culture*, Routledge, London, p. 129.
- Capra, F. (1982), *The Turning Point*, Simon & Schuster, New York, NY.
- Drucker, P. (1992), "The new society of organizations", *Harvard Business Review*, Vol. 70 No. 5, September-October.
- Drucker, P. (1993), *Post-Capitalist Society*, Harper Collins, New York, NY.
- Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower*, Harper Business, New York, NY.
- Ferguson, M. (1980), *The Aquarian Conspiracy: Personal and Social Transformations in Our Time*, J.P. Tarcher, Los Angeles, CA.
- Harman, W. (1988), *Global Mind Change: The Promise of the Last Years of the Twentieth Century*, Knowledge Systems, Indianapolis, IN.
- Housel, T. and Kanavsky, V. (1995), "A new methodology for business process auditing", *Planning Review*, Vol. 23 No. 3, May/June.
- Kaplan, R. and Norton, D. (1996), *The Balanced Scorecard: Translating Strategy into Action*, Harvard Business School Press, Boston, MA.
- Rayport, J.F. (1995), "Exploiting the virtual value chain", *Harvard Business Review*, November/December.
- Sveiby, K. (1997), *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*, Berrett-Koehler, San Francisco, CA.
- Sveiby, K. and Risling, A. (1986), *Kunskapsforetaget* (the Know-How Company), Liber, Malmo.