Building a Culture of Learning

for the 21st Century

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To *serve*--perhaps the most unique theme of higher education in America. For the bonds between a university and society are particularly strong in this country. Historically our institutions have been responsible to and shaped by the communities that founded them. They draw their agenda from these communities.

Perhaps this is nowhere more apparent than in our State of Michigan and with its institutions. For example, the founding principle of this institution can be found in those familiar words from the Northwest Ordinance chiseled above Angell Hall on the University of Michigan's Ann Arbor campus, "Religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged."

And perhaps it was appropriate that Michigan, a state with seemingly infinite resources of fur, timber, iron, and copper--a state with boundless confidence in the future--should play such a leadership role in developing the models of higher education which would later serve all of America. For while the University of Michigan was not the first of the state universities, it nevertheless is commonly regarded as the model of the true public university, responsible and responsive to the needs of the people who founded it and supported it, even as it sought to achieve quality equal to that of the most distinguished private institutions.

So too, our sister institution to the west, Michigan State University, is commonly regarded as the driving force behind the Morrill Act. It has become the prototype of the great land grant university that has served America so well. And our sister institution to the east, Wayne State University, has provided an important model of the urban university, seeking to serve the needs of one of our nation's great cities.

The State of Michigan, through these institutions and others which have arisen since, has provided a model of how higher education serves society through the triad mission of teaching, research, and public service. These institutions grew up with our state, responding to the changing needs and aspirations of its people: i) first, as Michigan expanded to the frontier; ii) then as it evolved through the industrial revolution to become the manufacturing capital of the world; iii) as the population of our state surged following the war years; iv) and. most recently, as Michigan has sought to strengthen and diversify its economic base.

Throughout its long history, one of the distinguishing characteristics of the higher education in Michigan has been its commitment, as President James Angell stated in 1879, to provide "an uncommon education for the common man," to serve all members of the diverse society that founded and supported these important institutions.

This has been one of the great themes of higher education in America. Each evolutionary wave of higher education has aimed at educating a broader segment of society—the public universities, the land-grant universities, the

normal and technical colleges, the community colleges. But today we must do even more to serve an even broader segment of our society.

The Need

There are powerful forces driving an increasing societal demand for higher education services in the United States. In today's world, knowledge has become the coin of the realm, determining the wealth of nations. It has also become the key to one's personal standard of living, the quality of one's life. We might well make the case that today it has become the responsibility of democratic societies to provide their citizens with the education and training they need throughout their lives, whenever, wherever, and however they desire it, at high quality, and at a cost they can afford.

We are in a transition period where intellectual capital, brain power, is replacing financial and physical capital as the key to our strength, prosperity, and well-being. In a very real sense, we are entering a new age, an *Age of Knowledge*, in which the key strategic resource necessary for prosperity has become knowledge itself, that is, educated people and their ideas. Our society is becoming ever more knowledge-intensive.

We have entered an era when the need for, and the demand for, advanced education and learning opportunities will grow rapidly. Increasingly, the education and skills of individuals are seen as the key to both their personal quality of life and the broader strengths of their society. Today, over 90 percent of the new jobs created require a college degree. Furthermore, the need for continuing education of the existing workforce has created a rapidly growing market for adult education at the college level.

People have always looked to education as the key to prosperity and social mobility. But now more than ever, people see education as their hope for leading meaningful and fulfilling lives. The level of one's education has become a primary determinant of one's economic well-being. Just as a high school diploma became the passport for participation in the Industrial Age, today, a century later, a college education has become the requirement for economic security in the Age of Knowledge.

The implications of the knowledge-intensive nature of our society can be seen by comparing the wages of groups with differing education levels:
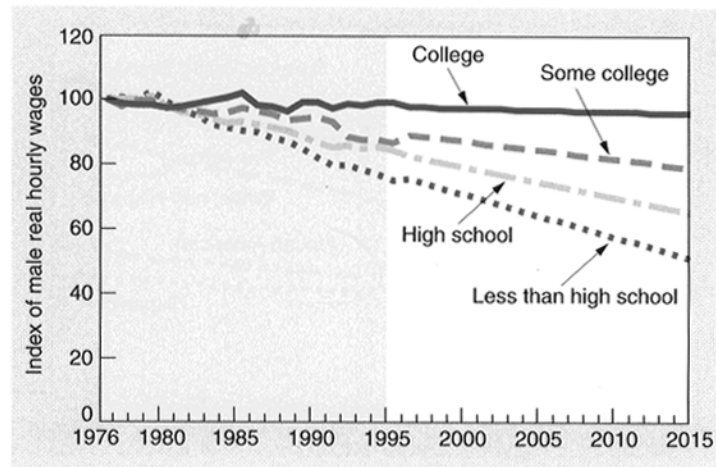
The single most important factor in determining the level of income has become the level of one's education. And it is disturbing how dramatically the incomes diverge; the income of those without a college education may drop 30 percent to 40 percent over the next twenty years. Clearly, this growing gap between the haves and have-nots poses a great threat to our nation's social order, a threat which can only be addressed through education.

A college education will serve only as a stepping stone to a process of lifelong education. The ability to continue to learn and to adapt to—indeed, to manage—change and uncertainty will become among the most valuable skills of all. For example, an active working career of sixty years might require ten or more complete relearning cycles through a lifetime.

In this age of knowledge, our society is becoming ever more dependent upon those social institutions that create knowledge, that educate people, and that provide them with knowledge and learning resources throughout their lives–institutions such as our colleges and universities. Yet here there is growing concern about whether our existing institutions have the capacity to serve these changing and growing social needs–indeed, even whether they will be able to survive in the face of the extraordinary changes occurring in our world. While I believe that the university will certainly survive, I also have become convinced it will not do so in its present form. The central premise of my remarks today is my concern that the current paradigm for conducting, distributing, and financing higher education–in Michigan, throughout our nation, and around the world–is simply incapable of adapting to the changing needs and available resources of our times.

The Forces of Change

The forces of change of most direct concern to higher education can be grouped into three areas: i) financial imperatives, ii) changing social needs, and iii) technology drivers.

Financial Imperatives: Since the late 1970s, higher education in America has been caught in a financial vise.[i] On the one hand, the magnitude of the services demanded of our colleges and universities has increased considerably. Enrollments have grown steadily; the growing educational needs of adult learners have compensated for the temporary dip in the number of high school graduates associated with the post-war baby boom/bust cycle. University research, graduate education, and professional service have all grown in response to societal demand. Yet the costs of providing education, research, and service have grown—even faster, in fact, since these university activities depend upon a highly skilled, professional workforce (faculty and staff), require expensive new facilities and equipment, and are driven by an ever-expanding knowledge base.

As the demand for educational services has grown and the operating costs to provide these services have risen, public support for higher education has flattened and then declined over the past two decades.[ii] The growth in state support of public higher education peaked in the 1980s and now has fallen in many states in the face of limited tax resources and the competition of other priorities such as entitlement programs and corrections. While the federal government has sustained its support of research, growth has been modest in recent years and is likely to decline as discretionary domestic spending comes under increasing pressure from the impact of unconstrained entitlement programs on federal budget-balancing efforts. Federal financial aid programs have shifted increasingly from grants to loans as the predominant form of aid. While the 1997 federal budget agreement provides over $40 billion in tax incentives to college students and their parents over the next several years, much of this federal support is likely to go into new consumption rather than to enhance access to or support of higher education.

To meet growing societal demand for higher education at a time when costs are increasing and public support is declining, most institutions have been forced to sharply increase tuition and fees. This has provided short-term relief, but it has also triggered a strong public concern about the costs and availability of a college education, and it has accelerated forces to constrain or reduce tuition levels at both public and private universities.[iii] As a result, colleges and universities are now looking for ways to control costs and increase productivity, but most are also finding that their current organization and governance makes this very difficult.

It seems increasingly clear that the higher education enterprise in America must change dramatically if it is restore a balance between the costs and availability of educational services needed by our society and the resources available to support these services. The current paradigms for conducting, distributing, and financing higher education may be inadequate to adapt to the demands and realities of our times.

Societal Needs: The needs of our society for the services provided by our colleges and universities will continue to grow. Significant expansion will be necessary just to respond to the needs of a growing population which will result

in a 30 percent growth in the number of traditional college-age students over the next decade. In addition, our institutions will be challenged to meet the needs of the growing population of adult learners in the workplace seeking the college-level education and skills necessary for their careers.

We are beginning to see a shift in demand from the current style of "just-in-case" education in which we expect students to complete degree programs at the undergraduate or professional level long before they actually need the knowledge, to "just-in-time" education in which education is sought when a person needs it through non-degree programs, to "just-for-you" education in which educational programs are carefully tailored to meet the specific lifelong learning requirements of particular students. The university will face the challenge of responding to other transitions, from passive students to active learners, from faculty-centered to learner-centered institutions, from teaching to the design and management of learning experiences, and from students to a lifelong members of a learning community

The situation is even more challenging at the global level, with over half of the world's population under the age of 20. In most of the world, higher education is mired in a crisis of access, cost, and flexibility. Sir John Daniels, Chancellor of the Open University of the United Kingdom, observes that although the United States has the world's strongest university system, the American paradigm seems ill-suited to meeting global education needs.[iv], Our colleges and universities continue to be focused on high-cost, residential education and to the outmoded idea that quality in education is linked to exclusivity of access and extravagance of resources.

Technology Drivers: As knowledge-driven organizations, it is not surprising that colleges and universities should be greatly affected by the rapid advances in information technology—computers, telecommunications, networks. In the past several decades, computers have evolved into powerful information systems with high-speed connectivity to other systems throughout the world. Public and private networks permit voice, image, and data to be made instantaneously available across the world to wide audiences at low costs. The creation of virtual environments where human senses are exposed to artificially created sights, sounds, and feelings liberate us from restrictions set by the physical forces of the world in which we live. Close, empathic, multi-party relationships mediated by visual and aural digital communications systems lead to the formation of closely bonded, widely dispersed communities of people interested in sharing new experiences and intellectual pursuits created within the human mind via sensory stimuli. Rapidly evolving technologies are dramatically changing the way we collect, manipulate, and transmit information.

This technology has already had dramatic impact on our colleges and universities. Our administrative processes are heavily dependent upon information technology—as the current concern with the approaching date reset of Year 2000 has made all too apparent. Research and scholarship depend heavily upon information technology, e.g., the use of computers to simulate physical phenomena, networks to link investigators in virtual laboratories or

"collaboratories," or digital libraries to provide scholars with access to knowledge resources. Yet, there is an increasing sense that new technology will have an its most profound impact on the educational activities of the university and how we deliver our services.

We generally think of the educational role of our institutions in terms of a classroom paradigm, that is, of a professor teaching a class of students, who in turn respond by reading assigned texts, writing papers, solving problems or performing experiments, and taking examinations. Yet, the classroom itself may soon be replaced by learning experiences enabled by emerging information technology. Indeed, such a paradigm shift may be forced upon the faculty by the students themselves.

Today's students are members of the "digital generation." They have spent their early lives surrounded by robust, visual, electronic media—*Sesame Street*, MTV, home computers, video games, cyberspace networks, MUDs, MOOs, and virtual reality. Unlike those of us who were raised in an era of passive, broadcast media such as radio and television, they expect, indeed demand, interaction. They approach learning as a "plug-and-play" experience, unaccustomed and unwilling to learn sequentially—to read the manual—and inclined to plunge in and learn through participation and experimentation. While this type of learning is far different from the sequential, pyramid approach of the traditional university curriculum, it may be far more effective for this generation, particularly when provided through a media-rich environment.

It could well be that faculty members of the 21st Century university will find it necessary to set aside their roles as teachers and become designers of learning experiences, processes, and environments. Tomorrow's faculty may have to discard the present style of solitary learning experiences in which students tend to learn primarily on their own through reading, writing, and problem solving. Instead, they may be asked to develop collective learning experiences in which students work together and learn together, with the faculty member becoming more of a consultant or a coach than a teacher. Faculty members will be less concerned with identifying and then transmitting intellectual content and more focused on inspiring, motivating, and managing an active learning process by students. We should note that this will require a major change in graduate education, since few of today's faculty members have learned these skills.

One can easily identify similarly profound changes occurring in the other roles of the university. The process of creating new knowledge—research and scholarship—is also evolving rapidly away from the solitary scholar to teams of scholars, perhaps spread over a number of disciplines. There is increasing pressure to draw research topics directly from worldly experience rather than predominantly from the curiosity of scholars. Even the nature of knowledge creation is shifting somewhat away from the *analysis of what has been* to the *creation of what has never been*—stressing more on the experience of the artist than upon analytical skills of the scientist.

Most significant here is the way in which emerging information technology has removed the constraints of space and time. We can now use powerful computers and networks to deliver educational services to anyone at anyplace and anytime, confined no longer to the campus or the academic schedule. Technology is creating an open learning environment in which the student has evolved into an active learner and consumer of educational services, stimulating the growth of powerful market forces that could dramatically reshape the higher education enterprise.

A Tale of Two Futures

Recall the opening lines from Charles Dickens' Tale of Two Cities:

> *It was the best of times, it was the worst of times,*
> *It was the age of wisdom, it was the age of foolishness,*
> *It was the epoch of belief, it was the epoch of incredulity,*
> *It was the season of Light, it was the season of Darkness,*
> *It was the spring of hope, it was the winter of despair,*
>
> Charles Dickens
> *A Tale of Two Cities*

To paraphrase Charles Dickens, these do indeed seem like both the best of times and the worst of times for higher education in America.

- On the one hand, in an age of knowledge in which educated people and their ideas have become the wealth of nations, the university has never been more important, and the value of a college education never higher.

- The educational opportunities offered by the university, the knowledge it creates, and the services it provides are key to almost every priority of contemporary society, from economic competitiveness to national security to protecting the environment to enriching our culture.

- There is a growing recognition that few public investments have higher economic payoff than those made in higher education.

- In 1997 the federal government made the largest commitment to higher education since the GI Bill through $40 billion of tax incentives to college students and their parents as part of the budget balancing agreement.

- In 1998 Washington took further action by proposing the largest increase in the funding of academic research in decades.

- And both the administration and Congress promise balanced budgets and generous support for years to come.

Yet, there is great unease on our campuses.

- The media continues to view the academy with a frustrating mix of skepticism, ignorance, and occasional hostility that erodes public trust and confidence.

- Although an unusually prosperous economy has provided both state and federal governments with the resources to halt the erosion in public support of higher education, the danger of intervention in the name of accountability remains high.

- Throughout society we see a backlash against earlier social commitments such as affirmative action, long a key mechanism both for diversifying our campuses and providing educational opportunity to those suffering discrimination in broader society.

- And the faculty feels the stresses from all quarters: There is fear that research funding will decline again when the economy cools and entitlement programs grow, a sense of loss of scholarly community with increasing specialization; and a conflict between the demands of grantsmanship, a reward structure emphasizing research, and a love and sense of responsibility for teaching.

To continue paraphrasing Dickens, while we may be entering an age of wisdom—or at least knowledge—it is also an age of foolishness. Last year, the noted futurist Peter Drucker shook up the academy when, during an interview in *Forbes*, he speculated: "Thirty years from now the big university campuses will be relics. Universities won't survive. It's as large a change as when we first got the printed book."[v] One can imagine the network of interactions that ricocheted across university campuses in the months following Drucker's conjecture. It was fascinating to track the conversations among the University of Michigan deans on electronic mail. Some, of course, responded by blasting Drucker, always a dangerous thing to do. Others believed it to be moot. A few even surmised that perhaps a former president of the University of Michigan might agree with Drucker. (He doesn't, incidentally.)

So what are we facing? A season of light or a season of darkness? A spring of hope or a winter of despair? More to the point, and again in a Dickensian spirit, is higher education facing yet another period of evolution? Or will the dramatic nature and compressed time scales characterizing the changes of our time trigger a process more akin to revolution?

To be sure, most colleges and universities are responding to the challenges and opportunities presented by a changing world. They are evolving to serve a new age. But most are evolving within the traditional paradigm, according to the time-honored processes of considered reflection and consensus that have long characterized the academy. Is such glacial change responsive enough to allow the university to control its own destiny? Or will a tidal wave of societal forces sweep over the academy, both transforming the university in unforeseen and unacceptable ways while creating new institutional forms to challenge both our experience and our concept of the university?

In this paper, we will discuss two sharply contrasting futures for higher education in America. The first is a rather dark, market-driven future in which strong market forces trigger a major restructuring of the higher education enterprise. Although traditional colleges and universities play a role in this future, they are both threatened and reshaped by aggressive for-profit entities and commercial forces that drive the system toward the mediocrity that has characterized other mass media markets such as television and journalism.

A contrasting and far brighter future is provided by a vision of a culture of learning in which universal or ubiquitous educational opportunities are provided to meet the broad and growing learning needs of our society. Using a mix of old and new forms, learners are offered a rich array of high quality, affordable learning opportunities. Our traditional institutional forms, including both the liberal arts college and the research university, continue to play key roles, albeit with some necessary evolution and adaptation.

Although market forces are far more powerful that most realize, we also believe that it is possible to determine which of these or other paths will be taken by higher education in America. Key in this effort is our ability as a society to view higher education as a public good that merits support through public tax dollars. In this way, we may be able to protect the public purpose of the higher education enterprise and sustain its quality, important traditions, and essential values.

If we are to do this, we must also recognize the profound nature of the rapidly changing world faced by higher education. The status quo is no longer an option. We must accept that change is inevitable and use it as a strategic opportunity to control our destiny, retaining the most important of our values and our traditions.

Scenario #1: A Massive Restructuring of the Higher Education Industry

Universities have long enjoyed a monopoly over advanced education because of geographical location and their monopoly on certification through the awarding of degrees. In the current paradigm, our colleges and universities are faculty-centered. The faculty has long been accustomed to dictating what it wishes to teach, how it will teach, and where and when the learning will occur. This faculty-centered paradigm is sustained by accrediting associations, professional societies, and state and federal governments.

This carefully regulated and controlled enterprise could be eroded by several factors. First, the growing demand for advanced education and training simply cannot be met by such a carefully rationed and controlled paradigm. Second, current cost structures for higher education are simply incapable of responding to the needs for high quality yet affordable education. Third, information technology is releasing higher education from the constraints of space and time (and possibly also reality). And fourth, all of these forces are driving us toward

an open learning environment, in which the student will evolve into an active learner and consumer, unleashing strong market forces.

Tomorrow's student will have access to a vast array of learning opportunities, far beyond the faculty-centered institutions characterizing higher education today. Some will provide formal credentials, others will provide simply knowledge, still others will be available whenever the student—more precisely, the learner— needs the knowledge. The evolution toward such a learner-centered educational environment is both evident and irresistible.

As a result, higher education is likely to evolve from a loosely federated system of colleges and universities serving traditional students from local communities into, in effect, a knowledge and learning industry. Since nations throughout the world are experiencing growing needs and demand for advanced education, this industry will be global in extent. With the emergence of new competitive forces and the weakening influence of traditional constraints, higher education is evolving like other "deregulated" industries, e.g., health care or communications or energy. In contrast to these other industries, which have been restructured as government regulation has weakened, the global knowledge-learning industry will be unleashed by emerging information technology that frees education from the constraints of space, time, and credentialling monopoly.

Many in the academy would undoubtedly view with derision or alarm the depiction of the higher education enterprise as an "industry" or "business," operating in a highly competitive, increasingly deregulated, global marketplace. This is nevertheless an important perspective that will require a new paradigm for how we think about postsecondary education. As our society becomes ever more dependent upon new knowledge and educated people, upon knowledge workers, this global knowledge business must be viewed clearly as one of the most active growth industries of our times. It is clear that no one, no government, will be in control of the higher-education industry. It will respond to forces of the marketplace.

In fact, one could well make the case that higher education today is about where the health care industry was a decade ago. The first waves of change are lapping on the beach, and hover the horizon there may be a tsunami of market forces!

Just remember that while Washington debated federal programs to control health care costs and procrastinated taking action, the marketplace took over with new paradigms such as managed care and for-profit health centers. In less than a decade the health care industry was totally changed. Today, higher education is a $180 billion a year enterprise. It will almost certainly be "corporatized" similarly to health care. By whom? By state or federal government? Not likely. By traditional institutions such as colleges and universities working through statewide systems or national alliances? Also unlikely. Or by the marketplace itself, as it did in health care, spawning new players such as virtual universities and for-profit educational organizations? Perhaps.

Several months ago, representatives from a leading information services company visited with my institution to share with us their perspective of the higher education market (and sell us a new educational product, an "MBA-in-a-box", based on "Sim City" like software). They believe the size of the higher education enterprise in the United States during the next decade could be a large as $300 billion per year, with 30 million students, roughly half comprised of today's traditional students and the rest as adult learners in the workplace. (Incidentally, they also put the size of the world market at $3 trillion.) Their operational model of the brave, new world of market-driven higher education suggests that this emerging domestic market for educational services could be served by a radically restructured enterprise consisting of 50,000 faculty "content providers," 200,000 faculty learning "facilitators," and 1,000 faculty "celebrities" who would be the stars in commodity learning-ware products. The learner would be linked to these faculty resources by an array of for-profit services companies, handling the production and packaging of learning-ware, the distribution and delivery of these services to learners, and the assessment and certification of learning outcomes. Quite a contrast with the current enterprise!

Unbundling: The modern university has evolved into a monolithic institution controlling all aspects of learning. Universities provide courses at the undergraduate, graduate, and professional level; they support residential colleges, professional schools, lifelong learning, athletics, libraries, museums, and entertainment. They have assumed responsibility for all manner of activities beyond simply education—housing and feeding students, providing police and other security protection, counseling and financial services . . . even power plants on many of our campuses!

Today comprehensive universities—at least as full-service organizations—are at considerable risk. One significant impact of a restructured higher education "industry" may be to break apart this monolith, much as other industries have been broken apart through deregulation. As universities are forced to evolve from faculty-centered to learner-centered, they may well find it necessary to unbundle their many functions, ranging from admissions and counseling to instruction and certification. We are already beginning to see the growth of differentiated competitors for many of these activities. Universities are under increasing pressure to spin off or sell off or close down parts of their traditional operations in the face of this new competition. Many of our other activities, e.g., financial management and facilities management, are activities that might be outsourced to specialists. Universities, like other institutions in our society, will have to come to terms with what their true strengths are and how those strengths support their strategies—and then be willing to outsource needed capabilities in areas where they do not have a unique competitive advantage.

The Emergence of a Commodity Market: Throughout most of its history, higher education has been a cottage industry. Individual courses are a handicraft, made-to-order product. Faculty members design from scratch the courses they teach, whether they be for a dozen or several hundred students. They may use standard textbooks from time to time—although most do not—but their

organization, their lectures, their assignments, and their exams are developed for the particular course at the time it is taught.

Our ability to introduce new, more effective avenues for learning, not merely new media in which to convey information, will change the nature of higher education. The individual handicraft model for course development may give way to a much more complex method of creating instructional materials. Even the standard packaging of an undergraduate education into "courses," required in the past by the need to have all the students in the same place at the same time, may no longer be necessary with new forms of asynchronous learning. Of course, it will be a challenge to break the handicraft model while still protecting the traditional independence of the faculty to determine curricular content. There is also a long-standing culture in which the faculty has come to believe they own the intellectual content of their courses and are free to market these to others for personal gain, e.g., through textbooks or off-campus consulting services. But universities may have to restructure these paradigms and renegotiate ownership of the intellectual products represented by classroom courses if they are to constrain costs and respond to the needs of society.

As distributed virtual environments become more common, there may come a time when the classroom experience itself becomes a true commodity product, provided to anyone, anywhere, at any time—for a price. If students could actually obtain the classroom experience provided by some of the most renowned teachers in the world, why would they want to take classes from the local professor—or, in many cases, the local teaching assistant? In such a commodity market, the role of the faculty member would change substantially. Rather than developing content and transmitting it in a classroom environment, a faculty member might instead have to manage a learning process in which students use an educational commodity, e.g., the Microsoft Virtual "Life on Earth" Course starring Stephen J. Gould. This would require a shift from the skills of intellectual analysis and classroom presentation to those of motivation, consultation, and inspiration. Welcome back, Mr. Chips!

Mergers, Acquisitions, and Hostile Takeovers: The perception of the higher education enterprise as a deregulated industry has several other implications. There are over 3,600 four-year colleges and universities in the United States, characterized by a great diversity in size, mission, constituencies, and funding sources. Not only are we likely to see the appearance of new educational entities in the years ahead, but as in other deregulated industries, there could well be a period of fundamental restructuring of the enterprise itself. Some colleges and universities might disappear. Others could merge. Some might actually acquire other institutions. One might even imagine a Darwinian process emerging with some institutions devouring their competitors in "hostile takeovers." All such events have occurred in deregulated industries in the past, and all are possible in the future we envision for higher education.

The market forces unleashed by technology and driven by increasing demand for higher education are very powerful. If allowed to dominate and reshape the higher education enterprise, we could well find ourselves facing a brave, new

world in which some of the most important values and traditions of the university fall by the wayside. While the commercial, convenience-store model of the University of Phoenix may be very effective way to meet the workplace skill needs of some adults, it certainly is not a paradigm that would be suitable for many of the higher purposes of the university. As we assess these market-driven emerging learning structures, we must bear in mind the importance of preserving the ability of the university to serve a broader public purpose.

In summary, the waves of market pressures on our colleges and universities are building, driven by the realities of our times: the growing correlation between one's education and quality of life, the strategic role of knowledge in determining the prosperity and security of nations, the inability of traditional higher education institutions to monopolize an open-learning marketplace characterized by active student-learner-consumers and rapidly evolving technology. Driven by an entrepreneurial culture, both within our institutions and across American society, the early phases of a restructuring of the higher education enterprise are beginning to occur.

Without a broader recognition of the growing learning needs of our society, an exploration of more radical learning paradigms, and an overarching national strategy that acknowledges the public purpose of higher education and the important values of the academy, higher education may be driven down roads which would indeed lead to a winter of despair. Many of the pressures on our public universities are similar to those which have contributed so heavily to the current plight of K-12 education in America. Furthermore, our experience with market-driven, media-based enterprises has not been reassuring. The broadcasting and publication industries suggest that commercial concerns can lead to mediocrity, an intellectual wasteland in which the least common denominator of quality dominates.

Scenario #2: A Culture of Learning

But there is also a spring of hope, stimulated by the recognition of the role that knowledge and learning will play in our future. Whether one refers to our times as the Information Age or the Age of Knowledge, it is clear that educated people and the knowledge they produce and utilize have become the keys to the economic prosperity and well being of our society. One's education, knowledge, and skills have become primary determinants of one's personal standard of living, the quality of one's life. We are realizing that, just as our society has historically accepted the responsibility for providing needed services such as military security, health care, and transportation infrastructure in the past, today education has become a driving social need and societal responsibility. Today it has become the responsibility of democratic societies to provide their citizens with the education and training they need, throughout their lives, whenever, wherever, and however they desire it, at high quality and at an affordable cost.

Of course, this has been one of the great themes of higher education in America. Each evolutionary wave of higher education has aimed at educating a broader

segment of society, at creating new educational forms to do that—the public universities, the land-grant universities, the normal and technical colleges, the community colleges. But today, we must do even more.

An interesting aside here, returning to the research university and the Endless Frontier partnership. As the dominant form of higher education in America today, the research university, was shaped by a social contract during the last fifty years in which national security was regarded as America's most compelling priority, as reflected in massive investments in campus-based research and technology. Today, in the wake of the Cold War and at the dawn of the age of knowledge, one could well make the argument that education itself will replace national defense as the priority for the 21st Century. Indeed, one might suggest that this will be the new social contract that will determine the character of our educational institutions, just as the government-university research partnership did in the latter half of the 20th Century. We might even conjecture that a social contract based on developing and maintaining the abilities and talents of our people to their fullest extent could well transform our schools, colleges, and universities into new forms which would rival the research university in importance.

So what might we expect over the longer term for the future of the university? It would be impractical and foolhardy to suggest one particular model for the university of the 21st Century. The great and ever-increasing diversity characterizing higher education in America makes it clear that there will be many forms, many types of institutions serving our society. But there are a number of themes which will almost certainly factor into at least some part of the higher education enterprise.

- *Learner-centered:* Just as other social institutions, our universities must become more focused on those we serve. We must transform ourselves from faculty-centered to learner-centered institutions.
- *Affordable:* Society will demand that we become far more affordable, providing educational opportunities within the resources of all citizens. Whether this occurs through greater public subsidy or dramatic restructuring of our institutions, it seems increasingly clear that our society—not to mention the world—will no longer tolerate the high-cost, low productivity paradigm that characterizes much of higher education in America today.
- *Lifelong Learning:* In an age of knowledge, the need for advanced education and skills will require both a willingness to continue to learn throughout life and a commitment on the part of our institutions to provide opportunities for lifelong learning. The concept of student and alumnus will merge. Our highly partitioned system of education will blend increasingly into a seamless web, in which primary and secondary education; undergraduate, graduate, and professional education; on-the-job training and continuing education; and lifelong enrichment become a continuum.
- *Interactive and Collaborative:* Already we see new forms of pedagogy: asynchronous (anytime, anyplace) learning that utilizes emerging information technology to break the constraints of time and space, making learning opportunities more compatible with lifestyles and career needs; and

interactive and collaborative learning appropriate for the digital age, the plug-and-play generation.

• *Diverse:* Finally, the great diversity characterizing higher education in America will continue, as it must to serve an increasingly diverse population with diverse needs and goals.

We will need a new paradigm for delivering education to even broader segments of our society, perhaps to all of our society, in convenient, high quality forms, at a cost all can afford. Fortunately, today's technology is rapidly breaking the constraints of space and time. It has become clear that most people, in most areas, can learn and learn well using asynchronous learning, that is, "anytime, anyplace, anyone" education. Lifetime education is rapidly becoming a reality, making learning available for anyone who wants to learn, at the time and place of their choice, without great personal effort or cost. With advances in modern information technology, the barriers in the educational system are no longer cost or technological capacity but rather perception and habit.

But even this may not be enough. Perhaps we should instead consider a future of "ubiquitous learning"—learning for everyone, every place, all the time. Indeed, in a world driven by an ever-expanding knowledge base, continuous learning, like continuous improvement, has become a necessity of life.

Rather than "an age of knowledge," we could instead aspire to a "culture of learning," in which people are continually surrounded by, immersed in, and absorbed in learning experiences. Information technology has now provided us with a means to create learning environments throughout one's life. These environments are able not only to transcend the constraints of space and time, but they, like us, are capable as well of learning and evolving to serve our changing educational needs. Higher education must define its relationship with these emerging possibilities in order to create a compelling vision for its future as it enters the next millennium.

Evolution or Revolution?

In spite of the growing awareness of these social forces, many within the academy still believe that change will occur only at the margins of higher education. They see the waves of change lapping on the beach as just the tide coming in, as it has so often before. They stress the role of the university in stabilizing society during a period of change rather than leading those changes. This too shall pass, they suggest, and demand that the university hold fast to its traditional roles and character. And they will do everything within their power to prevent change from occurring.

Yet, history suggests that the university must change and adapt in part to preserve these traditional roles. It is true that many, both within and outside the academy, believe that significant change must occur not simply in the higher education enterprise but in each and every one of our institutions. Most of these people see change as an evolutionary, incremental, long-term process,

compatible with the values, cultures, and structure of the contemporary university.

There are a few voices, however, primarily outside the academy, who believe that both the dramatic nature and compressed time scale characterizing the changes of our times will drive not evolution but revolution. They have serious doubts about whether the challenges of our times will allow such gradual change and adaptation. They point out that there are really no precedents to follow. Some even suggest that long before reform of the educational system comes to any conclusion, the system itself will collapse.[vi]

The forces driving change in higher education, both from within and without, may be far more powerful than most people realize. It could well be that both the pace and nature of change characterizing the higher education enterprise both in America and worldwide will be considerably beyond that which can be accommodated by business-as-usual evolution. As one of my colleagues put it, while there is certainly a good deal of exaggeration and hype about the changes in higher education for the short term—meaning five years or less—it is difficult to stress too strongly the profound nature of the changes likely to occur in most of our institutions and in our enterprise over the longer term—a decade and beyond.

While some colleges and universities may be able to maintain their current form and market niche, others will change beyond recognition. Still others will disappear entirely. New types of institutions—perhaps even entirely new social learning structures—will evolve to meet educational needs. In contrast to the last several decades, when colleges and universities have attempted to become more similar, the years ahead will demand greater differentiation. There will be many different paths to the future.

For the past decade we have led an effort at the University of Michigan to transform ourselves, to re-invent the institution, if you will, so that it better serves a rapidly changing world. We created a campus culture in which both excellence and innovation were our highest priorities. We restructured our finances so that we became, in effect, a privately supported public university. We dramatically increased the diversity of our campus community. We launched major efforts to build a modern environment for teaching and research using the powerful tools of information technology. Yet with each transformation step we took, with every project we launched, we became increasingly uneasy.

As we came to understand better the forces driving change in our society and its institutions, we realized that these were stronger, more profound that we had first thought. Change was occurring far more rapidly that we had anticipated. The future was becoming less certain as the range of possibilities expanded to include more radical options.

We came to the conclusion that in a world of such rapid and profound change, as we faced a future of such uncertainty, the most realistic near-term approach was

to explore possible futures of the university through experimentation and discovery. That is, rather than continue to contemplate possibilities for the future through abstract study and debate, it seemed a more productive course to build several prototypes of future learning institutions as working experiments. In this way we could actively explore possible paths to the future.

For example, through a major strategic effort known as the Michigan Mandate, we altered very significantly the racial diversity of our students and faculty, thereby providing a laboratory for exploring the themes of the "diverse university". We established campuses in Europe, Asia, and Latin America, linking them with robust information technology, to understand better the implications of becoming a "world university". We launched major initiatives such as the Media Union (a sophisticated multimedia environment), a virtual university (the Michigan Virtual University), and played a key role in the management of the Internet to explore the "cyberspace university" theme. We launched new cross-disciplinary programs and built new community spaces that would draw students and faculty together as a model of the "divisionless university." We placed a high priority on the visual and performing arts, integrating them with disciplines such as engineering and architecture, to better understand the challenges of the "creative university". And we launched an array of other initiatives, programs, and ventures, all designed to explore the future.

All of these efforts were driven by the grass-roots interests, abilities, and enthusiasm of faculty and students. Our approach as leaders of the institution was to encourage strongly a "let every flower bloom" philosophy, to respond to faculty and student proposals with "Wow! That sounds great! Let's see if we can work together to make it happen! And don't worry about the risk. If you don't fail from time to time, it is because you aren't aiming high enough!!!"

To be sure, some of these experiments were costly. Some were poorly understood and harshly criticized by those preferring the status quo. All ran a very high risk of failure, and some crashed in flames–albeit spectacularly. Yet, while such an exploratory approach was disconcerting to some and frustrating to others, fortunately there were many on our campus and beyond who viewed this phase as an exciting adventure. And all of these initiatives were important in understanding better the possible futures facing our university. All have had influence on the evolution of our university.

An Example: The Michigan Virtual Automotive College

One of the more provocative approaches to higher education in the information age is the so-called *virtual university*. In cybertalk, "virtual" is an adjective that means existing in function but not in form. A virtual university exists only in cyberspace, without a campus or perhaps even a faculty. Sophisticated networks and software environments are used to break the learning loose from the constraints of space and time and make it available to anyone, anyplace, at any time.

Already college directories list over 700 virtual colleges, with over a million students enrolled in their programs. Yet most of these are simply Internet-based extensions of conventional distance learning, relying upon existing higher education organizations such as extension programs. However, there are also several rapidly emerging virtual organizations such as the Western Governor's University and the California Virtual University that do represent radical departures from our traditional paradigms for colleges and universities. In this paper, we describe the design, formation, and rapid growth of one of the first of these new virtual colleges, the *Michigan Virtual Automotive College (MVAC).*

To respond to the changing educational needs of a major industry in our state, the automobile industry, as well as to explore the possibility of new types of learning institutions based upon rapidly emerging digital technology, in 1996, the State of Michigan launched the Michigan Virtual Automotive College. This is a collaborative effort among the University of Michigan, Michigan State University, the State of Michigan, the state's other colleges and universities, and the automobile industry. It was formed as a private, not-for-profit, 501(c)3 corporation aimed at developing and delivering technology-enhanced courses and training programs for the automobile industry.

MVAC was designed as a system integrator, a broker, between colleges and universities, training providers, and the automotive industry. It works to facilitate certificate and degree attainment for those participating in courses and training programs offered under its auspices. It is designed as a "green field" experiment where colleges and universities can come together to test capabilities to deliver their training and educational programs at a distance and asynchronously. It is also expected to serve eventually as a platform for the State of Michigan to build an education export industry.

MVAC is a college without walls. Courses and programs can be offered from literally any site in the state to any other technologically connected site within the state, the United States, or the world. Although learning technologies are rapidly evolving, MVAC currently brokers courses which utilize a wide array of technology platforms including satellite, interactive television, Internet, CD-ROM, videotape, and combinations of the above. MVAC will seek to develop common technology standards between and among providers and customers for the ongoing delivery of courses. MVAC offers courses and training programs, ranging from the advanced post-graduate education in engineering, computer technology, and business administration to entry level instruction in communications, mathematics, and computers.

MVAC has made considerable progress in its first year. After the negotiation of a governance structure and the development of a business plan in summer and fall of 1996, MVAC was formally incorporated in December, 1996. Capitalization for MVAC is provided by members of the partnership: the State of Michigan ($5 million), the universities ($2 million), and an as-yet-to-be-determined contribution from the automobile industry. A staff was recruited and facilities were developed in Ann Arbor. Commitments to participate in the evolution of

MVAC were obtained from all of the key members of the executive committee, including the leadership of the Big Three, the presidents of Michigan's colleges and universities, and key suppliers. Extensive market studies were performed, both through the use of MVAC marketing staff and through the use of consultants (Coopers & Lybrand). Based on this market survey, a request for proposals was distributed to higher education institutions for the development of courses for fall of 1997. MVAC currently offers sixty to seventy courses and over 20 degree programs across a broad spectrum of disciplines and levels.

This paper is intended to describe the rationale behind MVAC, our strategic plan, our execution, and what we have learned.

The Rationale

There were two issues that stimulated MVAC. First, a study commissioned by the State of Michigan's Automotive Partnership and performed by the University of Michigan's Office of Studies in Automotive Transportation concluded that the education and training needs of the automobile industry could no longer be met by conventional in-house training programs or established educational institutions. Both the combination of workforce turnover through retirements, coupled with the increasing skill and education levels required for future jobs in this industry, suggested that over 130,000 jobs would be at stake in Michigan alone over the next decade.

Existing higher education paradigms, based primarily on campus-based classroom learning, were limited in their capacity to respond to this need. Therefore, Michigan's Governor, John Engler challenged the state's universities to take advantage of emerging information technology to deliver educational services and training opportunities into the workplace of the state's automobile industry through a virtual university paradigm.

The University of Michigan, Michigan State University, and the Michigan Jobs' Commission formed a partnership to design and build such a learning institution. Michigan State University, as the state's land-grant institution, had long experience in delivering distance-independent learning through its extension programs. The University of Michigan had considerable expertise in information technology. And the Michigan Jobs' Commission could play a critical role both in providing the necessary startup funding and through its experience in providing assistance for training programs to the automobile industry.

However, even as this highly specific venture was launched, there was also recognition that it might well serve as a template for new learning institutions more capable of responding to the rapidly changing educational needs of the state.

The Key Decisions in Forming MVAC

As the above examples illustrate, there are many different approaches to building virtual universities. Clearly, all depend upon information technology to free themselves from the constraints of campus-based instruction. But they can differ considerably in the way they are financed, their governance, their markets, and their academic objectives.

As we examined a variety of different models for MVAC, we finally settled on the following characteristics:

First, we designed to be MVAC to be primarily a broker or system integrator, working with the industry to determine its education and training needs, and then, in turn, working with established educational institutions to respond to these needs through the use of information technology. In this sense, MVAC would have no campus, no faculty, and a very limited administrative staff. Its primary function would be to open up new channels for the delivery of educational services.

At the outset, we also decided that MVAC would not give degrees. Although there had been some early thought given to chartering MVAC as a state educational institution, in the end we decided against this. We wanted MVAC to be clearly perceived by Michigan's existing colleges and universities as value-adding, not competitive. Rather than creating an independent degree-granting capability–and facing the rather considerable challenges of accreditation–we instead decided to rely upon the established degree programs and cooperative agreements of existing institutions.

Second, we initially focused MVAC on a brokering role between institutions. That is, we viewed our initial market as companies, not individual employees or citizens. Furthermore, we viewed our suppliers as academic institutions, not individual faculty or staff. While we realized that at some future point, as we developed capacity to deliver high quality, cost-effective educational services beyond the workplace and onto the desktop and into the home, the possibility of offering programs to individual clients might become of interest. However at the outset, by confining our efforts to working with companies and academic institutions, we greatly simplified our marketing and support activities.

Third, we decided to form MVAC as a non-for-profit, independent corporation. While a for-profit organization would probably have been capable of faster growth because of access to capital markets, we believed that the non-for-profit character would better allow us to form relationships with colleges and universities. And while some state support was provided as to capitalize and launch MVAC, it is our intent that the operation be self-supporting based on educational fees and contracts within three years.

Finally, we believed that the governance structure of MVAC should clearly reflect the three key participants: Michigan's colleges and universities, the automotive industry, and the State of Michigan. Although the University of Michigan, Michigan State University, and the State of Michigan were founding members of the 501(c)3 membership corporation, we formed an executive

committee structure containing representatives from Michigan's other universities and community colleges, the Big Three, the supplier industry, and the UAW.

Next Steps

Even though MVAC has been in operation for only a year, there are already strong pressures within the state to establish similar industry-specific virtual colleges to respond to the needs of the states other economic sectors. The MVAC model is being considered as the template for virtual colleges focused on industries such as health-care products, furniture, tourism, and plastics. These are envisioned as "mirror sites", making extensive use of experience of MVAC, including administration, contracting, technology platforms, and academic services.

There has also been considerable interest expressed in extending the concept to include the delivery of educational services directly to individuals. Clearly with digital convergence–the merging of the television and the network computer–it will soon be possible to deliver sophisticated educational services directly into the home. The goal of making the vast resources of Michigan's educational infrastructure, its colleges and universities and cultural organizations, available to all of the state's citizens, wherever they are and whenever they desire them, at high quality, and at a cost they can afford, is a dream that may soon be within reach. To this end, the Governor has already proposed forming a new state university–a "Michigan Electronic University"–that would not only coordinate the various industry-specific virtual colleges such as MVAC, but would assist the state's colleges and universities in providing a broader array of educational services based on information technology.

Of course, beyond administrative, financial, and technological issues, there are important pedagogical issues to consider. For many years universities have utilized passive telecommunications technology such as television to extend teaching to people unable or unwilling to attend campus-based classes. In its simplest form, such distance learning is really a "talking heads" paradigm, in which faculty lectures are simply delivered at a distance, either through live transmission or videotape. There have been efforts to broadcast such instruction through "sunrise semesters," augmented by written correspondence. A more effective approach utilizes on site teaching assistants to work directly with the students. Recently, technology has allowed the use of feedback via electronic mail, chatrooms, or two-way video interaction.

The simplest conception of the virtual university uses multimedia technology via the Internet to enable distance learning. Such instruction could be delivered either into the workplace or the home. In one form, this Internet-mediated instruction would be synchronous—in real time with the instructor and the students interacting together. The more interesting teaching paradigms of the virtual university involve asynchronous interactions, in which students and faculty interact at different times. In a sense, this latter form would resemble a

correspondence course, with multimedia computers and networks replacing the mailing of written materials.

The initial driving force behind the formation of virtual universities is related both to cost and market. By using an inexpensive delivery mechanism such as the Internet to reach a potentially vast audience, many hope that a virtual university can provide instruction at costs far lower than campus-based instruction. There are presently for-profit entities[vii] competing directly with traditional colleges and universities in the higher education marketplace through virtual university structures.

Distance learning based on computer-network-mediated paradigms allows universities to push their campus boundaries out to serve learners anywhere, anytime. Those institutions willing and capable of building such learning networks will see their learning communities expand by an order of magnitude. In this sense, the traditional paradigm of "time-out-for-education" can be more easily replaced by the "just-in-time" learning paradigms, more appropriate for a knowledge-driven society in which work and learning fuse together.

The Questions Before Us

Many questions remain unanswered. Who will be the learners served by these institutions? Who will teach them? Who will administer and govern these institutions? Who will pay for them? What will be the character of our universities? How will they function? When will they appear?

Perhaps the most profound question of all concerns the survival of the university in the face of the changes brought on by the emergence of new competitors. That is the question raised by Drucker and other futurists. Could an institution such as the university, which has existed for a millennium, disappear in the face of such changes?

Most of us, of course, believe quite strongly that the university as a social institution is simply too valuable to disappear. On the other hand, there may well be forms of the university that we would have great difficulty in recognizing from our present perspective.

Let me suggest a somewhat different set of questions in an effort to frame the key policy issues facing higher education:

1. How do we respond to the diverse educational needs of a knowledge-driven society? Here we must realize that, while the educational needs of the young will continue to be a priority, we also will be challenged to address the sophisticated learning needs of adults in the workplace while providing broader lifetime learning opportunities for all of our society.
2. Is higher education a public or a private good? To be sure, the benefits of the university clearly flow to society as a whole. But it is also the

case that two generations of public policy in America have stressed instead the benefits of education to the individual student.

3. How do we balance the roles of market forces and public purpose in determining the future of higher education? Can we control market forces through public policy and public investment so that the most valuable traditions and values of the university are preserved? Or will the competitive and commercial pressures of the marketplace sweep over our institutions, leaving behind a higher education enterprise characterized by mediocrity.

An Action Agenda

1. <u>Determine those key roles and values</u> that must be protected and preserved during this period of transformation, e.g.,

    Roles: education of the young, preservation of culture, basic research and scholarship, critic of society, etc.

    Values: academic freedom, a rational spirit of inquiry, a community of scholars, a commitment to excellence, shared governance (?), etc.

2. <u>Listen carefully to society</u> to learn and understand its changing needs, expectations, and perceptions of higher education, along with the forces driving change.

3. <u>Prepare the academy for change and competition</u>, e.g., by removing unnecessary constraints, linking accountability with privilege, redefining tenure as the protection of academic freedom rather than lifetime employment security, etc. Begin the task of transforming the academy by radically restructuring graduate education.

4. <u>Restructure university governance</u>–particularly lay boards and shared governance models–so that it responds to the changing needs of society rather than defending and perpetuating an obsolete past. Develop a tolerance for strong leadership. Shift from lay boards to corporate board models where members are selected based on expertise and commitment and held accountable for their performance and the welfare of their institutions.

5. <u>Develop a new paradigm for financing higher education</u> by first determining the appropriate mix of public support (i.e., higher education as a "public good") and private support (higher education as a personal benefit). This should include a full accounting of both direct public support (e.g., appropriations, research grants, and student financial aid) and indirect public subsidy (e.g., "tax expenditures" currently represented by favorable tax treatment of charitable gifts and endowment earnings and distributions). Furthermore, consider key policy issues such as:

- The appropriate burdens borne by each generation in the support of higher education as determined, for example, by the mix of grants versus loans in federal financial aid programs.

- The degree to which public investment should be used to help shape powerful emerging market forces to protect the public purpose of higher education.

- New methods for internal resource allocation and management that enhance productivity.

6. Encourage experimentation with new paradigms of learning, research, and service by harvesting the best ideas from within the academy (or elsewhere), implementing them on a sufficient scale to assess their impact, and disseminating their results.

7. Place a far greater emphasis on building alliances among institutions that will allow individual institutions to focus on core competencies while relying on alliances to address the broader and diverse needs of society. Here alliances should be encouraged not only among institutions of higher education (e.g., partnering research universities with liberal arts colleges and community colleges) but also between higher education and the private sector (e.g., information technology and entertainment companies). Differentiation among institutions should be encouraged, while relying upon market forces rather than regulations to discourage duplication.

Concluding Remarks

We have entered a period of significant change in higher education as our universities attempt to respond to the challenges, opportunities, and responsibilities before them. This time of great change, of shifting paradigms, provides the context in which we must consider the changing nature of the university.

Much of this change will be driven by market forces—by a limited resource base, changing societal needs, new technologies, and new competitors. But we also must remember that higher education has a public purpose and a public obligation.[viii] Those of us in higher education must always keep before us two questions: "Who do we serve?" and "How can we serve better?" And society must work to shape and form the markets that will in turn reshape our institutions with appropriate civic purpose.

From this perspective, it is important to understand that the most critical challenge facing most institutions will be to develop the capacity for change. We must remove the constraints that prevent us from responding to the needs of rapidly changing societies, to remove unnecessary processes and administrative structures, to question existing premises and arrangements. Universities should strive to challenge, excite, and embolden all members of their academic

communities to embark on what should be a great adventure for higher education.

While many academics are reluctant to accept the necessity or the validity of formal planning activities, woe be it to the institutions that turn aside from strategic efforts to determine their futures. The successful adaptation of universities to the revolutionary challenges they face will depend a great deal on an institution's collective ability to learn and to continuously improve its core activities. It is critical that higher education give thoughtful attention to the design of institutional processes for planning, management, and governance. Only a concerted effort to understand the important traditions of the past, the challenges of the present, and the possibilities for the future can enable institutions to thrive during a time of such change.

Those institutions that can step up to this process of change will thrive. Those that bury their heads in the sand, that rigidly defend the status quo or, even worse, some idyllic vision of a past which never existed, are at very great risk. Those institutions that are micromanaged, either from within by faculty politics or governing boards or from without by government or public opinion, stand little chance of flourishing during a time of great change.

Certainly the need for higher education will be of increasing importance in our knowledge-driven future. Certainly, too, it has become increasingly clear that our currend paradigms for the university, its teaching and research, its service to society, its financing, all must change rapidly and perhaps radically. Hence the real question is not whether higher education will be transformed, but rather *how . . .* and by *whom*. If the university is capable of transforming itself to respond to the needs of a culture of learning, then what is currently perceived as the challenge of change may, in fact, become the opportunity for a renaissance in higher education in the years ahead.

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