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EDUCATION, CYBERTECHNOLOGY AND LEADERSHIP**



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Millennial Challenges in Management, Education, Cybertechnology and Leadership

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## FORWARD

There is nothing more difficult to take in hand,  
more perilous to conduct, or more uncertain in its  
success, than to take the lead in the introduction of a  
new order of things.

Niccolo Machiavelli

We are indeed at the threshold of a new order of things - at the eve of the third millennium awaiting the sun to project us on the horizon of the 21<sup>st</sup> century, ready (or not so ready) to experience a millennial shift of unprecedented proportions. This millennial shift may mean chaos or transformation and no one can predict where the world is headed. However, people from all walks of life agree that the new order of things will be socially, organizationally, politically and economically dramatically different from the present order of things.

**Project 2001** was created as a challenge and opportunity to stimulate ideas, discourse, debate, controversies in four areas which we believe are prime targets for change, namely our management, educational and leadership systems. These systems, built on yesterday's brick and mortar models, must give way to finding ways of resolving the existing contradictions and paradoxes and the emergence of new paradigms to guide our thinking and actions. The fourth area of concern, technology, reminds us that there is only one constant in this era, namely continuous change. Yet, although newly developed and rapidly changing technologies play a vital role in contemporary firms because they provide organizations and individuals spatial and temporal independence, they have yet to be integrated into the overall fabric of our organizational communities. Project 2001 is, in part, based on the recognition that our dominant models cannot solve contemporary problems and fail to offer guidance and insights for managers, educators, technologists and leaders who are struggling with the technological revolution, increasing globalization, strategic discontinuities and their limited abilities to develop and deploy human capital, especially in the core competencies of the firm.

Dynamic and dramatic changes in management, education, and leadership are not the hallmarks of the outgoing 20<sup>th</sup> century; in fact, they are very much missing from our current landscape. Moreover, management, education, cybertechnology, and leadership have largely co-existed with few significant alliances among two of the four areas (i.e., distance learning which combines education and technology) which are described here as the "four pillars" on which the burden of radical change rests. In the interconnected century and the networked economy we are approaching such independencies must be replaced by interdependencies and strategic alliances among the major players.

The primary mission of Project 2001 is to promote the integration of management, education, cybertechnology, and leadership into a comprehensive, holistic new order that promotes success in 21<sup>st</sup> century organizations. Project 2001 is designed to develop a compass that helps us to navigate the 21<sup>st</sup> century landscape by establishing mileposts for implementing new organization and management structures and cultures, new types of educators and educational institutions, global leaders who understand the challenges facing them from different perspectives and can play multiple roles when enacting different futures.

The papers in this proceedings volume reflect the cutting edge thinking of a small group of individuals who have been able to set the bar as the first stage for a new order of things. Each of the papers of this volume identifies turning points or burning issues in a specific field that signal the advent of a new time. The ideas expressed in the articles remind us that millennial turning points are opportunities for radical thinking and radical solutions and, if we ignore those opportunities, we continue to offer solutions to today's problems in management, education, cybertechnology, and leadership which were derived from the same worldview that caused the problems. We invite you to join us in Project 2001. Once enough of us change the ways we view the existing order, then solutions become evident, often in ways we could not image before we began to look through new lenses.

Karin Klenke, Ph.D.

*Project 2001 Proceedings Editor*

## **IN THE EYE OF THE CYCLONE: MILLENNIAL PROVOCATIONS FOR MANAGEMENT, EDUCATION, CYBERTECHNOLOGY AND LEADERSHIP**

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### **ABSTRACT**

This paper provides an overview of Project 2001, which has been conceptualized as a three-year effort to assess the existing models, theories and practices in management, education, cybertechnology and leadership. The purpose of Project 2001 is to explore possibilities for changes that are paramount in these fields for a successful transition into the 3<sup>rd</sup> millennium. In addition, we have developed a three-phase process of inquiry that is intended to facilitate the collaborative work of researchers and practitioners across disciplinary boundaries and geographies.

### **INTRODUCTION**

In today's brave new world, individuals, organizations, and nations are in the eye of a cyclone and a state of perpetual revolution. Rapidly changing technologies, increasing globalization and worldwide competition, shifting demographics, new workforce configurations, the erosion of traditional sources of managerial authority, demands for alternative models of education at all levels ranging from elementary school to executive education and development programs and the widely acknowledged leadership crisis, are prompting the search for new ways of doing business. Emergent organizational forms such as the global heterarchy or the interorganizational systems based on alliances and partnerships which are highly complex, the online learning/education revolution and the development of quantum computers are examples that illustrate an era characterized by turbulence, uncertainty and constant change.

Management guru Peter Drucker (1998) supports the premise that the future is making itself known in the present via tremendous forces of change, forces that promote inescapable outcomes of past events. Moore's Law, which predicts that the amount of information doubles every 18 months or so is perhaps one of the most sweeping elucidations of change that characterizes our era. At a recent meeting of the World Future Society, it was reported that the present information technology revolution is growing more than a million times faster than the historical, evolutionary rate of humans and their systems. New institutions spring up daily; old ones die away. New professions are developing to serve new markets, while the demand for old professions shrinks. Change swirls around us as we move into the third millennium. While the official focus typically falls on political, economic and technological change, all of us must make changes in our daily lives and acknowledge that change comes at a great cost - both in terms of financial expenditures and human energy. Many of the changes that are impinging upon us come from having to unlearn the rules of the past. Thus, one of the most important elements of change is the ability to break rules. Futurist Alvin Toffler once said, "the illiterate of the 21<sup>st</sup> century will not be those who cannot read or write, but those who cannot learn, unlearn, and relearn" - relearning means finding new ways of managing and leading the 21<sup>st</sup> century organization, making a commitment to lifelong education and learning and integrating new technologies into our personal and professional lives.

#### **The Millennium Zeitgeist**

In the recorded history of humankind, there have been no more than a dozen generations that marked a millennial passage. However, in contrast to prior millennial passages, at the dawn of the 21<sup>st</sup> century, the challenges for us are no longer surviving the onslaught of natural forces, winning a living from an often harsh and unpredictable environment, as it has been for most of human history nor is it the gigantic struggle between two opposing economic and political systems that overwhelmingly shaped the last half of the 20<sup>th</sup> century (Gell-Mann, 1994; Gallopin et al., 1997). Instead we are faced with fundamentally different challenges - that of managing a planet and global civilization in ways that will sustain both indefinitely (Hammond, 1999). We also do not have a commonly shared, holistic concept of the world that marked the millennial Zeitgeist of the last millennial transition leaving us with fragmented, splintered perspectives to choose from and reconcile.

Millennial prophets and gee-whiz futurist manifestos are all around us in these days as we are being swept up by a millennial tide. Futurists and prognosticators who are promoting their visions of the future are in demand on the

lecture circuit, waving their predictions between optimism, uncertainty and gloom. The worldview of the technological optimists, for example, is one of continued expansion, a view that Constanza (1999) referred to as “Star Trek”, named after the popular TV series that is one of the most articulate and vividly fleshed out manifestation of technological progress. It envisions the elimination of air pollution, the availability of clean, unlimited air, the conquering of many diseases, the development of space colonies to disperse the population on earth than continues to explode and the emergence of a class of leisure thinkers. Those who look at millennial transitions as a new age for peace and renewal and see the year 2000 as a benchmark for launching new scientific, political, and social paradigms embrace this worldview.

On the other hand, the technological pessimists foresee a technological and ecological nightmare with the greenhouse effect having kicked into full force and the earth’s climate and ecological systems being in complete shambles. According to this perspective, the world population has been on a long downward spiral, plagued by epidemic diseases that kill off a large segment of the population. Financial markets collapse and governments around the world are weak. Doomsday discussions of environmental or celestial disasters, threats of the collapse of our biosphere predict the end to the world as we know it. The technological pessimist perspective presents us with a serious picture of unsustainable outcomes across a wide range of factors. Both two views essentially derive from two fundamental worldviews that reflect our faith in technological progress. Which world will we inhabit as we transition into the third millennium?

An integral component of the millennial zeitgeist includes the spread of apocalypticism, which involves signs, themes, and beliefs surrounding the millennial transition, which multiply as the big date approaches. Beliefs in the nearly expected end, in particular, and apocalyptic future have prevailed throughout history along with hopes for an imminent transformation of the world on a specific date have a long history. In the past, apocalyptic signs include wars, famines, and all sorts of diseases and plagues. Contemporaneously, events such as the Oklahoma bombing, the shooting spree at a Colorado high school, the demise of the Darwinian cult under the leadership of David Karesh, the Tokyo subway attack of Aum and the suicide of the Heaven’s Gate sect are seen as declarations of the “End of the Age. Apocalyptic themes are also evident in popular movies such as Amageddon, Die Hard and The Terminator. Every time I visit my local bookstore or my favorite electronic store, the volume of titles on prophecy, new age, eschatology and “new” interpretations of Nostradamous crowd the shelves. Surfing the web, we are warned of the dangers of spiritual predators on line with web sites that capitalize on the sight and sound of the multimedia to project their apocalyptic vision. As we approach the end of the millenium, we can assume that there will be more bizarre incidents, either in anticipation of prophetic fulfillment or in the aftermath of apocalyptic disappointments.

While fear is an integral element of apocalyptic themes, so is hope, a dilemma that Dr. Chaharbaghi refers to as the millennial paradox. Millennial transitions also energize and galvanize people and institutions to change in fundamental ways. Thus, the turn of the millennium provokes hopes and fears of colossal changes, a new world order - divine or secular - and large numbers of people are drawn to its mesmerizing gravity (Daniels, 1999) because there are many reasons people fall prey to the millennial Zeitgeist – social, historical, chronological, political and religious, to name a few.

The dawn of a new millennium, then, is the best of times; it is the worst of times. Either way, as Morris (1997) stated:

As the big wave of millennial philosophizing begins to crest through the population, all of us who aspire to effective leadership and world performance had better be ready to surf it. We'd better have our boards in the water and we'd better be paddling in the right direction, because this one's going to be a tsunami and it will take us further than anything else possibly could (p. 9).

### **The Past as a Prologue to the Future**

"Time carries everything, even our wits, away." So wrote the great Roman poet Virgil (70-19 B.C.) more than a bimillenary ago. Time takes on a life of its own, especially at the turn of a century. As in the past, being at the threshold of a new millennium creates a unique temporal halo, which carries the promise that everything will be different once we cross the great divide.

The year 2000 is popularly referred to as then end of the 2<sup>nd</sup> millennium; not necessarily because its marks the last year of an outgoing century but because there is something powerful and seductive in round numbers. Futurist Richard Landes, Director for the Center for Millennial Studies, warned us never underestimate the power of round numbers in

the popular imagination. Although the "real" millennium will not occur until 2001, the popular, the psychological - and the computer - millennium will happen when we go from 1999 to 2000. Savvy millennialists who understand the power of round numbers include world leaders such as the Pope who was one of the first to plant a banner on the event, declaring the year 2000 a Jubilee Year as early as 1978. and President Clinton endorsed 2000 as the beginning of the new millennium.

However, many scientists and lay people understand the "real" beginning of the third millennium and new century to mean the year 2001. Their calculations are based on the Gregorian calendar, which is currently in use. Years in the Gregorian calendar are counted from AD 1. This 1<sup>st</sup> millennium comprised the years AD 1-1000, the 2<sup>nd</sup> millennium comprises the years AD 1001-2000 and the 3<sup>rd</sup> millennium will begin with AD 2001-3000. Proponents of this view argue that in the year 2000 what many people celebrate not the new century but the new number since the number 2000 has a magic that other proposed beginnings of the new millennium do not capture.

However we define the beginning of a new millennium, it marks the beginnings of a new time. As we approach the next century, there is a once-in-a-millennium opportunity to observe the impact of the completion of a thousand-year period on a society. How will our daily lives be influenced, altered, shaped and transformed by the onrushing new century? Thus, at the dawn of the third millennium, we find a uniquely opportune moment to study and document a major phenomenon in the shaping of social, political, economic and religious culture - the passage of a millennial date.

### **Paradigm Shifts**

The millennial Zeitgeist sets the stage for a paradigm shift. In scientific circles, dramatic transformations, revolutions of thoughts, great leaps of understanding and sudden liberations from old limits are called paradigm shifts. These offer distinctively new ways of thinking about old problems. The term paradigm shift is used to name the intellectual structure within which thinking occurs to include theory, policy, rules, social mores, and frames of reference in language and concepts. The word comes from the Greek *paradigma*: a pattern or a map for understanding and explaining certain aspects of reality. While a person may make small improvements by developing new skills, quantum leaps in performance and revolutionary advances typically require new maps, new patterns, and new ways of thinking about and seeing the world (Covey 1991). If nothing better than linear, incremental progress prevails, its glacial pace will not produce radical shifts that rewrite history. Incremental changes, important as they are to individuals, do not produce paradigm shifts. Hamel and Prahalad (1996) stated:

We have reached the end of incrementalism. Squeezing another penny out of costs, getting a new product to the market a few weeks earlier, responding to customer inquiries a little bit faster, ratcheting quality up one more notch, capturing another point of the market share, tweaking organizational structure one more time - these are obsessions of managers today. But pursuing incremental advantage while the rivals are fundamentally reinventing the industrial landscape is akin to diddling while Rome burns (p. X).

Paradigm changes often begin with the articulation of new concepts. The information age shifted the dominant paradigm in many disciplines. However, according to Drucker (1998), the information revolution was largely operational. The more important paradigm shift, which is well under way now - is what the author calls it a revolution in concepts. "Whereas the information revolution has centered on data - their collection, storage, transmission, analysis and presentation, Drucker says, the next revolution asks, "What is the MEANING of information, and what is its PURPOSE?" The last paradigm shift has also brought with it a wholesale rethinking on power, authority, motivation, loyalty, learning, and, above all, leadership. How is it to be distributed? (Ghiselin, 1994, p. 3). The classical schools of management thought (i.e., MAX Weber, Henri Fayol, and Frederick Taylor) which dominated during the greater part of the 20<sup>th</sup> century were being challenged. Educational systems came increasingly under attack. And cybertechnology was undergoing a very rapid pace of change that many people cannot keep up with.

Let us take the long view for a moment. Some 500 years ago, people had a certain map that reflected their understanding of the world at the time. It was not changed until an expert navigator and courageous seaman; Christopher Columbus (1451-1506) challenged the conventional wisdom by sailing West in hopes of discovering a new route to India. Although he failed to discover the Indies, he certainly changed the map, the paradigm of the world. And his breakthrough resulted in a most significant breakthrough in world history. The last great paradigm shift was the Copernican or scientific revolution in which Copernicus overturned the Ptolemaic paradigm that the earth was the center of the known universe. Although Copernicus actually did not change anything, except the way we saw things, he did set science on a new course.

Paradigm shifts are often triggered by new technologies. The transition point in printing, for example, from the laborious, hand written texts to low cost production of the printed word occurred, of course, with the invention of the Gutenberg movable type press of 1440. As Drucker (1998) observed, at the time Gutenberg invented the press, there existed a substantial information industry in Europe. In fact, it most likely was Europe's largest employer. It consisted of thousands of monasteries populated by highly skilled monks who copied books by hand. In those days, an industrious, well-trained monk could copy four pages a day for an annual output of 1,200-1,400 hand written pages. At the time, books were such a luxury that only the wealthy and educated could afford them.

But the printing press, changed it all - as did other technologies associated with paradigm shifts such as the computer where cost and price reduction at the heart of the technological invention. When Martin Luther's Bible came out in 1522 (a book of well over 1,000 pages), its price was so low that even the poorest peasant family could afford to buy one. Likewise, today, the price of microchips has fallen so much that the "a PC in every classroom by the year 2000" is becoming a reality.

The invention of the printing press was a paradigm shift, which achieved much more than revolutionizing the distribution of books or a technological breakthrough. It deeply affected the political, religious and social institutions of the time. In the decades that followed the invention of reusable molds for type elements which made up the backbone of the Gutenberg. University after university was founded in Europe and disciplines like law, medicine, natural philosophy and mathematics flourished. The Protestant Reformation would not have been possible without the printed Bible.

The next 500 years saw refinements of the Gutenberg printing process, such as the arrival of new mechanical power and alloys that made high speed, hot-type presses possible. This, in turn, created a revolution in the distribution of information as the economies of print made it possible to produce books, magazines and newspapers affordable to a growing percentage of the population. And the revolution continues as e-zines and e-books are beginning to invade the print media. However, as Bulkeley (1998) noted, although few companies unveiled \$500 electronic books this year, the situation will change dramatically as prices of PC drop. While there will be still books on paper, most likely customized textbooks will be downloaded to students as they sign up for classes and only likely bestsellers will still use the technology pioneered in the Gutenberg Bible.

The Renaissance produced many paradigms in the arts and the sciences shift, as did Einstein's theory of relativity. Gutenberg's invention of the printing press and the industrial revolution were paradigm shifts that significantly impacted management, education, technology and leadership creating conceptual shifts and drifts, new schools of thought, businesses, and classes of technologists, professionals and managers. The word paradigm shift has originally been used to describe the framework within which scientific thinking takes place. However, the word has spread to a wider social domain in which contextual and cultural variations of an emerging paradigm play a significant role.

Paradigm changes often begin with the articulation of new concepts. The information age shifted the dominant paradigm in many disciplines. However, according to Drucker (1998) the information revolution was largely operational. The more important paradigm shift, which is well under way - is what the author calls it a revolution in concepts. "Whereas the information revolution has centered on data - their collection, storage, transmission, analysis and presentation, Drucker says, the next revolution asks, "What is the MEANING of information, and what is its PURPOSE?" With Project 2001, we are asking here, "What do meaning and purpose mean in the context of management, education, cyberechnology and leadership?" Paradigm shifts, when viewed with the hindsight of history, seem to make sudden leaps. We look closely, however, we find that the new paradigm has started to make its appearance before the transition occurred. The features, as James (1998) pointed out, which force a new paradigm, may be several years ahead of the actual change.

Crossing the millennial divide means that we are in a long and difficult transition from one world system to another one or ones, and if the outcomes are uncertain, a large number of questions arises - what kinds of worlds do we, in fact, want and by what means or paths are we most likely to get there. As Ray and Rinzler (1993) noted:

Present economic, corporate, and social policies are, by and large, inconsistent with viable long-term development and are being made anywhere without a picture of a viable global future, or an understanding of the global system change required to bring about such a future (p. 16).

Millennial turning points are opportunities for radical thinking and radical solutions, which are the essence of paradigm shifts. They are a time of confusion and chaos since the old paradigm is no longer sufficient to provide that intellectual structure that gives the frame of reference for solving problems and the new one has yet to achieve that consensus that is necessary (James, 1998). Like previous paradigm shifts such as the industrial or the information revolution, the emerging 21<sup>st</sup> century era has the potential to raise the quality of life for everyone to unprecedented levels. And like earlier economic, scientific or social transformations, it will likely reward a new class of citizens. But also as in the case of previous transformations, it will leave some behind – those who cannot cope with the new responsibilities, the rapid pace of change, the demands for continuous learning and the willingness to break with the rules and traditions of the past.

This is most clearly seen in the widening gap between those who use the Internet and those who do not. The U.S. Department of Commerce in a recent study reported that the Internet revolution, which is featuring prominently in most crystal balls, is largely bypassing the poor, minorities and those who live in rural communities. The report predicts that the widening of the Internet gap is becoming one of America's leading economic and civil rights issues. Moreover, the report, based on questions attached to a Census Bureau survey of 48,000 households, defies expectations that the gap between the Internet's haves and have-nots would narrow significantly with falling computer prices. It found instead, that "the market saturates at the high end (42% of all households in the USA have a PC but there are in about 82% of homes in which families make \$75,000 a year or more and in less than 16% in which families make less than \$20,000) and low income people are still not able to afford services. Moreover, some experts noted that the social divide could widen as wealthier people start using high speed Internet connections (Lieberman, 1999). In an interconnected society, Hammond (1999) warns us differences between the have and have-nots could spell trouble even for countries that are able to take advantage to turn new technologies to their economic advantage. He writes:

Regions of the world that remain outside the increasing flow of knowledge, because they lack the social structures and institutions to participate in technological advances, will not be able to keep pace. High rates of poverty and illiteracy in some regions could help create new disparities in the form of have and have-nots (p. 42)

We are at a millennial crossroad, at the eve of a new century were many people are comfortable in their 20<sup>th</sup> century pair of shoes. At this juncture, we have two choices: take our pair of comfortable shoes (the 20<sup>th</sup> century worldview) to the cobbler and have it repaired another time to last for years to come or find a new pair of shoes (alternative worldviews) that later the way we walk. Which shoes will fit the new millenium – our current theories and models of management, education, technology and leadership or radically different approaches? At the portal of the present, do we want to look to the past to write the future or do we wish to write future history – looking at the four areas that concern us here from some future vantage point – 2005, 2010 as we begin to resculpy our models of management, education, technology and leadership? Of course, being at the portal of the present allows us to do both – like Janus, the Roman god of the portals and patron of the beginning and endings .His vestige was displayed at all city gates looking in and out, backwards and forwards.

### **PROJECT 2001: A MILLENNIAL ODYSSEE**

Project 2001 is an interdisciplinary, global brainstorming, three-year effort designed to provide a platform for a focused discussion on needed, catalytic changes in management, education, cybertechnology, and leadership. The architects of Project 2001 selected these four fields because it is in these areas where radical change is necessary to position organizations for the 21<sup>st</sup> century. We refer of them as the four pillars because arguably future systems and our future rests on the progress and advances made in these areas. Moreover, each of these pillars potentially is a potentially source of a paradigm shift. Some look to education as a prime mover of change; others view science as the driver for the next paradigm shift. Still others believe that the answer lies in technology and finally there are those who argue that ultimately paradigm shifts are a function of leadership; without new leadership, the status quo and incrementalism will prevail. And finally, in these for areas the is a great need to innovate and build alliances and partnerships that cross functional and geographic boundaries where risk takers and innovative thinkers are needed who go beyond incrementalism and aggressively pursue radical changes and bold innovations.

At the onset of the creation of Project 2001 we noted that management, education cybertechnology, and leadership, as institutions as well as social constructions, as hot beds of theory construction with lagging applications or vice versa were caught up in a certain “turn-of-the-millennium culture” searching for ways to prepare for and meet the demands of the interconnected 21<sup>st</sup> century. Around the four pillars, academics are writing about the need for change, posit new conceptions, build elaborate theoretical models, yet few organizations and educational institutions are moving in these directions. While consultants and management scholars talk about horizontal, process- based organizations, in reality organizational change is much more evolutionary. Thus we are faced with another paradox here: we acknowledge that organizations must change the way they do business; yet change efforts are conducted from within the paradigm using the same flawed processes and old perspectives that created the status quo.

Across the four pillars, with the exception of cybertechnology which in contrast to the other three fields seems to be in a perpetual state of change, we also noted a certain degree of parallelism in term of the degree of obsolescence and general dissatisfaction and disillusionment that permeate management, education and leadership. In these fields, there is a lot of discussion concerning the breakdown of the “brick-and-mortar” structures that held these fields together in the past. Considered being immutable only a few years ago, these structures are crumbling or are being dismantled. Management systems and schools at all levels mimic the bureaucratic, hierarchical factory systems and leadership, until recently was based on position power as reflected in the laid system of the organizational pyramid.

Project 2001 may also be conceptualized as a "from - to" journey on which we are embarking here. The “from” represents the present or our point of departure where the conditions are known whereas the “to” is a point in the future where conditions are uncertain. In organizations we are moving from hierarchies to global heterarchies, from vertical to horizontal structures; interorganizational systems, and multi-firm alliances. In management we are evidencing a shift from authority to responsibility; in marketing it is from strategic marketing to value marketing based on corporate and product credibility; in leadership; the command-and-control style is being replaced by collaboration; and as control is diffused through the organization (if used at all), the span of control , one of the hallmarks of classical management theory is replaced by spans of commitment – commitment to the organization’s vision and goals, to change and the willingness to constantly innovate In education; some of the important shifts are from individual to team and organizational learning, from face-to-face to web based instruction; from teacher designed to learner managed instruction; in technology we have left the programmer, systems analysts dominated information systems and are now working on user-centered information appliances; and in the health care industry we are seeing dramatic transformations driven by resource allocations, behavioral patterns of health care providers, “patients’ bill of right” with a shift from heavy dependence on hospitals to a greater reliance on outpatient clinics. As we are traveling along these various “from”- “to” paths, individually and collectively, we are undergoing transformations in life styles, values and our assumptions about the world we live in.

While not ignoring the "from", Project 2001 is about the future, but not in the sense of predicating it since we cannot predict the future since the future is presumable fact free. It once has been said that the best way to predict the future is to invent it. This is what Project 2001 is about. Instead of attempting to predict the future of management, education, cybertechnology, and leadership, we are deliberately and intentionally setting out with this project to envision, invent, and imagine alternative futures. Part of that process is about sorting out some the factors that will matter most in shaping a new era despite the mind-numbing complexity of our times and the glut of information that deluges us daily. Some of these factors and trend projections in some areas such as demographics and technology are known. For example, between 1996 and 2015, the world population will not only grow, but in the developed countries it will age while in the less developed countries it will remain relatively young. What was once the population pyramid everywhere, with the very old representing the tip of the pyramid, will become the population cylinder in the developed world (McCorduck & Ramsey, 1996). Being equipped with this type of information allows us to begin to set out to design the futures we want to happen. But then, there are always wild cards of history - atomic and biological terrorism, natural disasters, economic meltdowns which are potentially there, ready to change everything overnight. It is these wild cards which make the future unpredictable.

In the knowledge economies of the developing countries, the primary source of growth is the production, storage, processing and distribution of intellectual capital. According to Drucker (1998) knowledge is different from all other resources since:

It makes itself constantly obsolete, so that today's advanced knowledge is tomorrow's ignorance. The first - and overarching - implication is that the world economy will continue to be highly competitive, prone to

abrupt shifts in both the nature and content of relevant knowledge changing continually and unpredictably (p. 17).

As knowledge becomes increasingly a strategic resource for regional, national, and international economic development - we hear a lot of talk of the intellectual capital of knowledge workers in the knowledge society - there is need for effective knowledge generation, transfer, application and diffusion. More and more, organizations are concluding that sustainable growth results from systematically leveraging knowledge in order to build and enhance organizational performance. As Kanter (1999) notes, "the potential for business payoffs from knowledge exchange is clear: fast transmission of strategically important information across geographies; ideas for innovation; competitor intelligence and cost-savings as solutions are spread" (p. 19). Since managers are no longer the guardians of the knowledge base, we no longer need the command-control type executives (Zuboff, 1988).

Despite the growing realization in some select industries that sustainable growth frequently results from systematically leveraging knowledge in order to build, strengthen and enhance organizational capabilities, vexing questions remain. How can organizations learn today the skills they need tomorrow? Since the knowledge economy and society are unknowns to most managers and organizational leaders, what trends should they be looking for since traditionally forecasting techniques no longer work? How does a senior executive run a knowledge-based organization? At a time when creating knowledge-based business and learning organizations has become fashionable, many business leaders are skeptical of knowledge management and the proliferation of new acronyms and job titles it is creating: CLO (Chief Learning Officer), CKO (Chief Knowledge Officer), KM (Knowledge Management), LO (Learning Organization), to name a few. The skeptics point to an all familiar theme that seems to repeat itself when a new concept appears on the horizon, namely putting new wine into old bottles. Much of the current talk about knowledge management, no, we should use the correct term, "knowledge process management" is based on the assumption that knowledge can be managed. Knowledge has become a resource that gives market leverage and can be used for competitive advantage. Yet knowledge is largely cognitive and personal whereas management is an organizational process. Again, it seems that we are trying to play new games by the old rules.

### **CONCEPTUAL FRAMEWORK: THE FOUR PILLARS**

In the context of Project 2001, we refer to management, education, cybertechnology and leadership as pillars which, much like Atlas carrying the world, hold our future as individuals, that of our organizations and society as a whole. The four pillars of this project are catalysts of change, potential sources for paradigm shifts which represent major areas of global concerns; they are the essential links of a network that is poorly articulated at this time. Much like a classic Doric or Ionic temple, the columns are there although in various stages of decay but they need to be connected by an architectural element known as the architrave that holds the columns together.

Project 2001 reaches out to visionaries, paradigm shifters, out-of-the box thinkers, creators and collaborators of strategic alliances and partnerships, boundary spanning theorists and cutting-edge practitioners to become architects of the transformations needed in management, education, cybertechnology, and leadership. Each pillar rests on the shoulders of a project leader, co-project leaders or a small team of project leaders who, through their stewardship, facilitate the creation and dissemination of the knowledge acquired under the auspices of this project. Project 2001 goes beyond the remit of any single function or discipline. It is a collective, collaborate effort designed to bring together individuals and teams from multiple disciplines to create a compelling vision and architecture for frameworks that link management, education, cybertechnology and leadership as they are becoming increasingly interconnected.

### **MANAGEMENT**

It is becoming clear that the centrally controlled hierarchical, vertically integrated systems of the 20<sup>th</sup> century cannot withstand the growing turbulence in the era of complex, constant change. But what will tomorrow's organizations look like? What types of radical surgery may be necessary to transform the hierarchical structures of the industrial paradigm into designs of the future in the face of new communications and information systems, global competition and alliances? How can organizations learn today the skills they need for tomorrow? It is also becoming increasingly clear that global markets require a different set of management skills which, in contrast to the previous generation of managers who were trained as business analysts, include the "softer" social and interpersonal skills, credibility, appreciation of different cultures and cultural diversity.

Some of the changes that have been under way for several years now under the guise of total quality management, reengineering, downsizing, rightsizing, delaying, and outsourcing. But no matter which buzzword prevails, the trend is toward flatter organizations. In these flatter organizations, companies organize around process (i.e., developing new products), self-managing teams are the building blocks of the organization and performance objectives are linked to customer satisfaction rather than profitability or shareholder value (Byrne, 1993). These organizations tend to be porous and fluid, emphasizing the role of informal groups, cross-functional teams, the impact of the task environment and interorganizational networking. Beneviste (1994) suggested that in the future, the organization per se will be less important as the flow of knowledge, ideas and resources as workers create and re-create new organizations.

New and flatter structures have become possible as more and more information within an organization comes on line. As Leebart (1991) pointed out, this means that organizations will no longer be forced to choose between centralization for the purpose of tighter control and decentralization for the purpose of faster decision making. On-line technologies make it possible to have centralized control with decentralized decision making. In the 1980s, new technologies provided opportunities to collapse hierarchical pyramids by expanding the span of control - the number of subordinates one executive can effectively command. Moreover, expanding spans of control resulted from the flattening of the corporate hierarchy through downsizing and restructuring.

In the 1990's virtual organizations appeared on the scene, companies which share costs, skills, people and access to global markets. In these organizations, cross-functional, multidisciplinary teams and trust are two fundamental ingredients. In the traditional organization, University of Southern California Warren Bennis suggested, "hierarchy is a prosthesis for trust". The orderly bureaucracy, where each employee has a span of control, creates a clear set of obligations and accountability. Says Bennis, "That organizational armature reinforces or replaces interpersonal trust". Trust, as an organizational value is not encouraged in a competitive environment but requires multi-level and collective accountability. Trust is important because decentralized discretion implies that management can no longer maintain the level of control they were used to in the past. When management does not control, only monitors, it needs trust. Handy (1995a) argued that although the rules of trust may be both obvious and well established, they do not sit easily with a managerial tradition that believes that efficiency and control are closely linked and that you cannot have one without a lot of the other. Yet it seems that in the world of competitive business relationships, the term "trust-based relationships" is an oxymoron.

What, then, is the role of management in the 21<sup>st</sup> century organization? How do you manage people whom you do not see? C. Douglas Miller, CEO and Chairman of Norell insists that in the new millennium, managers will not manage people. Miller argues that workers will be going to the mountains, the beaches or even space as free agents. They will be individual producers, selling to multiple organizations and compensated for by the value of their output as opposed to the time spent producing. Stripped of many of the traditional requisites of power, authority, coping with expanded, nearly impossible spans of control - in today's information intensive, technology dominated organizations, the span of control of one executive may well exceed the hundreds - working with a fluid group of employees who, according to Kanter (1989) are "speaking up", challenging authority and charting their own course", the role of the manager is undergoing a major transformation. Managers now have to build relationships instead of commanding, negotiate win-win deals, choose the right partners for alliances based on compatible goals and values. The managerial skills that become most important when employees are free of close supervision include coaching, mentoring, and aligning staff around a vision - topics not typically found in the curricula of business schools.

Yet, despite the current talk about the "new management paradigm" where buzzwords such as transformational business, vision, the learning organizations, trust in virtual organizations, the greater majority of firms pays minimal lip service to these concepts. Despite our preoccupation with the search for new models of management (with parallel searches taking place in education and leadership), we believe that the espoused assumptions that govern management today (try a line worker in a factory or your auto mechanic) have not changed fundamentally over the past decades. Bennis (1997) has his own management metaphor when he says, "managing any people is like herding cats". Cats, of course, don't like to be herded. They may, however, be coaxed, cajoled, persuaded and adored (p. 7)". These cats are not millennial change agents; they are just surfers riding the waves of the Zeitgeist, albeit the surfers with the biggest board (i.e., of executive compensation and golden parachutes for retiring or derailed senior managers). As Bennis notes, the most celebrated people in business today are those who spent their days demolishing rather than creating companies (p. 26).

## EDUCATION

Handy (1995b) argued that education is the growth sector of every society, yet everywhere formal education systems are closing, and the educational profession is in recession and retreat. Corporations are establishing their own universities not because that is their line of business, but because they need training programs that address their core business objectives. The number of distance education programs is exploding. If the virtual organization was the talk of the 1990s, the virtual school is becoming tomorrow's buzzword.

We hear much debate now about the expected changes facing higher education today - changes in how the learning experience is delivered (e.g., distance learning vs. Face-to-face), changes in who is delivering the experience (e.g., traditional academic institutions or corporate universities), and changes in the role of the professional education (e.g., tenure, ownership of intellectual capital), changes in the demographics of the learner (e.g., fewer than 25% now fall into the traditional 18-22-year-old group) and changing values (e.g., should we value traditional content or new thinking about information (Clark, 1999). We know that the current factory system is cracking, no matter how strongly the teachers, unions, bureaucracies and some parents resist, because it is so out of sync with what the emerging economy and society will require. The online learning revolution has resulted in a rapid reduction of the number of old-fashioned school factories; now private companies provide global education with a brand name and market identity. Boundaries are blurring and the bricks and mortar of the school building ceased to bound education in space and K-12 ceased to bound education in time as pre-kindergarten and lifelong learning have become portable for many of us (Global Business Network, 1999).

A statement Knoke (1996) made earlier applies very much to the current state-of-the art in education:

We are a society that spent its childhood in a highly parochial world determined by place. We enter our awkward adolescence in the 21<sup>st</sup> century, as the old structures become cumbersome. *Near* is no longer closer than *far*, distance is less relevant, and our social institutions (families, schools, offices, factories, cities and even countries) are slowly breaking loose from their moorings rooted in the primacy of place (p. 53).

The author continues to say that our schools are poorly equipped for the challenges ahead and that in the world of multi-media learning systems, it makes no sense of having a Nobel laureate professor to deliver the same lecture each semester, using the overhead projector and colored chalk board, to a few hundred students. The days of the "sage on the stage" have come to an end, not because this instructional approach does not work but because it has become obsolete and fails to meet current demands. Education theorist TheodoreSizer has called for the educational systems of the USA to abandon its century old system of "one best curriculum", "one best strategy and pace of learning", "one best tests" and move to a more flexible, adaptive system built on trust in which "the decentralization of substantial authority to the persons close to the students is essential (Sizer, 1992, p. 195). Yet in the meantime, institutions of higher learning continue their misguided efforts to become research incubators clinging to the old paradigm instead of playing a useful role in shaping the future of business and society.

Despite attempts to reform the deterioration of the professional standing of teachers at the secondary level, most of these efforts have been counterproductive leading to an increase of the bureaucratization of the schools. Even graduate schools of business, for all their fame, are doing little to prepare future leaders of industry to run tomorrow's organization. On the contrary, Davidow and Malone (1992) claim, at a time when multidisciplinary competence, technical acumen, and leadership skills are needed, the business schools in the USA continue to instruct future executives in traditional management styles and leadership theories, and, at best, give only in passing nod to the vital role of information.

Other countries do not fare much better. MBA programs around the world are increasingly coming under fire. Crainer and Dearlove (1998) conclude from their survey of worldwide MBA programs that business schools as they stand are fatally flawed. The authors argued that MBA programs generally do not attract creative people but produce trivial strategists who have virtually no line experience when they enter the program and who last encounter an organizational problem in a case study some years ago in school. Likewise, Mintzberg (quoted in Crainer and Dearlove, 1998) does not hide his dissatisfaction and distrust with the current state of MBA programs when he says:

Regular full-time MBA programs with inexperienced people should be closed down. It is wrong to train people who aren't managers to become managers. MBA programs are confused between training leaders and specialists. At the moment, we train financial specialists and expect them to become leaders (p. 224).

According to the Global Business Network, retrieval, not delivery is the operant word for new education services. Education, according to this source, has been transformed from a producer-push logic of the delivery of standardized skills to a consumer-pull logic of just-in-time retrieval of situation specific and user appropriate information. The 21<sup>st</sup> century organization will depend upon a skilled and trained workforce comprised of workers who are both technically and socially literate, who can analyze problems and propose and implement solutions. The demands for high levels of information skills already exceed the supply in many developing countries. Some countries such as Germany, Sweden and France have remodeled their apprenticeship, craft, and job training programs to meet the demands of information and knowledge intensive organizations. It is conceivable that this system could migrate to higher education.

While much of the educational discourse has been concerned with technology and the gadgets that will be used in the classroom or artifacts of the future, more importantly, we need to ask ourselves, "How will education evolve or become something altogether different in 10 or 20 years as an institution and as a process?" The information revolution has come to education and technology is redirecting the course of education in fundamental ways. Again, we must ask questions. For example, how do information networks enhance the development of learning communities? Are virtual schools the answer to deal with the educational crises at all levels? What role should 21<sup>st</sup> century universities play in national and international development efforts? How can organizations link their workers to virtual schools?

### **CYBERTECHNOLOGY**

We have deliberately chosen the word cybertechnology here. Cyber in Greek means steersman to remind us the one of the major accomplishments of the information revolution is that it is putting the user, all of us, in the driver's seat. Yet, current discussions of the pervasive role of technology let us believe that technologies are in the driver's seat – they are driving our economy, scientific inventions and accomplishments and even politics. Forgotten in all of this is the notion of technologies as tools that are our servants, instrumental in expanding our capabilities.

Tapscott and Carston (1992) argued persuasively that the information age is entering a second era - one marked by decentralization, empowerment and affordability. The information systems/information technology (IS/IT) revolution has served as a major catalyst for change. Technology has advanced to a point where virtual corporations are not only possible but have penetrated many industries as cybertechnology technology reduces the significance of time and place. The growth of virtual organizations, which exist through connectivity and not shared physical space has begun to outstrip the demand for new office construction. In these firms, organizational performance and effectiveness depend on innovative deployment of new technologies for effectively managing knowledge networks for organizational effectiveness. Many such virtual organizations, based on information and knowledge as the foundation of their core businesses, are redefining the reality of the traditional brick and mortar organizations just as online learning is challenging the factor schools. The shift from the virtual organizations to the virtual technopolis no longer is a fantasy. In the state of Virginia where one of the authors lives, we already have an entirely wired city.

More than being helped by computers, companies will live by them, shaping strategy and structure to fit the new information technology (Main, 1998). The management information system (MIS) of the past which served the purpose of quickly producing sales, inventory, payroll, and scheduling data for decision-makers, has been integrated into the entire organization. This evolution is reflected in nomenclature changes: MIS became IS to show that the passage of information is no longer unidirectional and as numerous special purpose systems such as group decision support systems (GDSS), executive information systems (EIS), and executive support systems (ESS) which are shared between managers and members of the organization on the one hand, and between senior executives and their external constituencies.

Cybertechnology is adding new dimensions which force us to rethink the way we manage educate and lead. It is creating a timeless, placeless environment where temporal and spatial constraints no longer assist. Everything – people, resources, knowledge – soon will be available everywhere, instantaneously. Time seems to run faster in cyberspace where many activities are independent of location. Twenty-four hour industries are popping up everywhere, from banking to food shopping. Cyberspace provides a global a global marketplace for trading and disseminating knowledge.

One of the most important developments in the management of organizations is computer networking. Information that once flowed through the hierarchies now connects people to people and people to data. Networks also irrevocably alter the nature of managerial authority and work and invariably change the structure of the organization. Networks also

provide easy links across functional boundaries, the old walls between departments and encourage multidisciplinary teamwork. Teams of people, geographically dispersed, work routinely together, concurrently rather than sequentially, via computers in real time.

The managerial skills that are important in networked organizations go beyond technical competence and include mentoring, coaching, working collaboratively across organizational boundaries and building strategic alliances both within the firm and across organizations. In IS/IT project teams, one person rarely occupies the leadership role.

## **LEADERSHIP**

Until recently, our conceptualizations of leadership were based on qualities of a single individual - the Lone Ranger. Leadership attributes have included charisma, motivation, the leader's ability to rally followers behind his/her visions and goals and the ability to inspire the followers. Bennis (1999) captures the situation as follows:

So we cling to the myth of the Lone Ranger that great things are accomplished by larger-than-life individual shouting commands, giving directions, inspiring the troops, sounding the tocsin, decreeing the compelling vision. Leading the way and changing paradigms with brio and brimmer" (p. 73).

In today's complex organizations, it is virtually impossible for one person, the omnipotent individual, to have all the characteristics, skills, information and experience to lead a group, organization or nation. Therefore, leadership is shifting from individuals to teams. Microsoft, for example, is led by a 3-person team, the "Office of the President".

According to futurist Michael Schrage of MIT, many of our current and future leaders will be leaders of the old, because the old have the most difficulty embracing the new. As we approach the 21<sup>st</sup> century, leadership is being divorced from two attributes that used to characterize it: (1) authority - leaders used to be individual who held formal positions of authority and who asserted their leadership largely by virtue of their positions; and (2) power which was derived from the leader's formal authority and position. Hierarchical authority and position power, as they have been used traditionally in Western leadership and management thought, become dysfunctional as leaders are grappling with issues such as vision, empowerment, commitment, values, creativity, and spirit at work. While true leaders must understand the power players and dominant paradigms, the key to success is seldom found in any of them. The true breakthroughs come from investing in the collection of information and the generation of insights and knowledge that sit conceptually above any of these paradigms (Moore, 1996, p. 254). As Moore suggested, a great deal of leadership should rely on creating shared meaning which, in turn, shapes the future. As Moore remarks:

Sadly, the way most managers do their strategic planning today is by searching for investment and expansion opportunities within the same old business paradigm and within the same old definition of their industry. The energy and vitality of corporations is being channeled into the abyss of worn-out paradigms where it atrophies (p. 47).

Leaders whose horizons are bounded by traditional perspectives or use past knowledge to explain a new phenomenon are not able to solve problems that will confront us in the future. I believe that leadership will be the currency of 21<sup>st</sup> century models of management, education, and technology. The models we foresee will incorporate new organizational paradigms, which articulate leaner, flatter and virtual structures, a highly mobile workforce which includes Generation X leaders on the fast track whose values differ significantly from those of the generation that preceded them. We also believe that ethics, values, both company and personal, will be important for the new leaders who demand more than a generous compensation package from the employing organization.

## **MANAGEMENT, EDUCATION, CYBERTECHNOLOGY AND LEADERSHIP AS AN INTERCONNECTED NETWORK**

Management, education, cybertechnology (information and communications technologies) and leadership along with our political, social, and economic systems co-evolves together. Business and technology have always been intertwined. Education and technology are becoming increasingly interconnected as, for example, evidenced by the rapid proliferation of distance education programs. Changes in one of these areas will be invariably responded to by reactive or proactive developments in the other fields that must ensure, enhance and sustain their viability. As multidisciplinary studies are showing, there is an increasing degree of interconnectivity among the different fields of scientific inquiry - connective tissues are growing between unlikely cells.

For example, at the onset, it may seem that leadership and information technology (IT) are unlikely bedfellows since research on management information systems (MIS) until recently has paid little attention to leadership processes in the design and implementation of communications and information technologies. At the same time, leadership scholars have rarely incorporated information technologies as either independent or dependent variables into the design. Although they represent major organizational interventions which challenge the role of the leaders as a change agent. However, practitioners are quick to point to examples, which illustrate the interrelationships, and reciprocal influence processes that tie leadership and IT together. Take the role of CIO as the senior IS executive of the firm, for instance, which clearly combines technological competence and currency with leadership competencies such as identifying core values, and building an organizational culture of change.

In fact, if we take a look at MIS and leadership studies as the academic foundations or disciplinary roots of the two fields, we note a number of important similarities as the work of one of the authors has shown. The conceptual parallels between leadership studies and MIS which are summarized in Table 1 stem from a wide range of sources including the lack of conceptual clarity o basic definition of leadership and MIS, the multidisciplinary foundations of both fields which include history, religion and anthropology, to name a few, questionable conceptualizations of key concepts and inadequate validation of focal constructs such as leadership and systems effectiveness.

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Insert Table 1 Here

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Likewise, leadership and education are becoming increasingly intertwined. Leadership education is now offered in the context of undergraduate and graduated curricula by traditional academic institutions which have also captured a segment of the executive education market. In addition, many corporations including GE, Motorola, Southwest Airlines, have their own universities. Leadership education is a multi billion dollar business. Yet from all sectors of industry, we here questions such as, "Where are the leaders?" Where is the next generation of leaders coming from? This is one of the many paradoxes that the transition into the 3<sup>rd</sup> millennium is confronting us with.

One of us (Klenke, 1999) has argued elsewhere that one of the problems with contemporary leadership education stems from the fact that too much has been written about *what* leaders should be thinking about and too little is being said about *how* leaders should be thinking. In that article, I proposed that three hallmarks of leadership effectiveness in today's turbulent, competitive, and volatile environment are the leader's ability to think contextually, metaphorically, and futuristically. Since leadership is largely shaped by context and contexts are becoming more and more diverse both organizationally and globally, leaders must become great contextualizers. Thinking contextually means that leaders are able to identify, articulate the salient contextual factors that impact on their leadership.

Thinking metaphorically helps us over the established, stagnating terminology used in leadership and in other fields and allows us to think about a phenomenon in a fresh and creative way. Metaphors of leadership are inspirational and engage the imagination of those who lead and the led. And finally, thinking futuristically, is what Project 2001 is about. Again, the question arises, where and how do students of leadership acquire these skills?

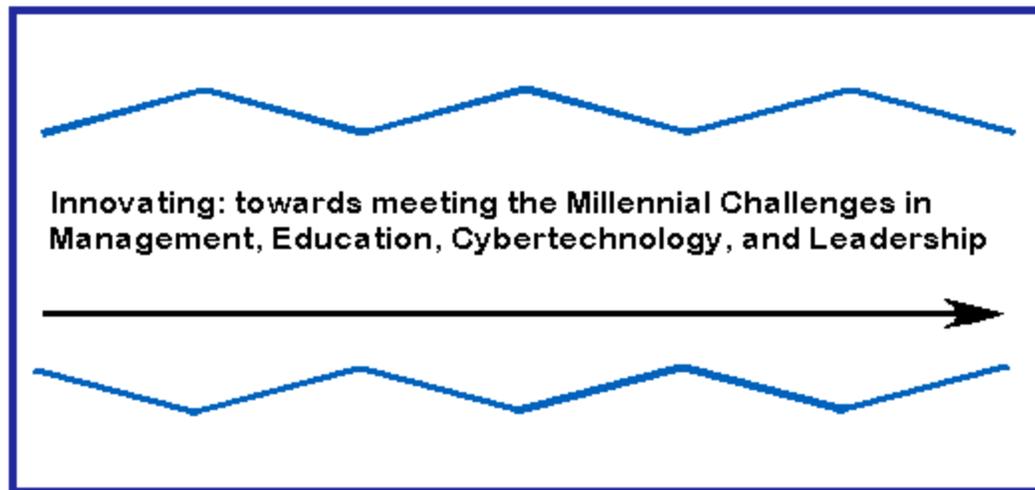
#### **A FRAMEWORK FOR PROJECT 2001: MILLENNIAL CHANGES IN MANAGEMENT, EDUCATION, CYBERTECHNOLOGY, AND LEADERSHIP.**

From the above it is apparent that Project 2001 is a collaborative effort for generating a radical debate on what education, leadership, cybertechnology and management must achieve in the twenty first century. Whilst others may choose to focus on how to reach a consensus on education, leadership, technology and management, Project 2001 intends to reengineer these through the variety that exists within our creative intelligence. The "Framework for Project 2001" is intended to stimulate creativity while providing a broad set of directions for those who are interested in participating in the project either in person at the AoM/IAoM conference and meetings or electronically throughout the life span of the project. The project combines both convergent and divergent processes; it calls for the convergence of multiple disciplines. The outcomes envisioned include innovations that align the projects four engines to create new interfaces and alliances, complexity thinking, and recommendations for practice that will help academicians, practitioners, researchers, educators and futurists to anticipate and meet the challenges in management, education, cybertechnology, and leadership in the new millennium. Millennial transitions provide the context for the creation of powerful narratives, which we hope to capture with this framework. Millennial

turning points, as we noted earlier, are also opportunities for radical thinking, radical solutions and paradigm shifts. The notion that the future has already happened - back to the future - is useful in framing this process of inquiry.

Figure 1

**Innovation as the Driver of Change in Management, Education, Cybertechnology, and Leadership**



The indicative working framework for Project 2001 that serves as a reference to guide the process of inquiry encompasses three phases: problematisation, generation of alternatives and experimentation. These three phases do not necessarily evolve and proceed in an orderly linear sequence but can also work together in a non-linear or recursive fashion. Each phase has a built-in feedback loop that may be proactive or reactive. The three phases are:

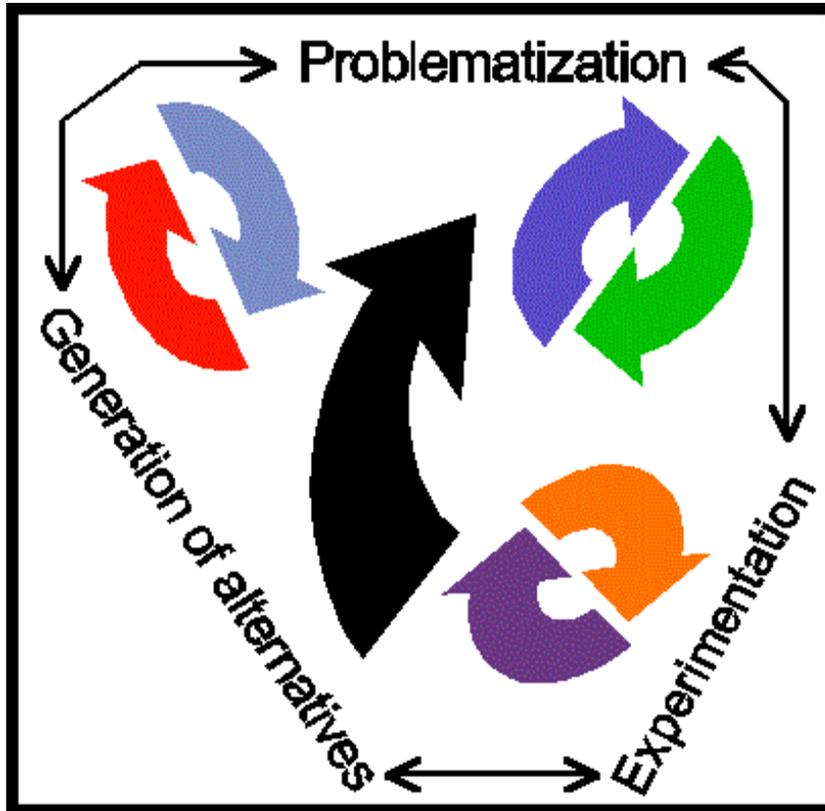
**Phase 1 - Problematisation.** This phase is intended to clarify what is wrong based on the supposition that "the question is the answer". It focuses on generating questions concerning the risks and limitations of existing paradigms that govern management, education, cybertechnology, and leadership while legitimising the need for creating alternative futures. Without asking the right questions it is not possible to dislodge existing paradigms that are losing their relevance nor is it possible to identify and embrace emerging paradigms.

**Phase 2 - Generation of Alternatives.** This phase is designed to ask the question "what is possible?" in management, education, cybertechnology, and leadership at the dawn of a new millennium. Specific activities of Phase 2 may include the development of exploratory and normative scenarios or making mental movies of alternative futures. Phase 2 is designed to develop possible alternatives that could potentially provide an escape route from existing paradigms, while mapping the route towards unfolding paradigms. Rather than predicting a single future or predicting the most plausible story of what is possible at the beginning of the 21<sup>st</sup> century, the focus is on the generation of bold, even improbable but possible futures as a way of stretching our thinking. One outcome of Phase 2 is the creation of value, intellectual, practical, or social for global knowledge partnerships that bring together representatives from academia, business, education world wide to discuss future issues of critical importance.

**Phase 3 - Experimentation.** After having cast a wide net in terms of surrounding the question of what is possible in terms of alternative models and paradigms, Phase 3 focuses attention on the question "what is feasible?" by providing the participants of Project 2001 with a platform upon which they can further develop their thoughts while applying them. We envision that research forums and practice fields will evolve around the unfolding paradigms that emerged from Phase 2 activities. Furthermore, we envision that the multidisciplinary collaborative alliances developed in Phase 2 and opportunities for experimentation of this phase give rise to transformative changes that qualify as paradigm shifts in management, education, cybertechnology, and leadership.

Figure 2

**The Three-Phase Framework for Project 2001**



This indicative working framework, when viewed as a whole, prevents us from having a futuristic fog machine that pollutes clear thinking about the present. This is an important consideration because it is always dangerous to think about the future without explicit links to action in the present. By sitting in the present, this framework helps us determine which bridge to cross and which to burn. Thus, while the second and third phases of Project 2001 will provide us with new possibilities and opportunities, effective solutions are not created unless they are revealed by asking the right questions i.e. questions that expose the underlying problems. This can be illustrated through an initial problematisation of the existing management, education, cybertechnology, and leadership systems.

Within this general framework, many different methodologies both quantitative and qualitative can be applied. One obvious approach, as we mentioned earlier, would involve the use of scenarios, which Porter (1995) defined as:

An internally consistent view of what the future might turn out to be - not a forecast, but one possible future outcome.

In contrast to traditional forecasts which are based on current trends, or estimates of growth based on history, which can be dangerous to organizations, if their environment is changing fast, scenarios develop a storyline designed to harness foresight rather than forecast. Hammond (1998) compares the scenario to a good story - scenarios have a set of circumstances or constraints within which they occur, a plot or logic that guides how the events unfold, and characters, individuals, groups or organizations and institutions that take part in the events and give them a human context.

Scenarios have been written to explore the connection between a successful Europe and a common currency (Currie, 1997), and Peter Schwartz's global scenarios were written to focus on the challenges which will need to be met for the optimistic scenario to prevail (Pine, 1995). They have helped companies to become the most successful of the major oil companies (Royal Dutch Shell) and they have been employed in the military and business communities.

### **THE SOLUTION IS THE PROBLEM: THE CASE OF EDUCATION**

The main implication of the transformation which society is undergoing is that unless our rate of learning (i.e., the rate at which we transform our worldview), is greater than the rate of change, we cannot define our development as progress, nor can we create and exploit new opportunities that meet our growing expectations. Such a transformation cannot be realised by thinking the way we thought when we ceased opportunities in the past. A new opportunity demands a new way of thinking. And such a transformation can only be brought about through education. However, the solution has unfortunately become the problem. This is because transforming the way we think is not possible through an education, which has developed itself to become a mirror image of the factory it serves.

The foundation of the present education system was laid at the end of the nineteenth century. It was designed to meet the needs of a world that was being transformed by industrialisation. The challenges we face today are of the same magnitude, but they are of a different character. The task is not to do better now what we set out to do then. It is to rethink the purposes, methods and scale of education in our new circumstances. The problem is that we currently have too much of a mass education system, the purpose of which in its original form, was to feed factories with a productive workforce. Like the factories it fed, it has adopted a production management paradigm where the curriculum is heavily weighted towards subject matter that gives students the illusion that rightness always depends on faithfulness to rule with policy makers keep pushing towards standardised assessment, uniformity of programme and homogeneity of aims. However, in a fast moving world, those who have learned a series of rules will have an inherent inflexibility that will eventually be their downfall. Although policy makers are right in acknowledging the importance of education in a fast moving world, they are ignorant when it comes to what form of education is required. They keep calling for the expansion of a form of education that is fast losing its relevance. A comparison of the education for opportunity and organised education may provide some clues as to what must education achieve in the twenty first century.

Education for opportunity is based on the supposition that education only becomes useful when it is meaning-oriented, enabling individuals to understand the world around them or see alternative worlds, when it is relevant in order to create new opportunities for individuals, and when it is natural, which means that individuals are not told "learn it" but instead they learn because they want to and are ready to learn. Education for opportunity is contradicted by organised education where the content is planned by the providers, its delivery is bound to a particular place, its outcome is measured in terms of the ability to replicate the content and its success is determined through qualifications. Therefore, with organised education, education is what remains when we have forgotten that we have been taught whereas with education for opportunity, education is what we cannot forget because it is what we have learned. The misconceptions surrounding organised education include:

- ❖ Educators have accessed a sustainable formula for success and developed technologies to exploit it.
- ❖ The more individuals know about this formula, the more successful they become.
- ❖ Such a formula is an enduring asset, which can be indefinitely optimised and differentiated.

By losing sight of what education should be about, organised education has embraced a production management paradigm where production managers have not asked themselves whether they are making anything useful: they are all busy running and supporting the education factory. Through this paradigm, education has grown to a size where "being there" is what matters with educators absorbing themselves with how to manage resources. Whilst an uncritical acquisition of an industrialised model of education management has led to interest in measurement, the artificial nature of what is being measured as successful has not been discussed.

Recent changes that have involved the reinforcement and expansion of mass education demonstrate that although we cannot have change without progress, it is certainly not the case that all change can be defined as progress. Unless the education is reengineered, it cannot become a source for the well being and renewal of society. This change must proceed all other changes otherwise change will only be superficial. As the solution lies in the problem, the answer has to lie in the question. Some examples include:

- ❖ How do educators learn?
- ❖ Should educators allow learners to race and surpass them?
- ❖ Should educators who do not want to race learners be encouraged to spend their time extolling the value of education instead?
- ❖ What education does education require for its renewal?

## CONCLUSIONS

As Project 2001 evolves, we expect a movement from a concentration on turning points and burning in the four specific areas to the development of more integrative, interlocking concepts and models that break down the boundaries between the four pillar and work on the construction of the architrave. In an increasingly interconnected society, the discovery and articulation of interrelationships and interdependencies between management, education, cybertechnology and leadership are a requisite for transcending the existing simplistic, single discipline models we are currently working with.

We also need to remind ourselves that while technology can change rapidly, political and social institutions change very slowly. Furthermore, they almost never change in anticipation of social needs, but only in response to them. We therefore have to be aware that any attempt to reconstitute existing practices through a chameleon-like disguise is not sustainable as it will face the same invisible paradox that is inherent in the chameleon's nature: while a chameleon can change colour according to its surroundings, the chameleon inside remains untransformed. What is necessary is a metamorphosing-chameleon where institutions not only develop the ability to change colour but also their *raison d'être* in a way that enables them to transform themselves naturally.

Let us leave you with a parting thought: great answers are not created; they are revealed by great questions. The generation of thought provoking, revealing questions is the essence of the first phase of Project 2001.

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Table 1

**Conceptual Parallelisms between Leadership and MIS**

<b>Sources of Parallelisms</b>	<b>Leadership</b>	<b>Management Information Systems (MIS)</b>
Definition	Leadership has been defined as trait, behavior, personality, charisma, situation; most definitions suffer from a lack of conceptual clarity	MIS has been defined as technological imperative, socially constructed, or both; lack of conceptual clarity characterizes most definitions
Theoretical Foundations	Multidisciplinary, drawing from disciplines ranging from religion to political science	Multidisciplinary, drawing from disciplines ranging from engineering to anthropology
Methodologies	Leadership research embraces both qualitative and quantitative methods; relies heavily on paper and pencil measures to assess major leadership constructs	MIS research employs both qualitative and quantitative techniques; major constructs are measured using paper and pencil tests modeled after instruments used in organizational behavior research
Construct Validation	Inadequate construct validation resulting from ambiguous definitions of leadership constructs and their operational measures	Inadequate construct validation due to poor construct definitions and measures
Dependent Variables	Leadership success or effectiveness, group or team satisfaction; group performance	IS effectiveness; IS usage; user satisfaction
Duality of theory and practice	Emphasized in leadership research	Emphasized in MIS research
Research Hubs	State Universities of Iowa, Michigan, Ohio, SUNY	Universities of MIT, Minnesota, Georgia State
Levels of Analysis	Multiple levels including individual, group, organizational, and environmental	Multiple levels including individual, group, organizational, and environmental

## **FROM A BASIS TO PERSPECTIVES OF MANAGEMENT**

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### **ABSTRACT**

The purpose of this research is to articulate the fundamentals of a new management theory in order to gain more support for the perception of management as future development and provide an overview of sustainable management, thereby complementing and expanding current management theories. In addition, this research projects changes in education to prepare the students for the realities of a sustainable future and examine the role of moral and religious transformations. Management, as defined here, is the organization of cooperative labor aimed at competitive production designed to overcome the following contradictions: (1) the contradiction between a narrow personal specialization and a wide personal demand; (2) the contradiction between a preferred personnel's specialization and specific market requirements for products and (3) the contradiction between an unlimited potential of the production growth and a saturated market demand. As management expands, its influence from the production domain to societal regulations and the relationships between people and nature, this expansion gives birth to a new discipline – Sustainable Management aimed at overcoming the contradictions between: (1) a nonegoistic, civilized atmosphere inside organizations and their nonethic fight against each other and society while struggling for competitive advantages; (2) natural resources overconsumption and their potential exhaustion; and (3) the current degree of self-satisfaction and a potential threat of an ecological catastrophe for future generations. To find the answers to these six contradictions is one of the greatest challenge for intellectuals and all humans. Meeting this challenge requires a reexamination of morality and religions. There is a general striving common to all religions and ethnic groups – the wish of a better life for present and future generations. It gives the basis to start the development of a new discipline – the Interethnic and Interreligion Relations Management.

### **INTRODUCTION**

Free market economy, and especially free labor market development, made management a key factor in the growth of public wealth, quick satisfaction of multiple consumers' demands, and in labor atmosphere perfection. Management is a new, quickly developing field that is both a practical and scientific discipline. But compared to economic theories, the theoretical foundations of management are much weaker. Frequently a set of practically useful recommendations substitutes for theory. To predict the future of management in the third millennium we must stand on more solid theoretical grounds. Moreover, the contradiction between the egoistic orientation of modern competitive management and the cooperative character of the global ecological, demographic, social, financial and political challenges faced by contemporary companies requires to match management of a particular organization and corporation with the regional and global requirements associated with management. New challenges of the third millennium also should give birth to new educational disciplines and paradigms. In parallel with the World coming to sustainable future we can foresee a sustainable management development.

Sustainable management can be defined as the management that is designed to join together two contradictory orientations towards competitive advantages and community needs. This discipline should teach how to respect the regional and global requirements while enforcing the organization's competitive advantages. We can foresee how sustainable management development overcomes the existing business-ethics contradictions. For example, today it is profitable to launch a panic at the stock exchange, but tomorrow the author of this panic loses his image in a public opinion that results in a total financial loss. Or importunate advertisement tomorrow will cause an opposite effect – a diminished consumer demand. So, the future manager should avoid annoying the public.

To prepare the managers for municipal, regional and international organizations can lead to the development of a sustainable business administration discipline, which joins together administrative and entrepreneurial skills. International business management would include measures of how to prevent global financial catastrophes. And in parallel, a field referred to as interreligion and interethnic management would be developed, based on the common perspectives among religious and ethnic groups including the shared wish for a better life for present and future generations.

The threat of a quickly approaching ecological catastrophe would provide the driving pulse to develop international and interreligious regulations. For example, now it is awkward to ask some ethnic or religious groups to diminish their population growth rate. Tomorrow specially prepared interreligion managers will be able to effectively influence the

family planning even in the most fanatic countries such as India. Or today it is strange to teach Americans how to limit their overconsumption, but tomorrow the interethnic managers will be able to explain Americans that they are setting a dangerous life style example for other ethnic groups.

**Some New Bricks Into the Management Theory Foundation**

To have a basis for prediction of the future changes in management we should precise the role of management in overall human activities. Modern civilizations can be schematically represented by the three overlapping loops of the human activity circulation:

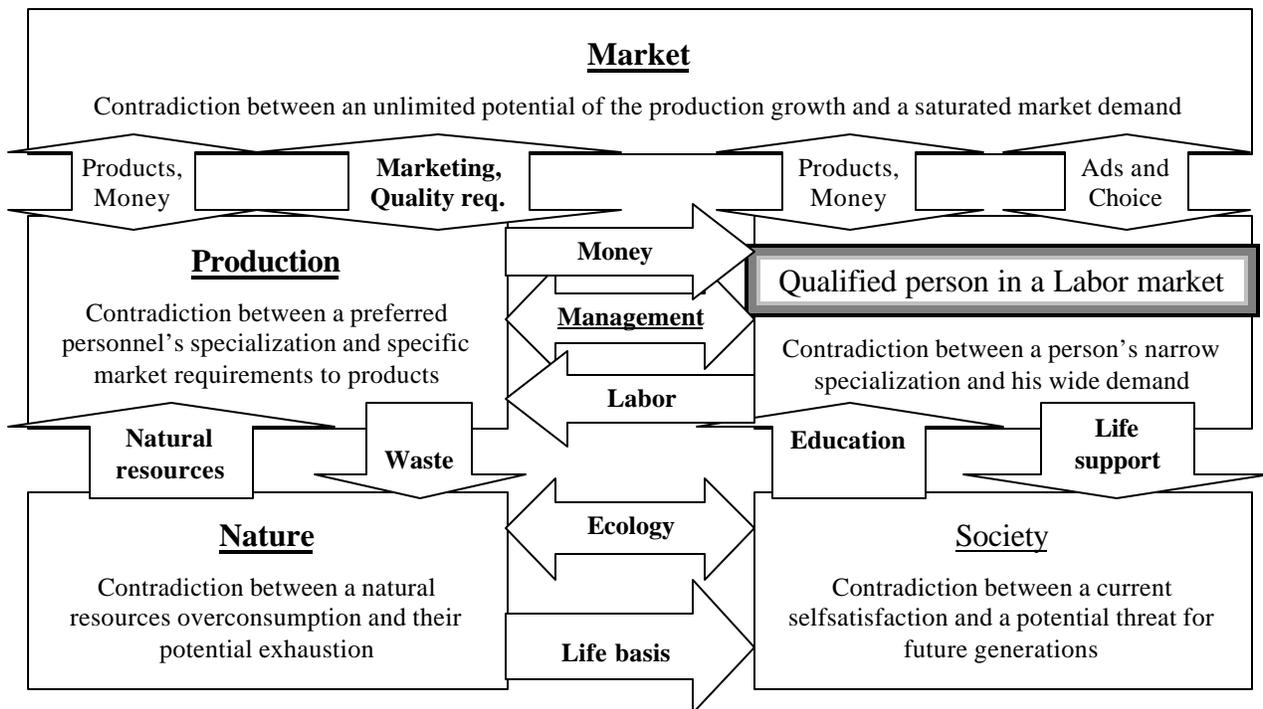
- An economic loop, consisting of three main units – labor markets, cooperative production of complex products and services, and market exchange of products and services,
- A natural loop, representing nature coupled with the production unit and reflecting the utilization of natural resources for production and waste return back to the nature,
- A human loop, representing the human society coupled with the labor market and reflecting a flow of sources to support the new generation development and return flow of educated individuals from society to the labor market.

A driving force activating the whole civilization machine is delivered by the nature and particularly by the sun energy flow and the sun energy accumulated in the earth during preceding millions of years. In society this driving force is transformed into the human reproduction, consumer, business, education and entertainment activities. Management plays the main organizational role in the whole circulation.

The interactions between the main players of modern civilizations are shown Figure1.

Figure 1

**Interactions and Contradictions between Society, Person, Nature,  
Production and Markets in Modern Civilizations**



According to this diagram, management plays a central position in modern civilization. One of its major purposes is to overcome the contradictions between the narrow specialization of personnel and the complexity of the required products and services. Management also helps in overcoming two another contradictions:

- it determines the motivation and the reward value for a qualified and specialized person, at a level that not only supports his or her own existence, but also supports raising and educating future generations
- it involves innovations and flexibility in production organizations to overcome the market saturation.

These contradictions and the ways of dealing with them will also take place in the next millennium; therefore the role of management in overcoming these contradictions will be important for a long time.

In general, management is a science, art and practice of the collective labor organization aimed at the effective production of competitive material and immaterial products and services in conditions of a saturated market with an unlimited potential for production growth.

The unlimited potential for a production growth in a saturated market is very important to understand. The management revolution, according to Peter F. Drucker (1993), originated from the productivity revolution after the World War II. In opposition to the command economy with its constant deficits, management deals with the constant overproduction that requires a great intellectual stress to select the best ways for innovations and reorganizations. Again, according to Peter F. Drucker, it puts knowledge before money, property and capital in the modern economy. But this knowledge is a practical one that can exhibit its strength only in a clear business infrastructure. For the future Peter F. Drucker predicts the revolution in concepts (Drucker, 1998). This revolution deepens the split between leaders, strategic and innovation managers from one side and operation managers and administrators from another side. It should overcome the contradiction between a growing importance of the practical knowledge and a more quick substitution of the human carriers of this knowledge, operation managers, by the computer Informatization means.

Another key factor in modern management development is a free labor market that supplies the qualified personnel to support current businesses and business innovations and transformations. And this free market calls for the retention of qualified personnel. The three main contradictions of the modern economy and corresponding mechanisms to overcome these contradictions are shown in Table 1.

Table 1

**Three Main Contradictions of the Economic Loop of Modern Civilizations**

<b>A contradiction between</b>	<b>A mechanism to overcome the contradiction</b>
A narrow personal labor specialization and a wide personal demand	Money, financial institutions and markets
A personal wish to do what is possible and an organizational need to produce what is needed	Management and business organizations in conditions of overproduction
A possibility to produce more and a saturated consumer demand	Marketing, promotion and quality control in conditions of the market saturation

The first contradiction was overcome thousands years ago with appearance of money as a universal equivalent of consumer product values and labor amounts and quality. But in countries where the transformation to a market economy has not been completed, hard labor does not offer the possibility of satisfying the wide demands of the worker and his or her family. With an overall productivity growth these countries can rise the labor value, thus creating the conditions for the implementation of modern management.

The second and the third contradictions are in the process being of overcome. Not every country has finished its transformation to a free market economy. Not every country has reached the potential of unlimited production growth. Not every country has a free labor market that gives the basis for a civilized atmosphere inside organizations. Therefore, the future trend is the expansion of the free market conditions to a broader range of countries, followed by the effective implementation of management principles. And another conclusion - the managerial recommendations direct implementation in developing countries before the free labor market is created and a high production potential is achieved - may not reach the desired effect. For these countries some version of managing during the transitional period should be developed and implemented.

Civilization is the way to meet constructively all contradictions and challenges elaborating new mechanisms to regulate new contradictions. Management is an intellectual and practical instrument to decide all contradictory challenges in real time and the future. Any time management must adjust its own methods to the new conditions.

### AN OUTLOOK ON THE FUTURE OF MANAGEMENT

The three rising contradictions of modern civilizations and the corresponding mechanism that must be developed to overcome these contradictions are shown at a Table 2.

Table 2

#### Three Rising Contradictions in Modern Civilizations

A contradiction between	A mechanism to overcome the contradiction
A civilized atmosphere inside organizations and their unethical fight against each other and society while struggling for competitive advantages	The creation of nongovernmental, regional and international organizations capable of influencing the ethic atmosphere spread throughout corporations
An overconsumption of natural resources and their potential exhaustion	An international regulation of the minimal price rises to prevent the depletion of the natural resources
A current self-satisfaction and potential threat for future generations	An interreligion and interethnic action influencing people to turn from their concentration on the own pleasures to the more responsible care about future generations

**The first contradiction** originates from personal egoism and integrity needed for a person to survive in a competitive atmosphere. Joining together in an organization individuals must limit their egoism to satisfy to the organizational or corporate culture. But their egoism and integrity collect at the organizational level and are expressed as the coherent egoism and integrity of the organization struggling for its survival with the rivals. Without external forces organizations or corporations will not express ethical behaviors in this fight. The price for ethical behavior is too high – it is the organizational survival.

There are already a number of multinational corporations, which claim to be ethical and socially responsible organizations. Among them are General Electric, Walt Disney, Marriott and Motorola, all of which have subsidiaries in developed and underdeveloped countries. But many more corporations have not stepped on the way of the social responsibility.

The analogy with the traffic regulation may lead to the correct conclusion. No driver loves the road police, but everybody understands that without regulation, traffic turns into nightmare. So, to regulate an ethical atmosphere of the competition between corporations and organizations, very influential NGOs, regional and international organizations should be created. These organizations would have the right to punish unethical behavior, including the artificial financial crisis. A system for punishing financial market players who promote global financial instabilities should be created. This is easy to say, but difficult to realize; it is a task more challenging than the exploration of Mars. And it is a challenge to all thinking and responsible people.

But the international organizations themselves should be controlled by the representatives of the Earth population. Any bureaucracy, independent of its level, has a steady tradition to put its own goals over the organization's goals. Bertrand Schneider, Secretary General of the Club of Rome points out: "There is a financial scandal, at the level of the planet which nobody so far dared to analyse and present... Scandal of the International Institutions as well such as the World Bank, which is spending so much for administration and overabundant staff that a very small percentage is left for action in favor of the poor countries".

The Club of Rome, founded in 1968 in Rome by Aurelio Peccei, was the very first organization that attracted public opinion to the problem of the limits for further expansion of the human activity on Earth. It is a group of scientists,

economists, businessmen, international high civil servants, Heads of State and former Heads of State from the five continents, who are convinced that each human being can contribute to the improvement of human society. The famous reports to the Club of Rome are very talented contributions into a new global mentality. Among these reports are *The Limits to Growth* (1972) and *Beyond the Limits* (1992) by Donella H. Meadows, Dennis I. Meadows, Jorgen Randers, and William W. Behrens III that have shown convincing facts and considerations requiring urgent transition to inevitable sustainable development.

**The power of the second contradiction** is growing with increasing speed. Some of the most important natural resources are totally exhausted. For example, it is not enough to say that free land for agriculture has disappeared, but existing agricultural land is shrinking constantly because of desertification, urbanization and industrialization. The estimated time to use up some other of the most important resources – such as discovered stock of oil, is measured by tens of years. This means that not only our grandchildren, but also already our children, will feel the growing lack of natural resources.

There is the only one way to limit consumption of vanishing natural resources – to put limits for their minimal prices, taking into account not only their extraction costs, but also their real values from the future generation's point of view. The modern pricing practice for depleted natural resources is as absurd as the price for a golden ring covering only expenses to open the box and to hand this ring to a buyer. By introducing a new pricing method for deficient resources we can stimulate the development of new progressive technologies, based on the renewable resources development. These new technological developments and their implementation and dissemination can give a new driving pulse for further management development.

But the idea of the limited natural resources is not widely accepted yet. An excellent critical platform of the Club of Rome managed to touch minds of only a small part of intellectuals. To stop heading for a disastrous ecological catastrophe we should launch a new model of the sustainable future based on commonly shared values. After the Earth Summit (Rio de Janeiro, 1992) a number of new international organizations have been created to find the proper ways to sustainable development. One of them, Earth Council, is preparing for a common adoption the Earth Charter – the collection of ethical norms for a sustainable future. New communication modes and media such as Internet are helping now to elaborate and adopt these values that will be the basis for a global political will.

It is pity to say, but many commonly shared values are produced now by advertisers and are turning around shopping habits. Corporations prefer to convert the entire population of the Earth into eternally consuming babies. This results in a childish model of behavior expressed by many adults: concentration on their own pleasures and problems, shopping vanity and irresponsible attention to the needs of future generations. If the Earth endures the overconsumption of the USA, the spread of the overconsumption model all over the world inspired by the immoral advertisement will accelerate the natural resources exhaustion thus producing the irreversible changes.

Thus, considering the future perspectives of the sustainable management development, we are touching on the basis of the existing management – an aggressive promotion of products and services by means of the inventive advertisement. Here again we could use the traffic regulation model, introducing the spiritual space as the field and the spiritual ecology as the object of regulation.

Management as a central agent of the human civilization influences all spheres of the civilization. We have discussed already the natural sphere, where management is responsible for the natural resources spending and waste accumulation. In the organizational sphere management joins together individual efforts producing a synergetic effect of a cooperative labor. In the common information space management creates needed knowledge and uses advertisement to increase its own effectiveness. And the highest of all these spheres is the spiritual space, where management can create new emotions, values and hopes. Any talented advertisement acts at the emotional sphere and often does so unconsciously. Collected together emotions give rise to new values implemented also unconsciously. These values can seed new hopes, which are able to change the human behavior.

The spiritual space is the sphere of human emotions, values and hopes subject to different influences including those that stem from management. Not any influence should be considered as wanted and permitted. The humankind knows the disastrous role of many bad influences on the spiritual space. For example, alcohol, smoking, drugs, crime, gambling, swindle and so on propaganda. Therefore, in parallel with natural ecology should be launched the spiritual ecology, preventing bad influences on the human spiritual space. Spiritual ecology can be determined as the complex of preventive measures to protect the human spiritual space from different disastrous influences. Spiritual ecology is of prime importance when we consider our children and future generations.

We should stop the overconsumption propaganda, launching in parallel with natural ecology goals the spiritual ecology requirements. For example, the requirement of not overfilling the personal emotions with uniquely material needs. Or not to repeat constantly the annoying advertisement. Or not to spread violence and crime propaganda on TV. We should stop the violence in many parts of the world. And this dialogue should start from a common set of values such as the urgent need in preventing from the irreversible changes.

This may sound strange while discussing the future development of the free market economy. But the survival of the human species carries too high a price for our trust in a free advertisement model. We should estimate the costs resulting from the free advertisement model and its propaganda from the sustainable management point of view. We should educate future managers with respect to the values espoused by the sustainable management perspectives.

The main feature of a sustainable business specialty is to connect the skills and knowledge useful to make money in a real world with those needed to fulfil the mission of saving the world from multiple disasters. These two approaches are very much in contradiction: by making money one forgets about the world, and working for the preservation of the world, one usually does not make money. But with the growth of international and regional ecological regulations, this specialty will be more and more respected. In a transitional time, students of the Sustainable Business specialty who possess the practical skills on a wide scientific basis will be able to align themselves with the specific requirements of the world protecting organizations. If these organizations in particular locations are not developed enough to attract graduates, these graduates would instead join existing egoistic companies and wait for better times.

**The third contradiction** touches on the most intimate matters: personal life style, moral and religious convictions. But these matters are very influential: any change in life style alters the market demand enormously, morality influences the personal responsibility for civilized environment and business atmosphere and some religions are responsible for a high population growth rate. The two main threats to the survival of the human species are overconsumption in the developed countries and overpopulation in the developing ones. Overconsumption is mainly inspired by the western life style created by propaganda and advertisement. Here we see key management success factors such as advertisement working in opposition of human prosperity. The threat of spreading the overconsumption model to the developing countries is very dangerous, but these countries, like their developed counterparts, are subject to the mighty advertisement campaigns.

To come to new values parents should think about their children and grandparents about their grandchildren's future instead of the endless preoccupation with self-satisfaction. We should return to the basic points of many religions: the common wish for a better future for present and coming generations. By removing the envelope of any religion we can see the innocent baby's eyes asking us, "What have you done for him and for future generations?" It is God looking at us and asking us about our responsibilities.

No scientific logic can stop the disastrous movement to a global environmental catastrophe. The way to a new life style goes through an appropriate religion. But this religion should be global and should be shared by the most of the Earth's population. It is sad to realize that humans can come to some common religion only after a common disaster. But currently the world looks like it did 2000 years ago when Christianity appeared as an answer to the same questions we are raising now. In the Christian hate of the wealth accumulation one can see an empirical analog that more cattle gives a wider desert. It is worth to remind the reader of the popular saying: "Greece has been eaten by goats". This observation arises from the fact that formerly fruitful lands in the middle of Africa have been turned into the Sahara desert by expanding human activities. This desert during the past thousands years continued to grow so that the most of the people of northern Africa have been swept away across the Mediterranean Sea and had to start new lives in the cold European forests.

It took human civilizations more than a thousand of years of the gloomy Middle Ages to accommodate themselves to the European climate. And only 1000 years ago, the Vikings started they victorious way back from the northern edge of Europe as the return wave of the human civilization accommodated to the severe environmental conditions. In the face of a new ecological catastrophe, we should return back to the first years of Christianity, to the God of love, when this religion was inspired by the common survival challenge. There should be a unique scientific and philosophical conviction that we hear God's words when the future generations require their right to survive. It is the basis for a common religion, independent of the concrete name given to God by a particular human group and its culture and traditions. For future generations need a common set of moral values and religion as a starting point but this model requires overcoming national egoism.

An interreligion and interethnic action influencing people to turn from their concentration on their own pleasures and problems to the more responsible care about future generations is urgently needed. This need can give birth to a new discipline – the interreligion and interethnic management.

**The sustainable management values can be expressed as:**

- the balance between the competitive companies creativity and the community needs, supported by the corresponding regulating organizations,
- the prevention of financial crises and military actions and preparations,
- the openness of the bureaucratic control organizations to the public inspection,
- the respect of the future generations expressed in the pricing policy of deficient natural resources and in saving the natural beauty and diversity,
- the hypocrisy in interethnic and interreligious relations overcoming for open dialog on the most essential global challenges, including the population growth rate control, - the adoption of common values shared by all religions – the wish of a better future for a current and future generations,
- the protection of the natural and spiritual ecology,
- the promotion of the intellectual and spiritual values instead of the material overconsumption.

**LEADERSHIP ON THE WAY TO A SUSTAINABLE FUTURE**

A new leader of the organization to be understood by his personnel should join the company's profitability with the environmental protection goals. This results from the fact that many employees spend one part of their lives as members of a company, but another, equally important part, as members of a community. For this person, the profitability of the company is of the same importance as the community and regional environmental perfection. With the growing interest of the population in the needs of future generations, leaders should reorient their goals in the corresponding direction. The talent of the leader depends on his or her skill to meet mutually contradictory challenges facing the companies' successes and to the creation of a civilized environment

On the other hand, communities and regions need their own leaders, capable to improve the environment while at the same time supporting local business activities. Movement to the sustainable future is impossible without an active involvement of the business people and managers. So, the challenging task before sustainable business administrations is to inspire local businesses movement towards sustainability.

**CONCLUSION**

Facing the approaching ecological catastrophe the world needs leaders who can express a global mentality and quick and decisive actions to save the Earth. The start of a new global mentality necessitates the correspondence of viewpoints of at least a small group of think tanks that can foresee the sustainable future. Now everybody, who is frightened by the coming ecological catastrophe, dreams about sustainability; yet nobody has a reasonable model of a sustainable world. A new comprehensive worldview opening the perspectives of evolution can be implemented only after this small group agrees that a common body of knowledge exists and is ready for dissemination. The model proposed here including current and future contradictions helps to shape the role of management now and in the future and to predict the emergence of new paradigms of management.

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# A CYBERTECHNOLOGY TO SUPPORT THE DECISION MAKING AT A FEASIBILITY STUDY OF INNOVATIVE PROJECTS

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## INTRODUCTION

One of the most serious problems standing before the management theory is to join together the achievements of the economics theory with the methods of decision making in management. Now these two approaches are rather separated: economics gives a general understanding of the market and production interactions, but management has to make everyday decisions resulting in risks, profits and losses.

For example, well known demand and supply curves can in general explain the existence of the equilibrium price, but they can not be used by a producer as a managerial tool, especially at a pre- and feasibility study, because supply depends on the producer's, but demand depends on the unknown buyer's decisions. To overcome this contradiction it is desirable to have a computerized instrument substituting the supply and demand prices on the values totally dependent on the producer's decision.

The purpose of this article is to show the Evolution-Simulation Method (ESM) developed by Dr. of Economics Vladimir E. Likhtenshtein. He has introduced in theory two values: undersupply and oversupply risks. Their dependence on the planned volume of supply permits to estimate with a good precision the optimal supply volume. It is especially important at a pre- and feasibility study of innovative products and services, because at this stage there is lack of information about real demand. He has developed the computerized model, named TANYA (Russian abbreviations for: Trustfulness, Accuracy, Reliability, Clearness). The computerized model minimizing the oversupply risk is very important at a current and future stages of management development, when management has to deal with a constant overproduction.

### The Theory Foundations

To estimate the planned supply volume, **PS**, for a new product there is a theoretical model taking into account multiple factors  $f_1, f_2, \dots, f_n$ , such as the population number in the region of the product distribution, their income, the share of their income spent on the similar products, market share being free from competitors. For any of these factors some statistical distribution model is supposed and input in the computer in interactive regime. Multiplying all the minimal values of these factors and dividing the result by the product price, **P**, we receive the minimal limit for a rough estimation of the possible supply volume. And the product of the maximal values, divided by the price, gives us the maximal limit of the volume. As usual, the initial spread between maximal and minimal estimations of **PS** is so large that these estimations have minor practical interest. The goal of the ESM is to diminish significantly the spread of the final estimations of **PS**.

The oversupply risk for **PS** > **FD** is estimated as the difference between the planned supply volume, **PS**, and factual demand volume, **FD**, multiplied by the cost, **C**, of the unsold product:

$$R_o = (PS - FD) * C.$$

The undersupply risk for **PS** < **FD** is estimated as the difference between the factual demand volume and planned supply volume, multiplied by the lost profit (**P** - **C**):

$$R_u = (FD - PS) * (P - C).$$

The real models of these risks estimation may take into account some additional values, such as the transportation and warehouse costs, discount price for extra supply, and so on.

ESM contains an universal algorithm to find the optimal **PS** value corresponding to the minimal losses at different assumptions. Multiple applications of ESM to different practical tasks show good precision of estimations. It is useful to note that the spread of the final results for **PS** is much less then the initial spread.

The ESM approach is the generalization of the recognized Thomas Bayes's method of finding an optimal decision in uncertain conditions. But Bayes had to use only analytical methods that limited very much the method's effectiveness. Cybertechnology opens wide possibilities to decide the Bayes's problem in different real situations not requiring «good» analytical functions. Based on the computer mathematics, ESM has the Bayes's problem as a part of the more wide approach.

### **POSSIBLE APPLICATIONS OF THE ESM**

ESM as an interactive computerized method gives managers wide possibilities to estimate an optimal production volume easily changing the supposed input data and their statistical distributions. The method can be used effectively in the educational process: it lets students to see and to change the distribution functions for different factors and to estimate the optimal production volumes for any input changes. It gives graphic dependencies of the both undersupply and oversupply risks on the planned supply volume, thus building the bridge between management and microeconomics.

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## **WITHIN: A LEADERSHIP DEVELOPMENT MODEL FOR THE DIGITAL ECONOMY**

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### **ABSTRACT**

A leadership model, WITHIN, that derives its effectiveness from its ability to develop awareness of and regulate fundamental thought and emotion skills is presented here. These fundamental thought and emotion skills impact a vast spectrum of essential leadership abilities such as team management, change management, communication, and thinking and analysis ability. This is achieved through the exercise of two powerful processes, The Leadership Heliospiral™ (Patent Pending), and Manifestation By Design™, which form the foundation of WITHIN. Through the application of WITHIN, individuals and organizations can become more conscious of their abilities, and the means to pragmatically and scientifically improve them, to thereby more rapidly and effectively respond to the complexities of the Digital Economy.

### **INTRODUCTION**

With the birth of the Digital Economy a tremendous global change is taking place. The purpose of this paper is to present a leadership model that will assist organizations and individuals to better maneuver through this markedly complex emerging environment. This paper will briefly examine some of the key characteristics of the Digital Economy, and outline key characteristics of WITHIN, a leadership model, whose design and features provides the wherewithal to more effectively lead in the volatile global environment.

#### **Characteristics of the Digital Economy**

The Digital Economy is an environment characterized by immediacy, globalization, digitization, virtualization, internetworking, disaggregation and convergence. Immediacy may be defined as the economy operating in real-time. As knowledge becomes the key resource there is only a world economy, and effectively, globalization. Digitization implies that communication, transaction, and delivery is increasingly digitized. Virtualization may be defined as physical things becoming virtual. Internetworking, as the existence of deep and rich networks within and among organizations. Disaggregation, as the shift from monolithic to molecular structures, and convergence, as the coming together of computing, communications, and content. For a more complete discussion of these characteristics refer to Don Tapscott's, 'The Digital Economy'<sup>1</sup>.

Yet today's organizations are inherently structured to almost oppose these characteristics. Instead of immediacy, many organizations usually have bureaucratic policies or at best time-bound yet inflexible processes through which communication, transaction, and delivery take place. These internal processes are typically the build-up of years of habit and of an outdated view of reality. Whereas the characteristic of digitization demands a commonly agreed upon and functional basis, in organizations there tend to be many locally created procedures and protocols by which communication is impeded instead of enhanced. Rarely are standards the same across organizations; as a result, a document or procedure, or even a bill of receipt may have to be translated several times as it works its way through an organization. Globalization implies a multi-faceted affectivity in will, to be present in several diverse markets simultaneously – yet organizations are typically structured based on a single concept of customer or a single concept of market. Internal processes are usually designed based on that single concept and propagate backwards from point of customer contact to point of raw material purchase to effect and influence all areas of the organization. Convergence implies the coming together of various distinct industries to create a possibly new product or service in the marketplace. For example, real-time manipulation of one's personal finances may require a customized hardware device with customized software running on it, having access to a public or private telecommunications network, and interfacing with the user's bank databases. Therefore, Hardware, Software, Telecommunications and Banking Industries will have to converge to create this service. But this kind of out-of-box thinking requires a completely

flexible organization that dynamically reconfigures its own internal processes based on what the opportunities in the market are. Few, if any, organizations have this capability. Disaggregation implies an objective reconfiguring of the organization, so that those parts of it that are not operating at world-standards can be dynamically replaced by external organisms that may be operating at world-standards. This kind of organizational objectivity and dynamic reconfigurability hardly exist. Thus, while the Digital Economy is in its fundamental nature instantaneous, fluid, and supple, the organizations within it, which are mostly the outgrowth of the previous economies and paradigms are not, and some major redesigning and adjusting will have to take place to close this gap.

## **MODEL REQUIREMENTS**

This will require especially able leadership to answer and act on four fundamental issues. First, how will the organization compete in the Digital Economy? That is, what will its value proposition be? Second, what is the best way to evolve the current suite of products and services so that they become digitally-enabled? Third, what infrastructure, in terms of technology, processes, and people, will enable the organization to effectively become digitally-enabled? Finally, how and what manner of organizational transformation should the organization go through in order to become 'live' in the Digital Economy?

To effectively respond to these questions the appropriate leadership is needed, both in terms of breadth and in terms of depth. Breadth of leadership, to foresee and answer accurately the intellectual challenge of shaping the new organization. Depth of leadership, in terms of pushing leadership ability down into the organization, so that as much of the organization as possible is empowered.

The leadership model needed, therefore, must positively affect a range of leadership abilities, so that the very essence of able leadership is grappled with. Such faculties as thinking and analysis, communication – both to individuals and groups, management of teams, change management, so that the entire organization can be effectively mobilized, must be affected. Further, the leadership model must be repeatable and communicable so that the techniques therein can be learned at each subsequent rung in the organization. This is necessary so that the organization becomes as supple as possible to respond to the needs of the far more complex environment. The challenge of the model, therefore, is to become as scientific as possible, so that a definite process that can be understood and repeated becomes clear.

In Daniel Goldman's article, 'What Makes a Leader' (HBR, December 1998)<sup>2</sup>, Emotional Intelligence was isolated as the most important factor in distinguishing leaders. Emotional Intelligence is defined as having five key components. These are self-awareness, which is the ability to recognize and understand moods, emotions, and drives; self-regulation, which is the ability to control and redirect disruptive impulses and moods; motivation; empathy; and social-skills.

The mystique behind leadership therefore, begins to be removed by uncovering a set of fundamental 'skills' which when mastered affect the process of leadership. While the components of Emotional Intelligence definitely move the understanding of leadership to a deeper and clearer level, in themselves they are not complete or fundamental enough to affect all the areas of leadership, as outlined above, which would definitely define a leader.

## **THE MODEL**

The model presented here, WITHIN, delves into this more fundamental level, so that a more complete number of core skills both in the 'emotional' and 'thought' areas can form the basis of leadership development.

Ten core groups and a total of twenty-two core skills are identified, which form the basis for all effective leadership behaviors. On the side of Thought, these groups are the following: Thought Basis, which comprises of Mental Quietude and Thought Dissociation; Internal Thought, which comprises of Ability to Grasp Internal Thought Stream, Ability to Grasp Internal Thought Patterns, Ability to Grasp Internal Thought Attitudes; Action of Will on Thought, which comprises of Willed Direction in Thought and Proactively Pushing Forward Selected Thought; Another Person's Thought, which comprises of Ability to be Aware of Another Person's Thought and Ability to Redirect Another's Thought; and Group Thought, which comprises of Ability to Grasp External Flow of Thought and Ability to Redirect External Flow of Thought. Similarly, five core groups and eleven fundamental skills exist on the side of Emotion.

In and of themselves these core skills are of no use, unless it is shown that they have a definite impact on the leadership abilities as presented above. While this cannot be done exhaustively, examples can illustrate how these core skills are fundamental to effective leadership ability. Consider, for example, the area of Change Management, a fundamental leadership ability, required to effectively mobilize an organization. Change management itself, can be defined as a set of other fundamental leadership skills. Thus, change management can be defined as comprising of facilitation & coaching; creating the case for change; aligning, engaging and mobilizing leadership; aligning, engaging and mobilizing the organization; developing organizational support and momentum; and designing and managing the change process. Further, facilitation and coaching can itself be broken down into a fundamental set of leadership sub-skills. For illustration purposes, these could include ability to intervene well; ability to synthesize, redirect and clarify discussions; ability to handle conflict; ability to redirect dysfunctional teams; and ability to engender enthusiasm.

Yet, to actually intervene well, a number of core skills are required. These include the prerequisites of Mental Quietude and Emotional Quietude so that the practitioner becomes receptive to the continuous internal and external thought and emotion movements within the group. Superimposed upon this receptive silence, the Ability to be Aware of Another's Thought and the Ability to be Aware of Another's Emotion are essential, so that the facilitator is able to know who in the group is experiencing what thought and emotion. This knowledge will give the facilitator an informed and precise means of action and intervention. Finally, the facilitator would require the Ability to Grasp External Thought Flow and the Ability to Grasp External Emotion Flow, which allow a precise following of the spontaneous and deliberate flow of thought and emotion which continually occurs within a group. The mastery of each of these core skills will create mastery over the ability to intervene well, which in turn will impact a leader's ability to facilitate and coach, which in turn will impact a leader's change management ability.

Similarly, in examining the leadership skill of analysis and thinking, say, it can be shown that mastery over six of the fundamental thought-related core skills will act 'upward' to influence mastery over thinking and analysis. To illustrate, analysis itself, can be thought of as comprising of five skills. These include ability to identify issues, ability to structure the problem, ability to conduct analysis, ability to draw conclusions, and ability to formulate recommendations. Looking at the ability to identify issues, for example, it is found that to do this well, first a basis of Mental Quietude and Emotional Quietude must exist, to create a clear and receptive silence, uncluttered by the usual internal noise that often accompanies the process of being. Furthermore, the Ability to Will a Direction in Thought must exist, so that in the clear and receptive silence a precise direction for the working of thought can be initiated. Lastly, the Ability to Grasp the Internal Thought Stream, Thought Patterns, and Thought Attitudes, must exist so that all issues that are created or arise internally are 'captured'. Each of the three thought-grasping movements is different. Ability to Grasp Internal Thought Stream, is the grasping of pure and original thought that occurs. Ability to Grasp Internal Thought Patterns is the grasping of old patterns of thought that tends to occur automatically. The realization that thought may be following a certain pattern, brings a definite objectivity to bare, which in turn allows the continued creation of the purer thought-stream. Ability to Grasp Internal Thought Attitudes is the ability to grasp the attitude or energy that often accompanies thought or the process of thought. Oftentimes this energy or attitude may be one of inertia, or rashness or hurriedness, which tends to compromise the quality of the thought experienced, and consequently the identification of relevant issues. A thought attitude of calmness tends to allow thought to continue at its highest and purest stream.

Similarly, mastery over each of the twenty-two fundamental core skills will act upward to finally create mastery over each of the other leadership abilities, such as those under the communication, and team management groups.

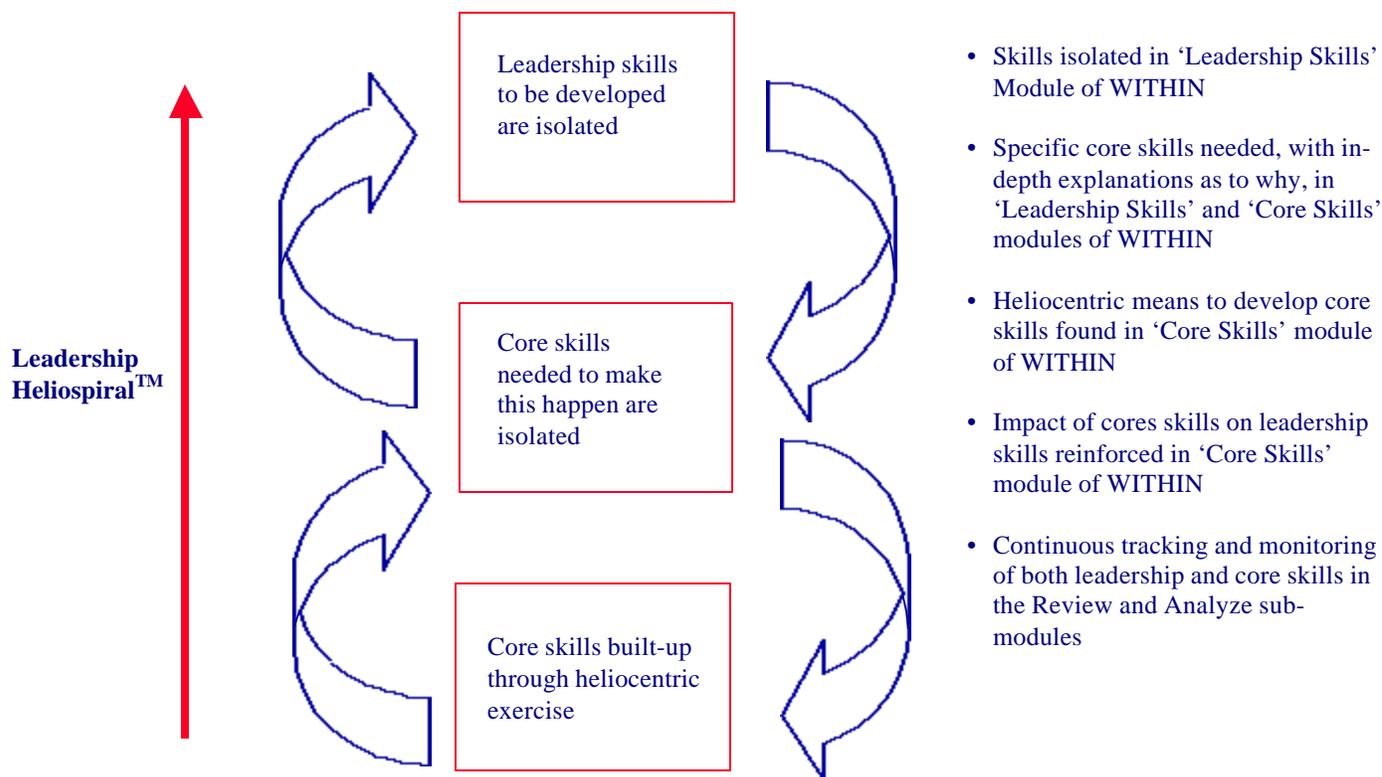
### **The Leadership Heliospiral**

Within the context of WITHIN, the leadership model under discussion, the dynamic that has just been described, is part of the 'Leadership Heliospiral'. An explanation of this process is fundamental to appreciating fully the subtlety and depth of WITHIN. As described above, there is a continual interaction between Core Skills and Leadership Skills. Leadership skills can be thought of as comprising of a number of core skills. Core skills are essential for the development of leadership skills. Yet, the practice of one iteration of this cycle is not enough to either develop an awareness of the core skills, or to develop mastery in any leadership skill. A continual interaction that proceeds like a spiral is required. With each iteration, both core skills and leadership skills are developed to ultimately affect leadership ability. But, these fundamental skills are developed by focusing internally, rather than externally. The inner

sun, the center within our being, is the focus of attention, in the development of any of the core skills. This entire dynamic has an internal heliocentric focus, and therefore is described as the Leadership Heliospiral.

If a process for leadership development was only dependant on learning from and in the external environment, as is often the case today, then all leadership development programs and consequently all leaders would be playing a game of eternal catch-up. WITHIN develops leaders by focusing on the internal, as opposed to only the external environment. In this manner, a set of fundamental abilities regardless of environment are developed, which can then be quickly adapted and employed in any external environment.

The spiral action of the Leadership Heliospiral functions to connect the internal with the external world in a more conscious manner. Oftentimes practitioners and aspirants to leadership positions focus entirely on external mechanics and processes in trying to make an impact. Yet, everything that a practitioner may create derives its power, insight, and force of being from within. Within are the processes of thought that distinguish the genius from the imbecile, and within are the processes of emotion that distinguish the dynamic man or woman of action from the laggard and the sloth. There must be therefore, a conscious development of the internal processes of thought and emotion, and a conscious development of whatever else may be hidden within, so that true affectivity and true leadership may be achieved.



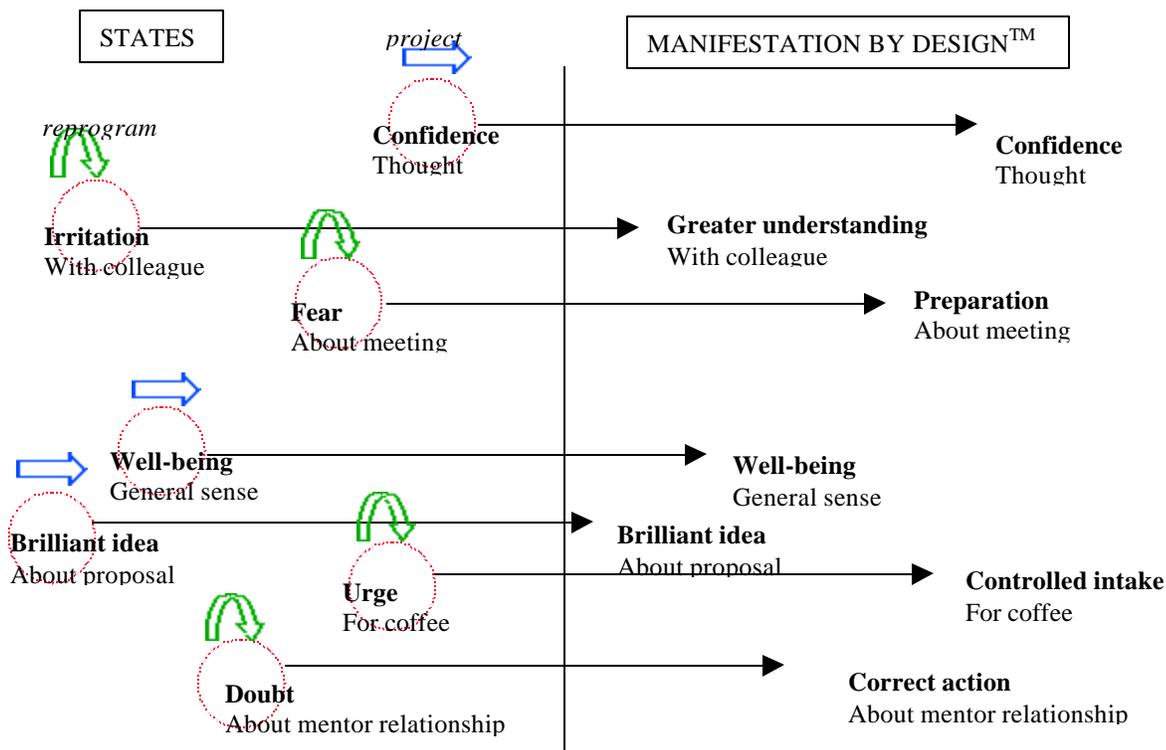
### Manifestation By Design

To expect potential leaders to delve straight into the subtlety of the Leadership Heliospiral may be a bit ambitious, though, especially if they have not had any prior exposure to regarding themselves as consisting of more than thoughts and emotions, or to regarding themselves in that manner at all. Another dynamic, therefore, Manifestation By Design, is what is first practiced. The purpose of Manifestation By Design is to build fundamental self-awareness and self-regulation ability.

During any given window of time a person may experience a number of different states. These states, for instance, may include both emotion-related and thought-related experiences such as ‘irritation’ with a colleague, ‘fear’ about a

meeting, 'urge' for coffee, 'confidence' about an idea, 'doubt' about a work-related relationship, and a 'brilliant idea' about a proposal. In Manifestation By Design the first step is to become aware that these states exist.

The awareness allows the person to separate from the experience, so that the person realizes that he or she is other than the state. This separation gives one the power to work objectively on the various movements that are occurring within the being. One is able to step back as it were, and therefore hold back on what may normally have occurred. If this power of objectivity did not exist, then a process of automatic manifestation may have occurred, and the internal state of 'irritation' with a colleague may have been projected forward as 'anger' in dealing with the colleague, the internal state of 'doubt' about a relationship may have been projected forward as the action of insensitively dumping on the person at the next meeting, and the internal state of 'fear' about a meeting, projected forward as embarrassment at that meeting. Further, the internal states of 'brilliance about an idea' and 'confidence' about a thought may have been lost because of the intensity of the other internal states.



Clearly, if automatic manifestation is allowed, then any person could quite easily operate at a sub-standard level within an organizational context. If on the other hand, objectivity exists, and an awareness of the states operating in the being, then a conscious projection forward of desired states only, is far more likely. Manifestation By Design is this ability to project forward the positive states within the being, and 'reprogram' the other states such as 'fear', so that the behavior of 'preparation' takes place instead of the automatic outcome of possible failure and embarrassment. Within the context of WITHIN, the 'reprogramming' of undesired states can be achieved through internal heliocentric exercises.

Naturally, a person practicing Manifestation By Design, will begin to operate at a higher state of excellence.

## CONCLUSION

The emerging Digital Economy is characterized by a complex, varied, and real-time environment. The fabric of economic possibility has been going through a definite shift. This fabric has the potential to take on an especially supple character, as a result of which dreams will more easily find expression. A single idea in the mind of a relatively powerless individual can, for instance, create upheaval in an industry. The playing field itself and the set of possible maneuvers are moving to a higher level of complexity.

To grapple effectively in this environment, individuals will have to move up a notch in their abilities. Individuals will have to develop the flexibility and maneuverability, the plasticity and suppleness to operate at the level of Mind. Further more, an effective force of dynamism will have to come to the forefront to make a quick reality of ideas. Organizations, too, many of which derive their organizational structure and dynamics from the Industrial Economy, will need to adapt to the realities of the new economy. Organizations created for the command and control economies of yesteryear will find it exceedingly difficult to succeed going forward. Hierarchy and bureaucracy will be suffocated in their own cocoons of inertia. An organization cannot be bound by the systems of yesteryear, by its own archaic rules of doing business, by the unwritten policies by which people communicate. A plastic, supple, flexible, empowered organization is what is needed to leverage the emerging reality of today.

A broad-based, effective, and repeatable leadership model, which adequately equips individuals and organizations with the means to develop the highest caliber of leadership is required. Such a model, which embodies the multi-dimensional principle of the Leadership Heliospiral, and the simple yet powerful principle of Manifestation By Design, to thereby enable key leadership abilities such as thinking and analysis, change management, team management, and communication, is presented in WITHIN.

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## DEMING'S LEDACY: GLOBAL UPGRADING OF QUALITY

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### ABSTRACT

The success of Japanese companies in global markets is due to the fact "they were able to change and deepen their own culture, to adopt and imbed in their lives and workplaces certain values and practices which, like w. Edward Deming, came first from the outside... the same opportunity, the chance to deepen and improve business cultures without abandoning the best parts of national of national identity, now awaits a new generation of Western managers. The economic future belongs to those organizations wherever they are located, which most successfully nurture the development of this third wave of management culture". Deming's legacy is a universal upgrading of quality in all areas of millennial interest - productivity, medical protocols, aerospace platforms, education, communication nets and information broadcasting.

### INTRODUCTION

Back in 1944, Ossip K. (O.K.) Flechtheim coined the word "futuurology" to describe the scientific study of the future. Prior to this, images of the future were based, primarily, on guesswork, speculation and mysticism. What we are beginning to learn today is that we can not move toward desirable future in one area without also considering the future of many other areas of society, which are inter-connected. Systematic reasoning about strategic "long-term futures" is a prime missing element on the agenda of today's tactical-oriented societal institutions.

American quality control guru Deming first introduced the Japanese to modern engineering and quality production techniques after World War II. Deming created a third culture in Japan---one that was not fully Japanese nor fully American. The Japanese honor his contribution each year when they award their nation's most prestigious Industrial prize: the Deming Award.

Spiritually, the U.S. and Japan have a "long karmic relationship that began when Admiral Perry arrived in Japan in the mid-1800s and forced Japan to begin trading with the rest of the world...From the perspective of metaphysical wisdom, the use of the [atomic] bomb twice on Japan [after the surprise attack at Pearl Harbor] disrupted the etheric web in these locations and let in a flood of new energy by shattering the veil between dimensions and thus allowing rebuilding to take place on somewhat new lines. The karmic relationship with the U. S. has taken many interesting turns. When General Douglas MacArthur took over the administration of Japan after its defeat, he worked to completely change Japan's totalitarian society into a democracy with freedom of expression [11]. The tradition of 'administrative guidance' of the famous Ministry of International Trade and Industry (MITI), which orchestrates Japan's unified industrial and trade policies, has now become the focus of U. S. complaints about its exclusionary policies on trade.

"Another karmic connection is 'quality circles,' where employees work at upgrading production and reducing defects. The concept was imported to Japan by the American Edward Deming after the war, when no one in the US would listen to his ideas...Deming's success in Japan has led to the widespread adoption of his ideas by US business. These are certainly examples of some interesting feedback loops in international relations [11]."

The practice of management today, as taught in American business schools and seen in most companies, according to Mary Walton [18], has changed little since Frederick W. Taylor introduced the idea of "scientific management" early this century: where man was merely a cog in the giant industrial machine, whose job could be defined and directed by appropriately-educated managers, administering a set of rules. The management system that resulted in industry, government, and in the service sector was rigid and autocratic---unresponsive to both workers and customers. Power and responsibility are at the top of a pyramid where change does not come easily.

A new paradigm of enhanced business consciousness is emerging in the US as the millennium approaches, which projects the convergence of the quality revolution with management's dynamic evolution. Responsibility and accountability for decisions once made at the corporate level will be shifted to division level or even lower. In a real sense, increased productivity creates a "win-win" situation, in which everyone gains---employees, management, stock holders, stakeholders present and future, and even nations. Each generation can pass on a better world to the next generation. But it is a long uphill battle. In the United States QC "circles" became just another management "program," so poorly planned and executed [9], that even today their reference invokes a negative connotation. Deming says:

No number of examples of success or failure in the improvement of quality and productivity would indicate what success his company would have. His success would depend totally on his knowledge of the fourteen points and of the diseases and obstacles, and the efforts that he himself puts forth.

Deming, who only became famous at age 80, offered direction in the transformation of the static US management style in his Out of the Crisis [2]. In it he detailed his Fourteen Points, the Seven Deadly Diseases and Obstacles, as well as the essentials of Statistical Quality Control [16]. The Industrial Revolution changed the society of the day; there is ample evidence that U. S. society is again changing in health care, gender problems, etc., where communication and cooperation, rather than competition is mandated.

Decisions made today and actions initiated today mold the future; yet, these decisions are invariably based upon past experience. Research is necessary to determine what is "learnable" about the future from the past---if anything! Perhaps the only thing we can say about the future, without engendering contradiction, is that the next millennium will come in it's own time, with its own nuances, whether we are ready or not.

As paradigms change science, as the transitional phase is with us, it becomes increasingly difficult to draw the frontier boundary between science and non-science, or science/pop-science or science/weird-science. As personal awareness, growth, self-actualization, subjectivity, meditation, love---have somehow entered into the formal, rigorous, objective equation. Non-reproducibility, predictability, disputability, subjectivism, fuzziness, etc., have reared their ugly heads---confusing prediction with forecasting, in dealing with future scenarios. Forecasting establishes visible trends, alternatives and possible futures. Prediction makes statements about occurrences that are supposedly to happen in a specified future. Forecasting results tell us what can change or what we can bring about; whereas prediction makes a statement out what will happen! The past unsatisfactory forecasting performance has lead to less formal alternate approaches integrating situation modeling, scenario sequences, chaos and catastrophe theory, science fiction, intuition and focus on latest split-brain differentiation, "transcientific" use of older disciplines like demography, sociology---all treated rigorously like the "hard" sciences. Viewed in game-theoretic terms, pre-industrial society was a zero-sum game against nature, industrial society, a game against "rational man," and post-industrial society, an n-person game requiring cooperation---rather than conflict and coalitions.

New ways of thinking and gaining strategic insight can help us overcome the two main obstacles to getting the future "right," or the "right" future, according to Schwartz [7], who advocates scenario planning:

Most organizations--and individuals--engage mainly in introverted thinking. their perceptions are shaped by a narrow range of contacts and are mainly reinforced by the limited views of their peers. As people work together they share an unconscious desire to see a favorable outcome as the most likely outcome. Second, these limits to thinking are further constrained by the desire to have a single-line forecast--or at least a most likely scenario. But the real world is inescapably uncertain. Clinging to the illusion of certainty increases the vulnerability to unfortunate surprises.

Schwartz states that many managers, in business and government, prefer the illusion of certainty to the understanding of standing of risks and realities. Multiple managers plan and prepare for uncertainty by offering glimpses of several different scenarios, each emphasizing one way the future might unfold.

Science-fiction, [SCI-FI], according to Joe Coates, does reveal one important feature of the exploration of the future and that is the intellectual difficulty in identifying and describing plausible positive futures in contrast to the relative ease with which negative, hostile and destructive futures may be generated [1]. A fundamentally different approach for analyzing the future is cited by Linstone and Simmonds [10]:

...problems move beyond the objective, analytic, reductionism number oriented, optimizing, and fail-safe approaches to futures problems and learn to think with equal fluency in more subjective, synthesizing, holistic, qualitative, option-increasing, and safe-fail ways.

Only half-truths, one-sided, biased arguments, and unit-dimensional approaches for management effectiveness can ever be consistent. To change the world, unfortunately, requires us to change ourselves; to change ourselves, requires not only requires not only a perception-change, but a deeper change of our conscious-subconscious-unconscious patterns of selfness, ego and identity.

Americans have known what to do in US society and the US economy for the past 50 years, but change was not necessary to improve the US standard of living until about 20 years ago. Tribus [7] quotes Winston Churchill, "You can always count on the Americans to do the right thing---after they've tried everything else." Our Quality (Control) Circles had to be expanded to include a much larger sector of American industry, involving the entire hierarchical structure, and power environment. Membership in Quality circles is defined too narrowly for the "new" management philosophy of Millennium-3, which includes all phases of the life cycle; particularly, time and accountability parameters. Conspicuously absent is the Research and Development (R&D) phase with its milestones and personnel---scientists, technologists and corporate experts---and its function to design and develop reliable, dependable quality items cost-effectively, in an optimal timeframe. To increase productivity in the R&D phase is a complex and elusive task--- involving interaction of many variables; namely, the personal factors (abilities, attitudes, motivation, personal commitment, work habits, etc.), job-related factors (supervision, work assignment, work environment, etc.), and project-related factors (technical performance, schedule, cost, quality, reliability).

The Deming quality management system worked in the real world of the early 1990's; particularly, in Japan. Examples of it across the country in all fields, show us the way into the Age of Continual Improvement involving everyone, the kaizen of our Japanese peers, where the Deming prize for quality is still a sought-after award, permitting only companies so rewarded to compete for the Japanese Quality Award [5]. American managers pride themselves on hunches and intuition, taking credit when they succeed, yet finding some scapegoat when they fail. But a quality transformation must be built on a much different set of assumptions. Deming virtually turned American around in its attitude on production quality. Advice in his germinal contribution to videos--such as, "If Japan can---Why can't we?" and others---began to be finally heeded by our auto makers.

Deming offered direction in the transformation of the static US style of management in his Out of the Crisis, published by MIT Center for Advanced Engineering Study [2]. He detailed his Fourteen Points, the Seven Deadly Diseases and Obstacles, as well as the essentials of Statistical Quality Control. As the Industrial Revolution changed the society of its day, there is ample evidence that our society is again in a transitional mode of change in health care, gender problems. etc., where communication and cooperation, rather than isolated competition is man- dated. The Deming quality management system works in the real world, and there are many examples of it across the country in all fields, showing us the way into Wave-3, his Age of Continual Improvement. The Deming Way includes his Fourteen points, Diseases and Obstacles, the 85-15 Rule, Know Thy Customer, Plan-Do-Check-Act (PDCA) Cycle, and the Seven Basic Tools and Other Significant Principles [18].

If the Deming management system is considered as a complete map of the continual improvement journey toward quality, the Baldrige award provides a highly detailed map of the place where you are at this moment---but it cannot guide you even one step farther toward performance excellence. The Malcolm Baldrige National Quality Improvement Act (Public Law 100-107, 20 August 1987) was established as an incentive to revolutionize American business and industry, to instill quality concepts that reach from the corporate office to the factory floor, from the CEO to the hourly worker. The Baldrige Award has provided US companies with focus and guidelines for a pursuit of quality that their very survival depends on. The award examination is divided into seven categories that represent a total quality management system, encompassing the major components of an integrated, prevention-based quality system built around the following criteria [for 1993]:

- o Leadership
- o Information and Analysis
- o Strategic Quality Planning
- o Human Resource Development & Management
- o Management of Process Quality
- o Quality & Operational Results
- o Customer Focus & Satisfaction

The heaviest weighted category is No. 7, Customer Satisfaction, which receives 300 out of the total of 1,000 points. [No other category is worth more than 180 points.] Applications are graded by members of the Board of Examiners, a group of about 140 “experts” from industry, universities, and trade and professional organizations, and receive feedback reports of their strengths, the areas in which they need to improve, and an overall quality management profile. The director of the Award, Dr. Curt Reimann, listed eight critical factors that examiners and judges look for:

- A plan to keep improving all operations continuously.
- A system for measuring improvements accurately.
- A strategic plan based on bench-marks that compare the company's performance with the world's best.
- A close partnership with suppliers and customers that feeds improvements back into the operation.
- A deep understanding of the customers so that their wants can be translated into products.
- A long-lasting relationship with customers, going beyond the delivery of the product to include sales, service and ease of maintenance.
- A focus on preventing mistakes rather than merely correcting them.
- o A commitment to improving quality that runs from the top of the organization to the bottom.

Hand in hand and with just-in-time [JIT] goes the race for perfect quality. When there is no margin for error, there can be no tolerance for performance short of perfection. The value of quality has come as a surprise to American manufacturers and service suppliers. Many have been stunned by the realization that quality is, in fact, free [12].

## **SUMMARY**

Fourth Generation Management, as well as Toffler’s Wave-3 projections---all follow the philosophical path of Deming, who calls for radical changes in our managerial actions: away from fragmented, analytical approaches to an "uncomfortable" eastern holistic world-view, opening our eyes to new ways to think about and to approach millennial problems and opportunities [8].

The status at the beginning of the new millennium is that both the U. S. and Japan are struggling to work out relationships, where the organizing principles of the two societies are actually polar opposites. The value of the individual, exalted in the West in opposition to Eastern communal values, which seem to make Japan a better economic competitor, are teaching something to the West about the need for a focused national purpose that transcends individual interests [11]. And Japan must realize, eventually, that its economic aggression [since WWII] is no longer useful for itself, or for the greater good of international

order.

The Baldrige Award Criteria change annually, permitting America's most aware companies to manage performance and quality with comparative insights of excellence. It has also been suggested that for total quality management (TQM) a trilogy of the Deming Prize and the Baldrige Award be utilized with ISO-9000 certification protocols [17].

Wave-3 Millennium demands a new philosophical Win-Win paradigm built on "constructive cooperation" rather than "destructive confrontation" for business, labor, education and government.

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# STRUCTURAL ANALOGIES AND TELECOMMUNICATION NETWORKS

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## ABSTRACT

This article deals with methods for the redefinition of interfaces in global communication networks. Those networks are building the platform and technical base for recent and future applications serving computer clients today and, even more, in der future beyond the year 2001. Operation and maintenance of global telecommunication networks is a substantial cost factor for manufacturers and operators of telecommunication infrastructure. With the ongoing geographical distribution of network terminals and node computers, particularly those methods which contribute to the reduction of maintenance costs and, hence, to the increase of service providers profits are becoming more important. This is true as far as technical diagnosis and remote repair methods prove to be effective as well as efficient. This contribution shows a basic problem of the operation of telecommunication infrastructures. The basic problem consists in insufficient compatibility between communication interfaces. According to practical experience, it becomes evident that incompatibilities may have minor causes, for instance, the incompatibility refers to only one layer of the protocol or it consists of minor differences between single processors of the hardware/software interface. Seen empirically, the major causes of failure are not total failures or even major disturbances by malfunctions, but small insufficiencies of interfaces. A solution lies in the diagnosis of the incompatibility and the remote repair by compensatory communication protocols and simulated processor features. This will be summarized in the expression „Interface Arrangement“.<sup>1</sup>

## INTRODUCTION

The contribution shows by the means of structural analogies that communication structures, communication processes and functional features of telecommunication networks are very similar to the characteristics of the so called „social net“. The existence of the social net has already postulated in 1965 by Kosiol.<sup>2</sup> A further development of his ideas, plus a technical transformation, had been leading here to the case of a basic problem of a service provider, which could be solved by a technical innovation.

## STRUCTURAL ANALOGIES OF THE SOCIAL NETWORK

In a functionalistic sense, members of organizations are communication entities, interworking via active and passive communication channels. An initialization of communication means the activation of a communication channel – the use of an eventually quiet – communication relation. The structure is used by communicating individuals of two different types: type A (with steering and regulating features), and type B (communicators with operative functions, so as transfer and presentation of information). In order to make it easy, the multilayer hierarchical structure is represented here by only two types of communicators, type A and type B. It is clear that both, the social as well as the technical network are far more complex than described here.

## ANALOGY EXAMPLE FOR INTERFACE REDEFINITIONS

Type A and Type B both do have communication protocols. As individuals are, the two entities are not 100 % compatible in the meaning of „identity“. The differences in the social network come from different languages,

<sup>1</sup> See Anstoetz, K., Coolegem, K.: Interface Arrangement, and Telecommunication System, and Method. U.S. Patentno. 5.299.281.

<sup>2</sup> See Anstoetz, K.: Innovatory Impulses of Theory guided Development of Multimedia Communication Systems. Ilmenau 1996.

multilinguality or multiculturalism, etc. They occur as differences in communication habits and interaction rules. Differences between individuals are usually handled by the means of common communication protocols. Nevertheless, several differences maintain, for example differences caused by discrepancies in semantics or semiotics. These differences are compensated by learning on one hand, and by mutual tolerance of individuals on the other hand.

A solution of the compatibility problem between different communication protocols of non-identical individuals is gained through the learning process of the individuals, while residual differences have to be compensated by tolerance. An adaptation has taken place when both individuals have changed their communication behaviour.

## **TRANSFORMATION INTO TECHNICAL PROCEDURES FOR THE ADAPTATION OF NETWORK ENTITIES**

Network entities, terminals type B (work stations) or supervisor terminals type A (node computers) show features in hardware and software which are similar to the features of individuals. In telecommunication systems, for instance, they interact by communication protocols. Insufficiencies or incompatibilities of communication protocols can be adapted here by the simulation of compatible interfaces. But – in a really operating network, the diagnosis of disturbances requires an exact analyses and localization of the insufficiency problem. For the case, a new terminal's features are not known when integration should be done, and, additionally, communication disturbances occur when the possibility of an exact diagnosis is restricted from the beginning. This can lead to false diagnosis and damages in remote repair. The solution of the problem is to correct false results by the means of simulations, here: suitable interface updates which are constructed by using original data.

### **METHODS FOR THE REDEFINITION OF INTERFACES**

A successful method for the redefinition of interfaces is going to be presented in the following chapter. In the widest sense, it has been taken from the sociological context. Therefore, it represents a technically formulated and transformed analogy.<sup>3</sup>

If we abstract from the social network, we have as a first step, the technical procedure of simulation of matching features, combined with the overwriting of the communication protocols in a second step. The analyses, diagnosis and the subsequent remote repair is the core of the method for the redefinition of interfaces suggested here. In the following, it will be explained in an application example.

The following figure shows a global telecommunication network with the construction elements „entities“ and „relations“. The entities are terminals organized in a hierarchy; terminals of different types. According to their functions in the network, the terminals are supervisor terminals (type A, called here „ST“) and working terminals (type B, called here „WT“). The ST have regulating and steering tasks. Operating tasks such as transfer and presentation of information are dedicated to the WT. The first core problem is to integrate a new terminal, whose features are unknown to the network. For this purpose, its features have to be recognized. The terminal has to be tested, not knowing if, or if not, protocol insufficiencies will occur.

The first major step is the type identification. This takes place by the sending of test messages in empty or partly filled frames. The new terminals are now called candidate terminals. The candidate terminals are now systematically questioned regarding their features, according to the realization in ITU standard H.221. Above H.221, the practical problem here is the diagnosis of incompatibilities (step 2) plus the replacement of incompatible interfaces by the replacement of improved, compatible versions (step 3). Necessary is the evaluation of quality before the overwriting. Should the new terminal have multifunctional features, it has to be considered, if a networkwise adaptation of all similar terminals would be the preferred alternative. That means the procedure:

1. Candidate terminal sends a signal („I am here“)

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<sup>3</sup> See Kosiol, E., Die Unternehmung als Aktionszentrum, Opladen 1965, who described in basic ideas the method of inductive transformation of networks.

2. General diagnosis of the type and general characterization
3. Interface testing in detail, blockwise or iterative
4. Evaluation of the interface quality
5. Incompatibilities are stated and a quality comparison with other terminals is carried out.
6. If the interface quality of the new terminal is equal to the others, it will be integrated without further manipulations. If the interface quality is lower, the terminal's interface is overwritten by a suitable simulation. If the interface quality is higher than the interface quality of the other network terminals, the old terminals are adapted by simulations, upgrading their interfaces.

The complete network gains self healing mechanisms and self learning features by this procedure. Its quality is improved by the adaptation of new terminals with new and better interfaces. The progress lies in the adaptability of the telecommunication network, founding on H. 221 and improving quality of the whole network.

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Insert Figure 1 Here

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Two interesting cases are evident:

Case 1: New terminals overwrite old terminals with supervisor features, if the information is obtained by testing, that the new terminals are also supervisor terminals. A future support of this decision by knowledge based systems is desirable.

Case 2: Supervisor terminals overwrite working terminals, if the candidates are of type B. In the contrary case, if a terminal of type A is overwritten by features of type B, just overwriting means a net loss. In this case, a mutual, interactive learning process with additionally build up tolerance intervals offers the greatest net advantage.

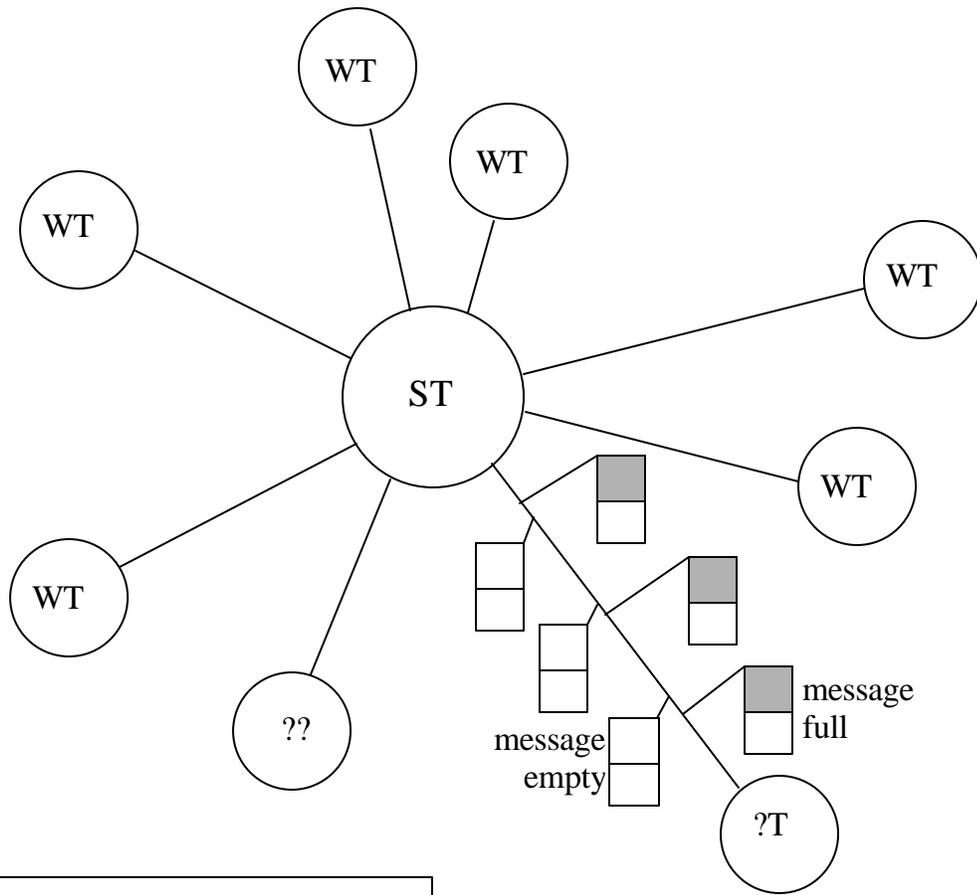
The testing procedure has shown operability under laboratory conditions. In principle, it is applicable for operation and maintenance of telecommunication networks. Further improvements are possible and desirable.

## **RESUMÉE**

Service providers are operators of global networks, for whom operation and maintenance belong to the cost intensive necessities. Procedures and methods, reducing costs remarkably plus improving the quality of the network, are of substantial interest for the network providers. The contribution has described the problem of small incompatibilities and has offered a technical solution for this problem. The method comes from the appliance of sociological analogies according to KOSIOL and the following mental and lingual transformation into systemtheoretical and technical terminology.

Figure 1

**The Procedure of Interface Testing**



**Legend:**

- ST = Supervisor Terminal
- WT = Working Terminal
- = Message Carrier
- ?? = Unknown Entity
- ?T = Candidate Terminal

# THROUGH THE EYES OF THE ALCHEMIST AND THE CHILD: LIVING THE QUESTION

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## ABSTRACT

Alchemists and children are naturally curious about almost everything. The nature of the alchemist's and child's questions challenge the prevailing worldview as we move into the next millennium. Our current worldview encourages us to quickly find answers for all our questions. There is a certain feeling of security in a world where, at least in principle, every question has an answer – where every question finds its place in some sense of natural order and certainty. And yet this security is a false one. Unfortunately, questions can be stopped by answers and some of the questions we need to ask require much pondering. Rather than seeing the question as something that needs a quick and simple answer, the organisation that succeeds in the next millennium will *live* the question, using its imagination to rigorously investigate and play with the question. This paper invites you to engage your imagination and consider some of the challenges before us.

## Introduction

We believe that it is critical for us all, as leaders at the beginning of a new millennium, to explicitly use our imagination and to regularly reflect on our practice and our thinking. We attempt to weave an argument that encourages us to do so. What we suggest in this paper challenges some fundamental assumptions most of us likely make every day in our work.

We hope to stimulate dialogue around the role that imagination will play in reframing our future. We briefly look back several centuries to find interesting parallels to today and consider how these insights might help us in the next millennium. We do not attempt to offer answers but hope we raise some intriguing questions.

## Post Industrialist Perspective

Numerous writers point to the fundamental problems inherent in our current paradigm or way of viewing the world.

Sheldrake [22], a scientist, states “We are all influenced by mechanistic habits of thought that shape our lives, usually unconsciously. If we are to hold these assumptions up to scrutiny, we need to look at their cultural origins and trace their development. We have to remember that what are now commonplace assumptions were once controversial theories, rooted in peculiar kinds of theology and philosophy, believed only by a handful of European intellectuals. Through the successes of technology, the mechanistic theory of nature is now triumphant on a global scale; it is built into the official orthodoxy of economic progress. It has become a kind of religion. And it has led us to our present crisis.”

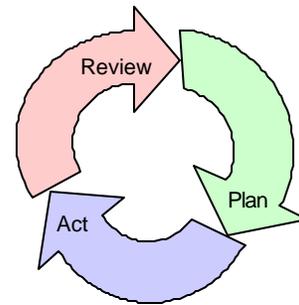
Kofman and Senge [14], organizational researchers, bring the argument into the business realm. “Organizations are microcosms of the larger society. Thus, at the heart of any serious effort to alter how organizations operate lies a concern with addressing the basic dysfunctions of our larger culture.” They believe that there are three fundamental problems with our current paradigm: fragmentation, competition, and reactivity.

Finally, Kauffman [11] reinforces the above, stating “The past three centuries of science have been predominantly reductionist, attempting to break complex systems into simple parts, and those parts, in turn into simpler parts. The reductionist program has been spectacularly successful, and will continue to be so. But it has often left a vacuum: How do we use the information gleaned about the parts to build up a theory of the whole? The deep difficulty here lies in the fact that the complex whole may exhibit properties that are not readily explained by understanding the parts. The complex whole, in a completely non-mystical sense, can often exhibit collective properties, “emergent” features that are lawful in their own right.”

Holbrook [10] would describe the above examples of fragmentation and reductionism as predictable outcomes of an Absolute-Fragmental paradigm. He describes the Polar-Complete paradigm as an alternative. He suggests the two

paradigms or worldviews have distinctly different features as their *centers of gravity*. We can see these features when these worldviews are compared as *wholes*.

“There are three basic features of the Absolute-Fragmental paradigm; its basic concepts, and, therefore, all its derived ones, are Absolutes, its perspective is Fragmental (one-sided, partial), and its attitude is socially sterile, involving a dwarfed image of human beings and a disdain for the ordinary. In contrast, the three basic features of the Polar-Complete worldview are non-Absolute concepts, an all-sided, wholistic, balanced perspective, and, most important, a consummately Humane attitude, wherein humanity is central.” [10]



It is our assertion that, if we desire technological innovation in the new millennium we will need to use all our imaginative ability to reframe our workplaces and our thinking from the Absolute-Fragmental paradigm to a more Polar-Complete worldview. We look through the eyes of the alchemist to help us reframe.

### Alchemy

The alchemists meditated on natural phenomena and drew insights, expressed as metaphors, into their own consciousness.

“ALCHEMY, AS I PERCEIVE IT, IS A SPIRITUAL TRADITION, A MEANS FOR EXPLORING OUR INNER SPACE AND THE LAYERS WHICH CLOTHE THE PRECIOUS ESSENCE OF OUR INNERMOST SOUL. IT IS A PATH, A WAY, A PRACTICAL METHOD FOR INVESTIGATING THE SUBSTANCE OF OUR BEING, BY MEDITATING UPON CHEMICAL PROCESSES. ... AS THE ALCHEMISTS REWORKED THESE EXPERIMENTS OVER IN THEIR SOULS, THEY FURTHER DREW PARALLELS WITH THE GREATER LABORATORY OF NATURE. THEY SAW THE WORK WITHIN THEIR FLASKS AS A KIND OF MICROCOSM OF MACROCOSMIC NATURE. THE LIVING ENERGIES AND BEINGS IN NATURE WERE METAPHORICALLY DRAWN INTO THEIR RETORTS, AS THEY BEGAN TO PICTURE THE LIVING ALCHEMICAL PROCESSES.” [16]

Knapp [13] suggests that alchemy opens a new way for the examination of work, allowing the participant to experience the essence of the work more profoundly than would another approach, “by broadening his horizons, ordering the chaotic”.

Technological organizations can be considered the Theaters of Alchemy: the interactive systemic crucible of change in which the actors and the audience undergo transmutation during the enactment of the reigning paradigm.

“The alchemists in meditating on processes in their flasks threw themselves into a sea of strange experience, and as they worked these within their meditations and sought to grasp the inner parallels and significance of each of the stages of the process they had embarked upon, in a sense they experienced an inner death and rebirth.” [16]

Once reborn the alchemist discovered the Philosopher’s Stone. The creation of the Philosopher’s Stone was the formation of the solid inner ground upon which the alchemical philosophers could build their personalities, and experience the full potentiality of being human. One symbol of the Stone was a snake holding its tail. The alchemists sometimes used the snake as a symbol of duality. When the snake was elongated it represented the polarities of head and tail. When it seized its tail it united the polarities into a circle, “a symbol to the alchemists for achieving solidity amongst the dualistic energies of the soul forces”. [16] Interestingly, this can be likened to Action Research which involves a cycle of planning, action, and review of the action, resulting in other continuing and iterative cycles of planning, action and review, enhanced by reflection throughout. [5] [3] Fig. 1 shows the circular snake and the action research cycle in a combined image.

The changing orientation of the snake from linear to circular can be seen as a metaphor for the changing prevailing worldview or paradigm from the Absolute-Fragmentalist to the Polar-Complete [10]. The task of the Director of the Alchemical Theatre is to enable the re-orientation of the snake, resulting in a change of worldviews.

The regeneration of the organization is possible through the mating of Chaos and Order and the rehatching of their “silvery egg” [12]. The snake must not eat the “silvery egg” or the organization will die. The circular snake (polar-complete) prefers to bite its own tail and is less likely to eat the “silvery egg” than the elongated snake (absolute-fragmentalist).

We ask you to imagine now, within the context of leading technological innovation into the next millennium, the circular snake (the polar-complete worldview) not only from a literal perspective but also from the possibilities of its symbolic meaning. Be aware of your imagination.

### **Imagination**

“Imagining is an inner way of seeing, of seeing through the literality of the world, to its symbolic meaning, a way of seeing what is reflective and sees more than just what is there but also sees meaning in what is there. In this sense, an image, or to imagine, is to be like the medieval alchemist who transformed events (physical matter) into experiences (psychical).” [18] in [1]

Interestingly we found references to the importance of the imagination written over two hundred years ago, before the industrial revolution and the birth of the absolute-fragmentalist worldview. The following excerpts are indicative of an extensive discourse on the primary importance of imagination.

“The idea of the imagination dramatized and made articulate a great dialectic between matter and spirit, nature and the inner psyche, materialism and transcendentalism, as well as between the concrete sensuous images of poetry and the “fading coal” of its inspiration. The imagination had already become, in a phrase used by Sir Joshua Reynolds in 1786, “the residence of truth”. It laid the groundwork for an organic view of mind and nature together. The creative imagination had also become, by 1780, an ideal to believe in wholeheartedly, a goal, a state of mind or being toward which to aspire – something it had never been before.” [6]

“In scientific discoveries and in works of art, the imagination not only accumulates piecemeal associations but simultaneously conceives a “design” or plan informing instinctively selects those ideas that will fit the finished

Figure 1: The Alchemist’s Circular Snake and the Action Research Cycle

AS THE MAGNET SELECTS FROM A QUANTITY OF MATTER THE FERRUGINOUS PARTICLES, WHICH HAPPEN TO BE SCATTERED THROUGH IT, WITHOUT MAKING AN IMPRESSION ON OTHER SUBSTANCES; SO IMAGINATION, BY A SIMILAR SYMPATHY, EQUALLY INEXPLICABLE, DRAWS OUT FROM THE WHOLE COMPASS OF NATURE WHICH IDEAS AS WE HAVE OCCASION FOR, WITHOUT ATTENDING TO ANY OTHERS (GERARD 1759).” [6]

“So important to Gerard (1728-1795) is the role of imagination, and with it the association of ideas, that imagination begins to assume the power previously ascribed to judgment. As judgment is assimilated into imagination, it becomes more immediate and intuitive.” [6]

This moving of judgment into the realm of imagination allows, indeed encourages, us to take a metacognitive, reflective stance on the issues with which we are presented. This metacognitive stance requires certain essential skills, practiced in a rigorous, honest, open and committed way. We now consider these essential skills; reflection, inquiry and dialogue.

### **Essential Skills for the new millenium**

As Cherry [2] suggests, “the intention in using these techniques is not to ‘take the person out of the equation’ or even to simply acknowledge and understand what the person is doing so that we can ‘factor the person out’; but rather to find a way to enhance the quality and richness of our knowledge creation process by allowing it to be a fully human and creative act, while at the same time identifying and taking responsibility for our own idiosyncratic contribution.”

We believe the skills of Reflection, Inquiry and Dialogue are central to the work of the alchemist who wishes to lead technological innovation into the next millennium. ‘Reflection’ we define as slowing down our thinking processes to become more aware of what our mental models are and how we form them (making meaning). ‘Advocacy with inquiry’ we consider holding conversations with others where we openly share views and develop knowledge about each other’s assumptions using ‘Dialogue’ as a sustained collective inquiry into everyday experience and what we take for granted.

## Reflection

Paracelsus was a renaissance alchemist who wrote on the subject of reflection. In discussing Paracelsus's work Heller [7] says, "the expression of 'mirror' should not be taken ... in the sense of a mere reflection. The mirror is not only subjective but objective as well, in the same sense that for Paracelsus man was the mirror of the world. Man's awakening to self-consciousness is a condition of the reproduction of the macrocosm because in *gaining self-knowledge man (the microcosm) finds in himself the same forms as in the macrocosm; more precisely, the same forms in a spiritual and intellectual projection*. That in turn makes possible a kind of epistemological reflection, for in the laws of the macrocosm man discovers and reveals the world outside himself, which 'agree' with his own world because the latter is a derivative, a spiritual reproduction of the former." [7]

Leaders in technological organizations tend to be action oriented. This alone does not always lead to the best outcome. We consider that reflective practice is a critical component of the polar-complete worldview and effective leadership now and into the next millennium. Such an outcome is most likely to occur when, as with the alchemist, powerful experiences are combined with a receptive, interactive workplace. "People can learn either through action or reflection; but most people tend to learn best when both elements are present." [24] Current proponents of reflective practice include Schon [19] and Cherry [2].

## Inquiry

IT'S EASY TO ESPOUSE THE PRINCIPLES OF INQUIRY AND REFLECTION, BUT MORE DIFFICULT TO ACQUIRE AND MAINTAIN A FRAME OF MIND WHICH IS ALWAYS OPEN TO THIS. WE GRADUALLY LEARN TO INQUIRE INTO THE SOURCES OF OTHERS' VIEWS, TO SEARCH FOR OBSERVABLE DATA BEFORE WE BEGIN OUR INTERPRETING, AND REGULARLY CONSIDER THE ASSUMPTIONS ON WHICH WE MAKE MEANING AND INFERENCES. WE ASK FOR ILLUSTRATIONS, INQUIRE INTO OTHERS' RESPONSES AND TEST THEM PRELIMINARILY, AND EXPLORE ANY INCONSISTENCIES. WE LISTEN TO ANSWERS TO LEARN THE OTHER PERSON'S VIEWS ABOUT THE OBSERVABLE DATA, AND WE LISTEN TO THE WAY THEY CRAFT THEIR VIEWS, EVALUATIONS, AND ATTRIBUTIONS. THE CONTENT OF INQUIRIES AND RESPONSES, AND THE WAY THEY ARE CRAFTED, PROVIDE IMPORTANT INPUT TO HIGH PERFORMANCE. [8]

## Dialogue

The word dialogue comes from two Greek roots, *dia* (meaning 'through' or 'with each other') and *logos* (meaning 'the word'). It has been suggested that this word carries a sense of 'meaning flowing through'. [20] [21] The image this gives is of a stream of meaning flowing among and through us and between us, leading to new understanding.

New environments, which have been called "containers" or fields of inquiry, emerge as two or more people move through a dialogue process. A container can be understood as the sum of the collective assumptions, shared intentions, and beliefs of a group. It can also be understood as the alchemist's crucible or the Alchemical Theatre.

## Imaginization

Imaginization [17] is a form of "reflective practice" encouraging us to become skilled interpreters of the situations with which we have to deal. It encourages us to develop our skills of framing and reframing, so that we can learn to see the same situation in different ways, so that we can remain open and flexible to multiple meanings, so that we can generate new insights and become comfortable with the paradox that the same situation can mean many things at the same time. It encourages us to become reflective, creative and expansive in understanding the situations with which we have to deal. A reflective practitioner is someone who is aware of how implicit images, theories, frames, metaphors, and ideas guide and shape his or her practice and how they can be used to create new possibilities. [17]

The challenge of imaginization is to create insights that allow one to reframe contexts substantially rather than superficially. The challenge is to open new windows on the world, to create new ways of seeing that can lay the basis for new ways of acting. This encourages us to 'live the question'.

## Living the Question: The Childlike Wonder of the Alchemist

To live responsibly as an alchemist is to always remain open to the question of how life is to be lived.

"What is that?" does not ask for a simple answer. The young child who asks it is looking for more - for an adult to converse about the world. "What is that?" asks for time to dialogue, time to think, to wonder, and to marvel. So rather than simply naming the objects the child points to, the adult might dwell on the different meaning dimensions of that

object. Indeed, naming something is more than learning to label it. Naming something is getting to know what the thing really *is*, what it is in its *whatness* and *thatness*. [23]

Alchemists, like children, are naturally curious about almost everything. Questions can be stopped by answers. We see this regularly today. We are under pressure to move quickly to problem solving without staying with the question in all its dimensions. Often this leads to fixing the immediate short-term problem and creating numerous longer term and trickier problems.

In our current organizational context the nature of the alchemist's resilient questions challenge the prevailing worldview. There is a certain feeling of security in the absolute-fragmental world where, at least in principle, every question has an answer - in a world where we experience things as being solidly grounded, where every question finds its place in some rock-bottom sense of natural order and certainty. And yet this security is a false one. Rather than seeing the alchemist's question as something that needs a quick and simple answer, the organization interested in succeeding in the next millennium should try to help the alchemist in his or her natural inclination to *live* the question. [23]

This understanding of the richness of the question is also present in Tao Te Ching, which we believe encapsulates the polar-complete worldview.

*"The Tao which can be spoken of is not the eternal Tao;  
The name which can be named is not the eternal Name.  
'Non-Being' names this beginning of Heaven and Earth;  
'Being' names the mother of the myriad things.  
Therefore, some people constantly dwell in 'Non-Being'  
Because they seek to perceive its mysteries,  
While some constantly dwell in 'Being'  
Because they seek to perceive its boundaries.  
These two ['Non-Being' and 'Being'] are of the same origin,  
But have different names;  
Together they are called abstruse –  
Abstruse and again abstruse,  
This is the gate of all mysteries."  
(Ku-ying, 1977)*

Living the question is just as important to us as leaders of technology. We need to continuously strive to 'live' our questions in order to exercise our imagination and develop our polar-complete worldview and discover the chaordic organization.

### Conclusion

"Complex systems seem to strike a balance between the need for order and the imperative to change. Complex systems tend to locate themselves at a place we call 'the edge of chaos.' We imagine the edge of chaos as a place where there is enough innovation to keep a living system vibrant, and enough stability to keep it from collapsing into anarchy. It is a zone of conflict and upheaval, where the old and the new are constantly at war. Finding the balance point must be a delicate matter – if a living system drifts too close, it risks falling over into incoherence and dissolution; but if the system moves too far away from the edge, it becomes rigid, frozen, totalitarian. Both conditions lead to extinction. Too much change is as destructive as too little. Only at the edge of chaos can complex systems flourish." (Crichton 1995)

DEE HOCK, EX-CEO OF VISA INTERNATIONAL AND ORIGINATOR OF THE WORD CHAORD, WAS UNCOMFORTABLE WITH THE TERM 'COMPLEX SYSTEMS' ABILITY TO FULLY DESCRIBE THE KIND OF ORGANISATION HE ENVISAGED. TO OUR MINDS, HOCK IS A PRESENT DAY ALCHEMIST.

"Language is only secondarily the means by which we communicate; it is primarily the means by which we think. The word "complexity" seems much too vague to describe self-organizing, adaptive complexes, yet I find it cumbersome to either think or write about them in the long string of adjectives by which the work is so often described. After grubbing in various lexicons for roots, meanings and a more suitable word, it seemed simpler to construct one. Since

the knowledge pursued is believed to lie in the phase between Chaos and Order, the first syllable of each, cha from chaos and ord from order, was borrowed and Cha-ord (kayord) emerged.

*By Chaord, I mean any self-organizing, adaptive, nonlinear, complex community or system, whether physical, biological or social, the behavior of which exhibits characteristics of both order and chaos. Or, more simply stated, a Chaord is any chaotically ordered complex." (Hock 1994)*

He goes on to say that his introduction of an audience to a Chaord (and then his attempt to relate it to technology, social change and the future of organizations!) requires weaving a rather complex tale from filaments of history, biography, philosophy, experience and serendipity. It is just such a journey that we have invited you to begin in this paper.

We hope we have intrigued you and stimulated your imagination. We encourage you take on the challenges of the next millennium, beginning with imagining the potential of, and your experience with, chaord. Challenge yourself to live your questions through reflective practice, advocacy with inquiry and dialogue.

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