Good afternoon, and thank you both for the introduction and for the invitation to be with you here today.

The ideas that I want to talk about emerged as a result of a traumatic experience our organization went through in the early 1980s. Our company was acquired in a wildly over-leveraged buyout on the eve of the worst business downturn since the Great Depression. Almost overnight we went from being a moderately well-run, growth organization to an insolvent wreck.

We were thrown from Order into Chaos, and in the months that followed we were forced to reexamine every aspect of our business operations. The crisis was so great that we were compelled to articulate and reconsider everything we believed about the nature of people and the role of business organizations. In short, we were compelled to make explicit our own personal and organizational philosophies. It is a process that continues in our organization today.

I have since come to believe that this reaction is the natural response of both individuals and organizations when faced by crisis. It is essentially what happened in the well-known Tylenol-tampering incident, when the managers at Johnson and Johnson, faced with a problem falling well outside their standard operating procedures, were forced to fall back on their credo — their statement of their most fundamental values — in their search for a guide as to what action they should take.

Philosophy

So, my topic today is really philosophy and its application to experience. I want to throw some light on the philosophical assumptions that I think underlie much of our conventional thinking about cognition in people and their organizations. I want to suggest what I think is a more helpful philosophical framework and finally, give you some illustrations of how this framework is a useful guide to action. Some of you may feel that what follows is pure fantasy, but you will have to agree that at least it's in the right setting!

Of course, I am not a professional philosopher. Yet I am a philosopher, and I believe that all of us are philosophers. For behind the daily activities of people and their organizations there is a hierarchy of frameworks of assumptions, many of them tacit, about how the world works, a series of philosophies or theories-in-use. This afternoon I want to explore some of the upper levels in this hierarchy.

My justification for talking to this audience about philosophy is that it seems to me that management science and practice in North America is in a state of intellectual disarray, not dissimilar to that faced by classical physics in the early part of this century. Judging from the behavior of managers and the advice given to them by consultants, the majority of management practitioners and theorists believe in a mechanical, Newtonian world where objects and events are simply located in time and space. Such a world can be observed accurately by a detached, objective observer and acted on systematically by a rational manager. Just as is the case with classical physics, this framework works well when we deal with stability and the routine organizational interactions that fit the machine model on which it is based.

But, I want to argue, it breaks down as soon as we leave this same middle ground and have to deal with radical change and creativity — with the renewal of established organizations and the genesis of new ones. The theory breaks down as soon as we have to deal with the complex imaginative processes that, I believe, are so critical to the creation of competitive advantage.

One-World Theory

I like to think of this prevailing management philosophy of radical realism as a “one world” theory of the universe; the belief that we live in one world, a mechanical or perhaps electrochemical machine or computer of which we are part. One-world theories have been around for a long time. The early Greek philosophers developed several of them. They would never have thought of the world as a machine; for them it was an organism, alive and self-creating. Nevertheless, it was their preoccupation with the physical world, with substance, that laid the foundation of our own preoccupation in the West with the prediction and control of the material world. In contrast, another one-world theory — that of Eastern mysticism — dismisses our perception of the physical world as an illusion and has led many cultures to a fatalistic withdrawal from material concerns.
Two-World Theory

Perhaps because of the Greeks’ concept of the world as a creative organism, the Greek model of a world that was alive proved extremely durable. Via Aristotle and Thomas Aquinas, it was incorporated into the Christian religion, where it served for hundreds of years until it was shattered by the emergence of the mechanical metaphors of the Renaissance. Or, rather, it was split into what one might call a “two-world” theory. In this theory, inanimate matter was split from animate mind and the existence of both a physical world and a mental world was accepted. But a fierce debate broke out about the relationship between the two. That is, how does a nonmaterial, unextended entity, like the mind, act on the material, extended entity of the body? It was Descartes who first encountered the mind-body problem, and it has bedeviled two-world theories and philosophy ever since.

Now there were two popular “solutions” to this problem. One — scientific realism — was to deny the existence of mind and say that all could be reduced to matter. It is from this “solution” via Hobbes and the British Empiricists that the philosophical views of so many managers seem to come. The other solution — absolute idealism — was to deny the existence of matter or, at least, deny our ability to know its true nature. Via Kant, this would become the foundation of European idealism.

Now, just in case I give you the wrong impression of our organization, let me hasten to assure you that we are not some kind of Platonic Academy. When I asked the president of our steel trading operations if he’d ever heard of Immanuel Kant, he replied that he thought that “Manny” Kant was a scrap dealer in Florida!

But I’m sure you are wondering of what earthly use this kind of stuff can be to practicing managers. Well, I believe, as West Churchman suggested some time ago,1 that the debate between the realists and the idealists is a continuing one and needs to be raised in every knowledge system. For while realism has been very successful in its reduction of mind to matter, its success has been its use as a methodology — finding answers to given questions. It has been quite unsuccessful as a philosophy — as a means of finding good questions.

Three-World Theory

So, like Churchman, I am proposing a dialectic between realism and idealism, and this process is best conducted from a “three-world” theory of the universe. Three-world theories have also been around for a while. Plato’s was perhaps the first one to be developed, with his concept of a physical world of nature, a spiritual world of the soul, and the world of ideas or eternal forms. Hegel’s and perhaps Whitehead’s systems are more modern examples.

What I would like to do today is to explore some ideas based on a three-world theory propounded by the British philosopher Sir Karl Popper and his colleague, neuroscientist Sir John Eccles.4 Popper is well known for his work on the logic of scientific discovery. He is less well known for his three-world theory, which is a product of his later philosophy.

Popper contends that we live in three worlds. The first of these, World 1, is the real physical world of matter and energy. The second, World 2, is that of mental processes, both conscious and unconscious; while World 3 is that of products of the human mind, or objective knowledge, as he calls it.

Popper’s World 3 has much in common with Plato’s world of ideal forms. But World 3 is not an eternal world; it is a changing one, an evolutionary world loaded with fossils and relics from the past, but continually being added to by new products from the human mind. Indeed, what separates these three worlds from each other is not space but time. Each has its own time orientation.

One can think of World 1, the physical world, as being the perpetual present, ever changing, but often at rates that are either too fast or too slow for us to detect. Hence our illusion that it is a static material world that is always present — a “given.”

World 2, the mental world, is also a world of process. One can think of it as a future-oriented process, an enquiring system capable of making fine differentiations and great integrations in the search for coherence, self-actualization, or “becoming.”

World 3, the world of objective knowledge, consists of constructs developed in the past. As I have suggested, it is a fossil deposit of answers to questions that have already been asked. As George Kelly, the psychologist, has put it:

“Man looks at his world through transparent patterns or templates which he creates and then attempts to fit over the realities of which the world is composed. The fit is not always very good. Yet without such patterns . . . man is unable to make any sense out of it. Even a poor fit is more helpful to him than nothing at all.”5

World 3 consists of these patterns and templates.

Information

That’s the three-world theory, much condensed. I would like to explore the interactions of the worlds by talking more specifically about information. As I said a few minutes ago, many management practitioners and theoreticians appear to hold radical realist beliefs about the world in general and information in particular. Dean Donham wrote in the first volume of the Harvard Business Review:

“The task of developing business theory scientifically is first, the recording of facts; second, the arrangements of these facts into series and relationships; third, the development of generalizations which can be safely made only upon the basis of such recorded facts.”6
This view of information as a substance, a World 1 object with an existence independent of theory, is found throughout management writings. In the 1960s, for example, in his popular book *Principles of Management*, George Terry wrote about what he called the “principles of facts and planning”: “To design an effective plan, it is necessary to obtain all the available pertinent facts, face the facts, and in the plan include the action that the facts dictate.”

The situation does not get much better after that. In more recent times, I believe that our notions of what constitutes information have been overly dominated by concepts from information theory and the widespread use of the digital computer as a metaphor for the mind.

Managers have been encouraged to assume that facts are rather like the data processing concept of bits of information. A bit is always a bit and appears to have an existence independent of theory. Most managers today would probably agree with Herbert Simon’s statement of nearly 30 years ago:

> Nowadays, with the advent of computers, we can think of information as something almost tangible; strings of symbols which, like strips of steel or plastic ribbons, can be processed — changed from one form to another.”

Popper classifies these approaches to information under what he calls the “bucket theory” of knowledge. The belief is that our mind is like a bucket that is originally empty — or more or less so — and that, via perception, material enters through our senses, accumulates drop by drop in the bucket, and is digested. Perception is the passive receipt of information through our senses. In his theory of knowledge Popper replaces this passive concept of perception with the active notion of observation. He writes:

> “At every instant of our development we are living in the centre of a ‘horizon of expectations’ . . . [which] plays the part of a frame of reference [that] confers meaning or significance on our experiences, actions and observations.”

Popper calls his theory of knowledge the “searchlight theory of the mind.” The mind searches for facts in the light of prior expectations. In a way we are indeed like drunks searching for lost coins under streetlights because that is the only place we can see. Popper puts it this way:

> “Science never starts from scratch; it can never be described as free from assumptions; for at every instant it presupposes a horizon of expectations — yesterday’s horizon . . . as it were. Today’s science is built upon yesterday’s science (and so it is the result of yesterday’s searchlight); and yesterday’s science, in turn, is based on the science of the day before. And the oldest scientific theories are built on prescientific myths, and these, in their turn on still older expectations.”

I believe the same comment should be applied to the cognitive activities of people and organizations. Information has no existence independent of the frameworks that managers use to gather and interpret it — the theory contained in the expectations we bring to every situation. Our so-called facts are full of theory; the theory is provided either by our culture or by our experience. It is yesterday’s theory.

As an aside, I should say that I think that this is why so many effective managers often bypass their management information systems to get at “raw” phenomena — they mistrust the theory, embodied in the construction of their systems, which selects, filters, and “cooks” the data.

Let me start to bring some of these notions together, using the three-world theory to illustrate some concepts of information. At its most basic level, World 1, the physical world, is a world of differences: shape, size, intensity, and so on.
We are assisted in our encounters with problems by a collection of durable solutions produced in the past by interactions between World 1 and World 3. World 1 is the physical world and World 3 consists of the constructs of objective knowledge. Together, they interact to form what we call culture; that is, physical objects and processes that embody World 3 ideas. Here are the books, libraries, musical performances, works of art, and so on, that constitute a repository of solutions to problems faced in the past. These solutions can be transmitted from generation to generation (because they are part of both World 1 and World 3) and can be drawn on to solve problems encountered in the future. These solutions, like the problems, are in multiple layers. At the most basic of levels they might consist of innate skills, “hard wired” into the body. At higher levels they might consist of mathematical formulas, social norms, or religious rituals.

The last interaction is that of World 2 and World 3, that of the integrative tendencies of the mental world and the world of objective knowledge. The interaction between these two worlds produces a set of personal expectations about the future, yet based on the past. These expectations, too, occur in levels. At a fairly low level they are exhibited in our vulnerability to visual illusions of all kinds, where our expectations, derived from experience, impose patterns on visual reality. At a higher level it has been suggested that an organization’s schemata, dominant logics, or paradigms predispose members of the organization to see the world in certain ways.\(^9\)

Those are the three two-world interactions. At the center of these interactions is the integration of them all, the nexus of Worlds 1, 2, and 3. These integrations are also hierarchical. At the bottom are the differences to which we attend. One of the lower-level integrations of differences we call “data” — a framed set of differences. A higher-level integration we might call “information” — differences that make a difference, as Gregory Bateson put it.\(^9\) A level higher still we call “knowledge” — a body of information. A higher level yet we might describe as “meaning” — knowledge of significance or importance to the individual or organization. And at the top is our highest level of integration, that of “identity.” This dynamic integration, this sense of identity, plays a central role in determining what differences are attended to by both individuals and organizations.
Identity plays the role of the carbon arc in the search-light of the mind. The result of this, as Michael Polanyi has pointed out,\textsuperscript{14} is that we literally dwell in our mental constructions. Fundamentally, all knowledge is held personally — it is integrated by our deepest assumptions about who we are. All our understanding depends on deeply held beliefs.

The three-world theory views the mind as a dynamic, evolving system that constructs a hierarchy of integrations by connecting the differences of World 1 to make a series of transformations through data, information, knowledge, and meaning to achieve an identity. Identity is at the top of a hierarchy of frameworks by which knowledge systems sort out differences from similarities, data from noise, information from irrelevance, knowledge from ignorance, and meaning from confusion. In short, "identity" is the derivation of the One from the Many, the production of Order out of Chaos. As such it is a core construct in every knowledge organization. It was a threat to our identity — everything we were — which made our organization's crisis so severe in the early 1980s. It was our success in reconstructing our identity that enabled our ability to deal with our problems effectively.
Experience

I am now going to leave the level of the imagination behind and move toward the bottom line; that is, behavior. You may feel an acute sense of cognitive discomfort as I do, for the gap between the imagination and concrete experience is very real and it cannot be bridged entirely by logic. It requires some faith as well.

I believe that managers are not just collectors of data, administrators of information, or even managers of knowledge. We are all of those, but above all, we are managers of meaning, articulators of identity, both for ourselves and for our organizations. The medium of meaning is metaphor or, perhaps more broadly speaking, analogy in general, for we create our integrations among the three worlds by the use of analogies that bridge the gap between our very tangible experiences of the physical world (World 1), our subjective experience of the mental world (World 2), and our imaginative experience of World 3, the world of ideas, of which we are only peripherally aware and find impossible to express without the use of analogy. So, while managers can and do work at the bottom of this hierarchy of integrations, the real leverage is at the top in the metaphors that control the context of meaning and identity — the frames that are the controllers of cognition and behavior.33

The Power of Metaphor

We often underestimate the power of metaphor to do this. An example from the current discussions on steel trade between Canada and the United States is the expressed need by U.S. steel mills for a “level playing field.” This metaphor sanctions all kinds of behavior, once you accept the football version of it; what could be fairer than a “level playing field”? Some people, on the other hand, might prefer the golf version of the metaphor and reach a rather different conclusion. In golf one is usually the architect of one’s own misfortunes so, far from leveling the field, the steel mills would have to play the ball where it lies!

My point is that cognitive support for organizational policies and activities often rides on the broad back of a powerful metaphor. Let me give you some examples from our own experience. We are in the steel distribution business. We don’t make steel; we buy it from the makers and sell it to the users. Our product is typically described by economists as being a commodity, with all the implications that metaphor contains — large, undifferentiated bulk goods, a single market price that clears the market, and so on. We have found, perhaps not surprisingly, that if one thinks about steel as a commodity, one gets commodity-like financial results from one’s operations. More surprisingly, we have discovered that if you don’t think about steel as a commodity one gets much better financial results. The commodity metaphor, once sanctioned for use within the organization, is the generator of a self-reinforcing behavioral loop.

What we try to do is to not only outlaw the use of the word “commodity,” we try to change the way our salesmen think about steel. For example, we tell them when a customer calls asking for a price on 2 x 2 x ¼ angle (this is a generic piece of carbon steel — everybody stocks it), you have two choices: (1) Say “Twenty-three cents a pound,” or (2) Ask “What do you want to use it for?” Now, if the customer happens to be a farmer who is looking for fence poles he might say that is what he wants. If you, the salesman, know what you’ve got in inventory and what can be done with steel, you might be able to say, “You’re in luck, I have some whatever it is, 1½ x 1½ x ¼ angle. It’s ideal for fence poles and I can give you a special price at ten bucks a pole.”

Now, a customer can take the 23-cents-a-pound price and shop it around town because everybody knows what a 2 x 2 x ¼ angle is, but he can’t shop the price on fence poles. We have just created a competitive advantage, and every time the phone rings there is an opportunity for our salesmen to create similar competitive advantages. If the market justifies it we might be able to capitalize on some of these advantages by organizing them into a routine — by specializing in fence poles, for example. A flexible manufacturing system might enable us to be the low-cost producer and so sustain the advantage, at least for a while, before it is copied and eroded. But my point is that the advantage first has to be created by the salesman in the trenches, not by some strategist at head office. It is an act of imagination, not a deduction drawn from a mass of data. As managers we haven’t always understood this very well.

Sometimes it is helpful for managers to create new organizational analogies. For example, we are steel distributors. Typically we think about ourselves as people who warehouse and distribute steel by selling it on credit to steel users. As a result, our steel salesmen tend to be top dogs in the hierarchy and many of our middle and senior managers began their careers as salesmen. For the same reason, credit managers are not revered in the steel distribution hierarchy. They are essentially seen as anti-salespeople, the kind of folks who are always looking for an excuse to say “no.” In our organization, there used to be fierce fights between sales and credit, with sales usually on the winning side. The evidence of their victory soon became clear in our bad debt experience! So, some years ago we started holding joint salesmen/credit seminars, which not only allowed each party to see that the other was human, but also allowed us to try to switch the metaphor.

We suggested to them that rather than thinking of ourselves as a distributor we should consider ourselves as a financial institution, as lenders of the last resort who finance small, struggling steel users. The only security that we have for the loans we make to these people is the steel that we send them!
Creating Competitive Advantage: Welding Imagination to Experience

What this metaphor does is highlight the fact that we are indeed often lenders of the last resort, selling steel to people who have either long since exhausted their bank lines or who are in start-up mode and do not have financial statements that would support a bank loan. The salesmen like to do business with these people because they tend to be repeat buyers of product with relatively high margins. The financial metaphor, however, now places the credit manager at the center of the action. As the equivalent of a venture capitalist, his task is to invest our capital with some assurance that we will get our money back and make a profit. Partly as a result of this different way of looking at the world we have become experts at taking security in various esoteric ways (creating, I might add, a competitive advantage). With the salesmen’s help, credit managers have become pretty good judges of customers’ characters (because often this is the only secure basis on which we make our loans). And we have built excellent relationships between the sales and credit departments. Salesmen and credit managers now realize that they have to live with what is a double metaphor. The tension between the two can only be resolved creatively.

My last example of how we try to change the metaphors of meaning for our people is that of our truck drivers. In the past we have tended to think of our truck drivers as purely deliverers of metal. They have usually been seen as overpaid members of militant trade unions, which indeed some of them are. The recognition is beginning to dawn on us, however, that our truck drivers (and their trucks) are the only company representatives our customers ever want to see on a regular basis. The driver is a company representative, a barometer of business activity, an early warning system for the credit department, and an arm of our market research as to what our competitors are doing in the marketplace. He also delivers steel.

The drivers’ multiple roles give them so many opportunities to create competitive advantage that one is forced to regard them not only as implementors of our strategy but also as makers or, at least, as co-creators of our strategy! As such they need access to all the frameworks a strategist might find useful. Needless to say, if the truck driver is placed in an information network and a compensation system that supports these multiple contexts in which he must operate he will find his job full of meaning and achieve a new sense of identity. He will be liberated from the cognitive bonds that previously limited his activities.

Strategy

I can’t resist pointing out that this perspective has interesting implications for the concept of strategic management, for it suggests that the formulation of strategy can develop competitive advantage only to the extent that the process can give meaning to workers in the trenches. Strategy itself should be an attempt to articulate imaginative frameworks that can both inform the behavior of operators and coordinate their experience so that they can recognize and exploit opportunities. If successful, their exploits can be institutionalized and competitive advantage can be sustained, at least for a while. For once competitive advantage is realized and expressed in technology it can, of course, be copied by others.

Imagination and Experience

In short, the task of managers within an organization is continually to weld together imagination with experience. Alfred North Whitehead laid just this charge on universities — perhaps we can apply it to all knowledge organizations:

"The justification for a university [knowledge organization] is that it preserves the connection between knowledge and zest of life, by uniting the young and the old in the imaginative consideration of learning: . . . "This atmosphere of excitement, arising from imaginative consideration, transforms knowledge. A fact is no longer a base fact [when] it is invested with all its possibilities. It is no longer a burden on memory, it is energizing as the poet of our dreams, and as the architect of our purposes. "Imagination is not to be divorced from the facts, it is a way of illuminating the facts. . . . It enables men to construct an intellectual vision of a new world, and it preserves the zest of life by the suggestion of satisfying purposes. . . . The task of a university [knowledge organization] is to weld together imagination and experience." 17

This task requires a philosophy of knowledge that is not embarrassed to talk about imagination and realizes that language cannot capture all of experience. Without such a philosophy, we cannot weld Imagination to Experience. Rather, we end up in a sticky mess, with Analysis firmly glued to Description; that is, with Analysis stuck to itself.
When I was a university student we were led to believe that science had solved the problems that preoccupied the minds of the early Greek philosophers. I don’t believe that it has. The debate between the one-world theories needs to be continued. The dialectic between realism and idealism, between the actual and the potential, between stability and change must exist in every knowledge system if it is to make creative progress. The concept of information and knowledge as products of a living, creative system inhabiting three worlds, like the New Physics, evokes again the organic metaphors of the early Greek thinkers — albeit at a much more sophisticated level and with the benefit of a great deal of experience.

But it is this link with the past, this feeling of continuity and participation in history that enhances the sense of high purpose and adventure in all knowledge organizations and allows us as managers to fuse imagination with experience and, in that process, enable our people to create competitive advantage.

Endnotes
10. See Endnote 9, p. 345.
11. See Endnote 9, pp. 346-347.
12. This phenomenon has been observed at all levels of knowledge systems. At the level of a scientific community see T. S. Kuhn’s *The Structure of Scientific Revolutions*, Chicago: The University of Chicago Press, 1970.
15. At the individual level the master metaphor is "I" which integrates the total personality; see M. C. Bateson, *Our Own Metaphor*, New York: Alfred A. Knopf, 1972.
16. I have discussed these ideas in greater depth in D. K. Hurst, "Why Strategic Management is Bankrupt," *Organizational Dynamics*, Fall 1986, pp. 5-27.
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