

Leading Higher Education In an Era of Rapid Change

James J. Duderstadt
President Emeritus
University Professor of Science and Engineering
The University of Michigan

State Higher Education Executive Officers
48th Annual Meeting
Portland, Maine
July 30, 2001

Introduction

Several years ago, during a meeting with my executive officers following my announcement of my decision to step down as president and return to the faculty, one of my vice-presidents slipped me a piece of paper with the well-known quote of Machiavelli:

“There is no more delicate matter to take in hand, nor more dangerous to conduct, nor more doubtful of success, than to step up as a leader in the introduction of change. For he who innovates will have for his enemies all those who are well off under the existing order of things, and only lukewarm support in those who might be better off under the new.”

After almost a decade of attempting to lead a transformational change process at the University of Michigan, I could only respond with an emphatic “AMEN!” If my experience is any guide, leading transformational change is not only challenging but usually hazardous...and rarely rewarded. But fortunately it is also rarely routine or boring, and it certainly can have a profound impact on an institution. Hence it seems logical this afternoon to share some war stories about university transformation with you.

But first, let me mention two caveats. As you all know, Michigan is unique among the states in having no “SHEEO”. In fact, we have nothing that corresponds to statewide system of higher education. Instead we have 15 highly independent and usually very hungry campus presidents and chancellors, each vying for a slice of the higher education appropriation pie within what can best be characterized as a political anarchy. Furthermore, although the University of Michigan has a “mini-system”, consisting two small commuter campuses in Flint and Dearborn, in addition to a gigantic campus (38,000 students, \$3.3 billion in budget) in Ann Arbor, my experience is primarily with leading flagship public universities, not systems of public higher education.

Yet, in looking over the agenda for this meeting, I find that most of your topics related to battles I’ve fought, sometimes won...and occasionally lost.

The sessions on economic imperatives and budget cutbacks remind me of the days in the early 1980s and early 1990s, when we had to cope with the loss of roughly 30% of our state appropriation. (It was over this period that the University of Michigan evolved from a “state-supported” to a “state-assisted” to

a “state-related” to a “state-located” university...and with satellite campuses in Asia, Europe, and Latin America, some would suggest that today we remain only a “state-molested” public university.)

Diversity and participation is also an area of some interest. During the 1990s we executed a plan known as the Michigan Mandate that doubled the number of underrepresented minority students and faculty on our campus. Perhaps as a consequence, today I find myself one of the named defendants in the suit involving the use of race in college admissions that is likely to go to the Supreme Court and define the nature of affirmative action in higher education.

Distance learning and the rapidly evolving marketplace for postsecondary education are also areas of interest, since after stepping down as UM president our Governor John Engler asked me to be the startup president of a cyberspace university, the Michigan Virtual University, now up, running, and thriving in our state. (I might add that I also chair an effort by the National Academy of Sciences study aimed at understanding better the implications of rapidly evolving information and communications technology on the future of the university.

Tuition and financial aid are also subjects of interest, since I have long maintained that the key to access is through robust need-based financial aid programs and not artificially low (but politically very attractive) tuition levels, which in reality represent welfare for the rich, subsidizing the cost of education for those who can afford to pay at the expense of taxes paid and opportunities lost by those who can least afford a college education.

Accountability is another pet interest, since while I certainly agree that we need to focus more on the educational value-added provided by our colleges and universities, that is outcomes, rather than inputs like student entry statistics or state appropriations, the fact remains that in the political arena, cries for accountability are to many simply a call for greater government control, a situation that can lead to disaster during a time of rapid change (as our catastrophic experience with K-12 should clearly demonstrate). What we don't need is state version of GRPA (the Government Results and Performance Act.)

Finally, governing board relations. Here I'm afraid I have very little constructive to add, since, you see, I'm only a casualty, not an expert on such matters.

I note that tomorrow morning Governor Patton of Kentucky will be updating the conference on the status of the National Governors Association initiative in higher education. Some of you may recall a 1998 poll conducted of the nation's governors that found their four highest priorities were:

- to encourage lifelong learning (97 percent),
- to allow students to obtain education at any time and in any place via technology (83 percent),
- to require postsecondary institutions to collaborate with business and industry in curriculum and program development (77 percent), and
- to integrate applied or on-the-job experience into academic programs (66 percent).

In contrast--and most tellingly--the bottom four items were: (1) maintain faculty authority for curriculum content, quality, and degree requirements (35 percent); (2) maintain the present balance of faculty research, teaching load) and community service (32 percent); (3) ensure a campus-based experience for the majority of students (21 percent); and (4) in last place--enjoying the support of only one of the governors responding--maintain traditional faculty roles and tenure (3 percent).

Their new project on higher education, co-chaired by Governor's Paul E. Patton of Kentucky and Tom Ridge of Pennsylvania, set as guiding principles:

- Insisting that higher education contributes to the state's economic development, recognizing that competitive states in the 21st Century recognize that an educated workforce is critical to economic vitality.
- Confronting the challenging of educating a more diverse citizenry ("leaving no adult behind".)
- Promoting a customer orientation by focusing on learners, employers, and the public who supports educational opportunities.
- Holding high expectations for postsecondary education providers and expecting results in areas of access, quality, cost containment, civic engagement, public/private partnerships, and innovation.

Clearly such principles will demand very significant changes not only in the nature of our colleges and universities, but in how we as stakeholders, patrons, and government bodies relate to them.

Before boldly leaping into the fray of the tactics of transformation, let me first step back and offer a few strategic observations concerning the imperatives of change. Let me begin at the 100,000 foot level of global and national issues before swooping down to the treetop level of the states.

The Challenges of Change

The forces driving change in higher education today are many and varied:

- the globalization of commerce and culture,
- the lifelong educational needs of citizens in a knowledge-driven, global economy,
- the exponential growth of new knowledge and new disciplines,
- the increasing diversity of our population and the growing needs of under-served communities,
- the compressed timescales and nonlinear nature of the transfer of knowledge from campus laboratories into commercial products, and
- the impact of information and communications technologies on the university.

Today we are evolving rapidly—decade by decade, even year by year—into a post-industrial, knowledge-based society, a shift in culture and technology as profound as the shift that took place a century ago as an agrarian America evolved into an industrial nation.¹ Industrial production is steadily shifting from material- and labor-intensive products and processes to knowledge-intensive products. A radically new system for creating wealth has evolved that depends upon the creation and application of new knowledge.

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.² Unlike natural resources such as iron and oil that have driven earlier economic transformations, knowledge is inexhaustible. The more it is used, the more it multiplies and expands. But knowledge is not available to all. It can be absorbed and applied only by the educated mind. Hence as our society becomes ever more knowledge-intensive, it becomes ever more dependent upon those social institutions such as the

university that create knowledge, that educate people, and that provide them with knowledge and learning resources throughout their lives.³

Our rapid evolution into a knowledge-based society has been driven in part by the emergence of powerful new information technologies such as computers, telecommunications, and high-speed networks. Modern digital technologies have vastly increased our capacity to know and to do things and to communicate and collaborate with others. They allow us to transmit information quickly and widely, linking distant places and diverse areas of endeavor in productive new ways. This technology allows us to form and sustain communities for work, play, and learning in ways unimaginable just a decade ago. Of course, our nation has been through other periods of dramatic technology-driven change, but never before have we experienced a technology that has evolved so rapidly, increasing in power by a thousand-fold every decade, obliterating the constraints of space and time, and reshaping the way we communicate, think, and learn.

Furthermore, whether through travel and communication, through the arts and culture, or through the internationalization of commerce, capital, and labor, the United States is becoming increasingly linked with the global community. The world and our place in it have changed. A truly domestic United States economy has ceased to exist. It is no longer relevant to speak of the health of regional economies or the competitiveness of American industry, because we are no longer self-sufficient or self-sustaining. Our economy and many of our companies are truly international and are intensely interdependent with other nations and other peoples.⁴

This internationalization also continues to take place within our borders, as we are nourished and revitalized by wave after wave of immigrants who bring unbounded energy, hope, and faith in the American dream. Today, America is evolving into a "world nation" not only in terms of its economic and political ties, but also in terms of the ethnic ties many of our citizens share with parts of the globe. From this perspective, it becomes clear that understanding cultures other than our own has become necessary, not only for personal enrichment and good citizenship, but for our very survival as a nation. The contemporary American university is already well-positioned as a truly international institution. It not only reflects a strong international character

among its students, faculty, and academic programs, but it also stands at the center of a world system of learning and scholarship.

But here as well the university has yet to tap its own full potential. Despite the intellectual richness of our campuses, we still suffer from the inherited insularity and ethnocentrism of a country that for much of its history has been protected from the rest of the world and self-sufficient in its economy—perhaps even self-absorbed. We must enable our students to appreciate the unique contributions to human culture that come to us from other traditions—to communicate, to work, to live, and to thrive in multicultural settings whether in this country or anywhere on the face of globe.

The increasing diversity of the American work-force with respect to race, ethnicity, gender and nationality presents a similar challenge. Women, minorities, and immigrants now account for roughly 85 percent of the growth in the labor force, currently representing 60 percent of all of our nation's workers. The full participation of currently underrepresented minorities and women is crucial to our commitment to equity and social justice, as well as to the future strength and prosperity of America. Our nation cannot afford to waste the human talent, the cultural and social richness, represented by those currently underrepresented in our society. If we do not create a nation that mobilizes the talents of all our citizens, we are destined to play a diminished role in the global community and will in all likelihood see an increase in social turbulence. Most tragically, we will have failed to fulfill the promise of democracy upon which this nation was founded.

The growing pluralism of our society is one of our greatest challenges as a nation. The challenge of increasing diversity is complicated by social and economic factors. Far from evolving toward one America, our society continues to be hindered by the segregation and non-assimilation of minority cultures. Both the courts and legislative bodies are now challenging long-accepted programs such as affirmative action and equal opportunity. Our social pluralism is among our most important opportunities, because it gives us an extraordinary vitality and energy as a people. As both a leader of society at large and a reflection of that society, the university has a unique responsibility to develop effective models of multicultural, pluralistic communities for our nation. We must strive to achieve new levels of understanding, tolerance, and mutual

fulfillment for peoples of diverse racial and cultural backgrounds both on our campuses and beyond. But it has also become increasingly clear that we must do so within a new political context that will require new policies and practices.

A century ago, a high school diploma was viewed as a ticket to a well paying job and a meaningful life. Today, a college degree has become a necessity for most careers, and graduate education desirable for an increasing number. A growing population will necessitate some growth in higher education to accommodate the projected increases in the number of traditional college age students. But even more growth and adaptation will be needed to respond to the educational needs of adults as they seek to adapt to the needs of the high performance workplace. Some estimate this adult need for higher education will become far larger than that represented by traditional 18 to 22 year old students.⁵ Furthermore, such educational needs will be magnified many times on a global scale, posing both a significant opportunity and major responsibility to American higher education.⁶

Both young, digital-media savvy students and adult learners will likely demand a major shift in educational methods, away from passive classroom courses packaged into well-defined degree programs, and toward interactive, collaborative learning experiences, provided when and where the student needs the knowledge and skills. The increased blurring of the various stages of learning throughout one's lifetime—K-12, undergraduate, graduate, professional, job training, career shifting, lifelong enrichment—will require a far greater coordination and perhaps even a merger of various elements of our national educational infrastructure.

The growing and changing nature of higher education needs will trigger strong economic forces. Already, traditional sources of public support for higher education such as state appropriations or federal support for student financial aid have simply not kept pace with the growing demand. This imbalance between demand and available resources is aggravated by the increasing costs of higher education, driven as they are by the knowledge- and people-intensive nature of the enterprise as well as by the difficulty educational institutions have in containing costs and increasing productivity. It also stimulated the entry of new for-profit competitors into the education marketplace.

In this regard, we must remember that market forces also act on our colleges and universities, even though we generally think of higher education as public enterprise, shaped by public policy and actions to serve a civic purpose. Society seeks services such as education and research. Academic institutions must compete for students, faculty, and resources. To be sure, the market is a strange one, heavily subsidized and shaped by public investment so that prices are always far less than true costs. Furthermore, if prices such as tuition are largely fictitious, even more so is much of the value of education services, based on myths and vague perceptions such as the importance of a college degree as a ticket to success or the prestige associated with certain institutions. Ironically, the public expects not only the range of choice that a market provides but also the subsidies that make the price of a public higher education less than the cost of its provision.

In the past, most colleges and universities served local or regional populations. While there was competition among institutions for students, faculty, and resources—at least in the United States—the extent to which institutions controlled the awarding of degrees, that is, credentialing, gave universities an effective monopoly over advanced education. However, today all of these market constraints are being challenged. The growth in the size and complexity of the postsecondary enterprise is creating an expanding array of students and educational providers. Information technology eliminates the barriers of space and time and new competitive forces such as virtual universities and for-profit education providers enter the marketplace to challenge credentialing.

The weakening influence of traditional regulations and the emergence of new competitive forces, driven by changing societal needs, economic realities, and technology, are likely to drive a massive restructuring of the higher education enterprise. From our experience with other restructured sectors of the economy such as health care, transportation, communications, and energy, we could expect to see a significant reorganization of higher education, complete with the mergers, acquisitions, new competitors, and new products and services that have characterized other economic transformations. More generally, we may well be seeing the early stages of the appearance of a global knowledge and learning industry, in which the activities of traditional academic institutions

converge with other knowledge-intensive organizations such as telecommunications, entertainment, and information service companies.⁷

This perspective of a market-driven restructuring of higher education as an industry, while perhaps both alien and distasteful to the academy, is nevertheless an important framework for considering the future of the university. While the postsecondary education market may have complex cross-subsidies and numerous public misconceptions, it is nevertheless very real and demanding, with the capacity to reward those who can respond to rapid change and punish those who cannot. Universities will have to learn to cope with the competitive pressures of this marketplace while preserving the most important of their traditional values and character.

These social, economic, technological, and market forces are far more powerful than many within the higher education establishment realize. And they are driving change at an unprecedented pace, perhaps even beyond the capacity of our colleges and universities to adapt. There are increasing signs that our current paradigms for higher education, the nature of our academic programs, the organization of our colleges and universities, the way that we finance, conduct, and distribute the services of higher education, may not be able to adapt to the demands and realities of our times.

The Skills Race

Ask any governor about state priorities these days and you are likely to hear concerns expressed about education and workforce training. The National Governors Association notes that “The driving force behind the 21st Century economy is knowledge, and developing human capital is the best way to ensure prosperity.”

The skills race of the 21st Century knowledge economy has become comparable to the space race of the 1960s in capturing the attention of the nation. Seventy percent of Fortune 1000 CEOs cite the ability to attract and retain adequately skilled employees as the major issue for revenue growth and competitiveness. Corporate leaders now estimate that the high performance workplace will require a culture of continuous learning in which as much as 20% of a worker’s time will be spent in formal education to upgrade knowledge and

skills. Tom Peters suggests that the 21st Century will be known as the “Age of the Great War for Talent”, since in the knowledge economy, talent equates to wealth.⁸

The signs of the knowledge economy are numerous. The pay gap between high school and college graduates continues to widen, doubling from a 50% premium in 1980 to 111% today. Not so well known is an even larger earnings gap between baccalaureate degree holders and those with graduate degrees.

The market recognizes this growing importance of intellectual capital, as evidenced by a comparison of the market-capitalization per employee of three companies:

General Motors	\$141,682
Walt Disney Company	\$743,530
Yahoo	\$33 million

In fact, the market-cap-per-employee of the top 10 Internet companies averages \$38 million! Why? In the knowledge economy, the key asset driving corporate value is no longer physical capital or unskilled labor. Instead it is intellectual and human capital.

But here we face a major challenge, since it is increasingly clear that we are simply not providing our citizens with the learning opportunities needed for a 21st Century knowledge economy. Recent TIMMS⁹ scores suggest that despite school reform efforts of the past two decades, the United States continues to lag other nations in the mathematics and science skills of our students. Despite the growing correlation between the level of one’s education and earning capacity, only 21% of those in our population over the age of 25 have graduated from college. Furthermore, enrollments in graduate programs have held constant or declined (particularly in technical fields such as engineering and computer science) over the past two decades.¹⁰

The space race galvanized public concern and concentrated national attention on educating “the best and brightest,” the elite of our society. The skills race of the 21st Century will value instead the skills and knowledge of our entire workforce as a key to economic prosperity, national security, and social well-being.

A Society of Learning

Even more fundamentally, as we enter the new millennium, there is an increasing sense that the social contract between the public university and American society may need to be reconsidered and perhaps even renegotiated once again.¹¹

1. The university's multiple stakeholders have expanded and diversified in both number and interest, drifting apart without adequate means to communicate and reach agreement on priorities.
2. Public higher education must compete with an increasingly complex and compelling array of other social priorities for limited public funding. Both the public and its elected leaders today view the market as a more effective determinant of social investment than government policy.
3. Perhaps most significant of all, the educational needs of our increasingly knowledge-intensive society are both changing and intensifying rapidly, and this will require a rethinking of appropriate character and role of higher education in the 21st Century.

The ultimate challenge for the public university in the 21st Century may be to assist our nation's evolution into what one might call *a society of learning*, in which opportunities for learning become ubiquitous and universal, permeating all aspects of our society and empowering through knowledge and education all of our citizens, might be the most appropriate vision for the future of the public university.

Today we have entered an era in which educated people and the knowledge they produce and use have become the keys to the economic prosperity and social well-being. The "space race" of the 1960s has been replaced by the "skills race" of the 21st Century. Education, knowledge, and skills have become primary determinants of one's personal standard of living. 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 that—the public universities, the land-grant universities, the normal and technical colleges, the community colleges, and today’s emerging generation of cyberspace universities.

But we now will need new types of public colleges and universities with new characteristics:

1. Just as with other social institutions, our universities must become more focused on those we serve. We must transform ourselves from faculty-centered to learner-centered institutions, becoming more responsive to what our students need to learn rather than simply what our faculties wish to teach.
2. Society will also 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 the costs of higher education, 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.
3. In an age of knowledge, the need for advanced education and skills will require both a personal 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.
4. 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.
5. 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. In a

society of learning, people would be continually surrounded by, immersed in, and absorbed in learning experiences, i.e. ubiquitous learning, everywhere, every time, for everyone.

6. The great diversity characterizing higher education in America will continue, as it must to serve an increasingly diverse population with diverse needs and goals. But it has also become increasingly clear that we must strive to achieve diversity within a new political context that will require new policies and practices.

It is clear that the access to advanced learning opportunities is not only becoming a more pervasive need, but it could well become a defining domestic policy issue for a knowledge-driven society. Public higher education must define its relationship with these emerging possibilities in order to create a compelling vision for its future as it enters the new millennium

Transforming the University

The Imperatives of Change

A rapidly evolving world has demanded profound and permanent change in most, if not all, social institutions. Corporations have undergone restructuring and reengineering. Governments and other public bodies are being overhauled, streamlined, and made more responsive. Even the relevance of the nation-state is being questioned and re-examined.

Certainly most of our colleges and universities are attempting to respond 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 paradigms, according to the time-honored processes of considered reflection and consensus that have long characterized the academy. Change in the university has proceeded in slow, linear, incremental steps—improving, expanding, contracting, and reforming without altering its fundamental institutional mission, approach, or structure.

While most colleges and universities have grappled with change at the pragmatic level, few have contemplated the more fundamental transformations

in mission and character that may be required by our changing world. For the most part, our institutions still have not grappled with the extraordinary implications of an age of knowledge, a society of learning, which will likely be our future. Most institutions continue to approach change by reacting to the necessities and opportunities of the moment rather than adopting a more strategic approach to their future.

Furthermore change in the university is rarely driven from within. After all, one of the missions of the university is to preserve time-honored values and traditions. So too, tenured faculty appointments tend to protect the status quo, and the process of shared governance provides the faculty with a mechanism to block change. Most campus administrators tend to be cautious, rarely rocking the boat in the stormy seas driven by politics either on campus or beyond. Governing boards are all too frequently distracted from strategic issues in favor of personal interests or political agendas.

Earlier examples of change in American higher education, such as the evolution of the land-grant university, the growth of higher education following World War II, and the evolution of the research university, all represented reactions to major forces and policies at the national level. The examples of major institutional transformation driven by internal strategic decisions and plans from within are relatively rare. Change is a particular challenge to the public university, surrounded as it is by powerful political forces and public pressures that tend to be conservative and reactionary.

The glacial pace of university decision making and academic change simply may not be sufficiently responsive to allow the university to control its own destiny. There is a risk that the tidal wave of societal forces could sweep over the academy, both transforming higher education in unforeseen and unacceptable ways while creating new institutional forms to challenge both our experience and our concept of the university.

The Process

So, how might we approach the transformation of an institution as complex as the modern public university? Historically, universities have accomplished change by using a variety of mechanisms.

1. In the good old days of growing budgets, they were able to buy change with additional resources.
2. When the pace of change was slower, they sometimes had the time to build the consensus necessary for grassroots support.
3. Occasionally a key personnel change was necessary to bring in new leadership.
4. Of course, sometimes universities did not have the luxury of additional resources or even adequate time to effect change and would resort to less direct methods such as disguising or finessing change, or even accomplishing change by stealth.
5. In fact, sometimes the pace of change required leaders to take a “Just do it!” approach, making top-down decisions followed by rapid execution.

Yet these past approaches are unlikely to be adequate to address the major paradigm shifts that will almost certainly take place in higher education in the years ahead. From the experience of other organizations in both the private and public sector, we can identify several features of the transformation processes that are applicable as well to the university:

1. First it is essential to recognize that the real challenge lies in transforming the culture of an institution. Financial or political difficulties can be overcome if the organization can let go of rigid habits of thought, organization, and practices that are incapable of responding rapidly or radically enough.
2. To this end, those most directly involved in the core activities of the university, teaching and research, must be involved in the design and implementation of the transformation process. Clearly, in the case of a university, this means that the faculty must play a key role—not simply elected faculty governance, but the true intellectual leaders among our faculties.

3. But sometimes to drive change, one needs assistance from outside. As the old saying goes, “To get a mule to move, sometimes you must first hit it between the eyes with a 2x4 to get its attention.” In the past, government policies and programs have served as the 2x4. Today, however, many believe that the pressures from the marketplace will play this role. But beyond this, it is usually necessary to involve external groups both to provide credibility to the process and assist in putting controversial issues on the table (such as tenure reform, for instance).
4. Finally, experience in other sectors has shown the critical importance of leadership. Major institutional transformation does not occur by sitting far from the front lines and issuing orders. Rather, leaders, and in our case, university presidents, must pick up the flag and lead the institution into battle. Granted, this usually entails risk.

Of course, transforming an institution as complex as the university is neither linear nor predictable. Transformation is an iterative process, since as an institution proceeds, experience leads to learning that can modify the transformation process.¹²

For change to occur, we need to strike a delicate balance between the forces that make change inevitable (whether they be threats or opportunities) and a certain sense of confidence and stability that allow people to take risks. For example, how do we establish sufficient confidence in the long-term support and vitality of the institution, even as we make a compelling case for the importance of the transformation process?

The Challenges to Transformation

The Complexity of the University. The modern university is comprised of many activities, some nonprofit, some publicly regulated, and some operating in intensely competitive marketplaces. We teach students; we conduct research for various clients; we provide health care; we engage in economic development; we stimulate social change; and we provide mass entertainment (athletics). The organization of the contemporary university would compare in both scale and complexity with many major global corporations.

The Pace of Change. Both the pace and nature of the changes occurring in our world today have become so rapid and so profound that our present social institutions—in government, education, and the private sector—are having increasing difficulty in even sensing the changes (although they certainly feel the consequences), much less understanding them sufficiently to respond and adapt.

Let me provide an example. For the past year I have been chairing a task force for the National Academy of Sciences aimed at understanding the impact of rapidly evolving information and communications technology on the university. At a meeting held this past January at the National Academies, roughly one hundred leaders from the IT industry, higher education, and federal agencies agreed that this impact would be rapid, profound, unpredictable, and likely discontinuous. About the only reassuring conclusion was that while we could not predict the impact of this “disruptive technology” on the university, at least for the near term (a decade or less) we would be able to understand what had happened to us. For the longer term, it was unlikely that we would even be able to understand our transformation, at least from our current concepts of the university.

Bureaucracy. Part of the challenge is to clear the administrative underbrush cluttering our institutions. Both decision making and leadership is hampered by bureaucratic policies and procedures and practices, along with the anarchy of committee and consensus decision making. Our best people feel quite constrained by the university, constrained by their colleagues, constrained by the “administration”, and constrained by bureaucracy. Yet leadership is important. If higher education is to keep pace with the extraordinary changes and challenges in our society, someone in academe must eventually be given the authority to make certain that the good ideas that rise up from the faculty and staff are actually put into practice. We need to devise a system that releases the creativity of individual members while strengthening the authority of responsible leaders.

The Resistance to Change. In business, management approaches change in a highly strategic fashion, launching a comprehensive process of planning and transformation. In political circles, sometimes a strong leader with a big idea can captivate the electorate, building a movement for change. Change occurs in the university through a more tenuous, sometimes tedious, process. Ideas are first

floated as trial balloons, all the better if they can be perceived to have originated at the grassroots level. After what often seems like years of endless debate, challenging basic assumptions and hypotheses, decisions are made and the first small steps are taken. For change to affect the highly entrepreneurial culture of the faculty, it must address the core issues of incentives and rewards.

Of course, the efforts to achieve change following the time-honored traditions of collegiality and consensus can sometimes be self-defeating, since the process can lead all too frequently right back to the status quo. As one of my exasperated presidential colleagues once noted, the university faculty may be the last constituency on Earth that believes the status quo is still an option. To some degree, this strong resistance to change is both understandable and appropriate. After all, the university is one of the longest enduring social institutions of our civilization in part because its ancient traditions and values have been protected and sustained.

Mission Creep and the Entrepreneurial University. All of higher education faces a certain dilemma related to the fact that it is far easier for a university to take on new missions and activities in response to societal demand than to shed missions as they become inappropriate or threaten the core educational mission of the institution. This is a particularly difficult matter for the public university because of intense public and political pressures that require the institution to continue to accumulate missions, each with an associated risk, without a corresponding capacity to refine and focus activities to avoid risk. Whether particular academic programs, services such as health care or economic development, or even public entertainment such as cultural events or intercollegiate athletics, each has a constituency that will strongly resist any changes.

Resource Requirements: Clearly, we will need significant resources to fuel the transformation process, probably at the level of five percent to ten percent of the total university budget. During a period of limited new funding, it will take considerable creativity (and courage) to generate these resources. As we noted earlier in our consideration of financial issues, the only sources of funding at the levels required for such major transformation are tuition, private support, and auxiliary activity revenues.

Leadership and Governance: The contemporary university is one of the most complex social institutions of our times. The importance of this institution to our society, its myriad activities and stakeholders, and the changing nature of the society it serves, all suggest the importance of experienced, responsible, and enlightened university leadership, governance, and management. American universities have long embraced the concept of *shared governance* involving public oversight and trusteeship, collegial faculty governance, and experienced but generally short-term administrative and usually amateur leadership. While this system of shared governance engages a variety of stakeholders in the decisions concerning the university, it does so with an awkwardness that tends to inhibit change and responsiveness.

University governing boards already face a serious challenge in their attempts to understand and govern the increasingly complex nature of the university and its relationships to broader society because of their lay character. This is made even more difficult by the politics swirling about and within governing boards, particularly in public universities, that not only distract boards from their important responsibilities and stewardship, but also discourage many of our most experienced, talented, and dedicated citizens from serving on these bodies. The increasing intrusion of state and federal government in the affairs of the university, in the name of performance and public accountability, but all too frequently driven by political opportunism, can trample upon academic values and micromanage institutions into mediocrity. Furthermore, while the public expects its institutions to be managed effectively and efficiently, it weaves a web of constraints through public laws that make this difficult. Sunshine laws demand that even the most sensitive business of the university must be conducted in the public arena, including the search for a president. State and federal laws entangle all aspects of the university in rules and regulations, from student admissions to financial accounting to environmental impact.

Efforts to include the faculty in shared governance also encounter obstacles. To be sure, faculty governance continues to be both effective and essential for academic matters such as curriculum development, faculty hiring, and tenure evaluation. But it is increasingly difficult to achieve true faculty participation in broader university matters such as finance, capital facilities, or external relations. The faculty traditions of debate and consensus building, along

with the highly compartmentalized organization of academic departments and disciplines, seem incompatible with the breadth and rapid pace required in today's high momentum university-wide decision environment. Most difficult and critical of all are those decisions that concern institutional transformation.

The university presidency is all too frequently caught between these opposing forces, between external pressures and internal campus politics, between governing boards and faculty governance, between a rock and a hard place. Today there is an increasing sense that neither the lay governing board nor elected faculty governance has either the expertise nor the discipline—not to mention the accountability—necessary to cope with the powerful social, economic, and technology forces driving change in our society and its institutions.

The Particular Challenges faced by Public Universities: All colleges and universities, public and private alike, face today the challenge of change as they struggle to adapt and to serve a changing world. Yet there is a significant difference in the capacity that public and private institutions have to change. The term “independent” used to describe private universities has considerable significance in this regard. Private universities are generally more nimble, both because of their smaller size and the more limited number of constituencies that have to be consulted—and convinced—before change can occur. Whether driven by market pressures, resource constraints, or intellectual opportunity, private universities usually need to convince only trustees, campus communities (faculty, students, and staff) and perhaps alumni before moving ahead with a change agenda. Of course, this can be a formidable task, but it is a far cry from the broader political challenges facing public universities.

The public university must always function in an intensely political environment. Public university governing boards are generally political in nature, frequently viewing their primary responsibilities as being to various political constituencies rather than confined to the university itself. Changes that might threaten these constituencies are frequently resisted, even if they might enable the institution to serve broader society better. The public university also must operate within a complex array of government regulations and relationships at the local, state, and federal level, most of which tend to be highly reactive and supportive of the status quo. Furthermore, the press itself is

generally far more intrusive in the affairs of public universities, viewing itself as the guardian of the public interest and using powerful tools such as sunshine laws to hold public universities accountable.

As a result, actions that would be straightforward for private universities, such as enrollment adjustments, tuition increases, program reductions or elimination, or campus modifications, can be formidable for public institutions. For example, the actions taken by many public universities to adjust to eroding state support through tuition increases or program restructuring have triggered major political upheavals that threaten to constrain further efforts to balance activities with resources.¹³ Sometimes the reactive nature of the political forces swirling about and within the institution is not apparent until an action is taken. Many a public university administration has been undermined by an about-face by their governing board, when political pressures force board members to switch from support to opposition on a controversial issue.

Little wonder that administrators sometimes conclude that the only way to get anything accomplished within the political environment of the public university is by heeding the old adage, "It is simpler to ask forgiveness than to seek permission." Yet even this hazardous approach may not be effective for the long term. It could well be that many public universities will simply not be able to respond adequately during periods of great change in our society.

Some Lessons Learned

Values

It is important to begin a transformation process with the basics, to launch a careful reconsideration of the key roles and values that should be protected and preserved during a period of transformation. For example, how would an institution prioritize among roles such as educating the young (e.g., undergraduate education), preserving and transmitting our culture (e.g., libraries, visual and performing arts), basic research and scholarship, and serving as a responsible critic of society? Similarly, what are the most important values to protect? Clearly academic freedom, an openness to new ideas, a commitment to rigorous study, and an aspiration to the achievement of excellence would be

on the list for most institutions. But what about values and practices such as shared governance and tenure? Should these be preserved? At what expense?

Engaging the Stakeholders

Next, as a social institution, the public university should endeavor to listen carefully to society, learning about and understanding its varied and ever-changing needs, expectations, and perceptions of higher education. Not that responding to all of these would be desirable or even appropriate for the public university. But it is important to focus more attention on those whom we were created to serve.

But of course, we also must engage internal stakeholders, the most important being our own faculties. But here the goal is to empower the best among our faculty and staff and enable them to exert the influence on the intellectual directions of the university that will sustain its leadership. However, here we must address two difficulties. First, there is the more obvious challenge that large, complex hierarchically-organized institutions become extremely bureaucratic and conservative and tend to discourage risk-taking and stifle innovation and creativity. Second, the faculty has so encumbered itself with rules and regulations, committees and academic units, and ineffective faculty governance that the best faculty are frequently disenfranchised, out-shouted by their less productive colleagues who have the time and inclination to play the game of campus politics. It will require determination and resourcefulness to break this stranglehold of process and free our very best minds.

Removing Constraints

It is particularly important to prepare the academy for change and competition. Unnecessary constraints should be relaxed or removed. There should be more effort to link accountability with privilege on our campuses, perhaps by redefining tenure as the protection of academic freedom rather than lifetime employment security or better balancing authority and responsibility in the roles of academic administrators. It is also important to begin the task of transforming the academy by considering a radical restructuring of the graduate programs that will produce the faculties of the future.

Structural Issues

The modern university functions as a loosely coupled adaptive system, evolving in a highly reactive fashion to its changing environment through the individual or small group efforts of faculty entrepreneurs. While this has allowed the university to adapt quite successfully to its changing environment, it has also created an institution of growing size and complexity. The ever growing, myriad activities of the university can sometimes distract from or even conflict with its core mission of learning.

While it is certainly impolitic to be so blunt, the simple fact of life is that the contemporary university is a *public corporation* that must be governed, led, and managed like other corporations to benefit its stakeholders. The interests of its many stakeholders can only be served by a governing board that is comprised and functions as a true board of directors. Like the boards of directors of publicly-held corporations, the university's governing board should consist of members selected for their expertise and experience. They should govern the university in way that serves the interests of its various constituencies. This, of course, means that the board should function with a structure and a process that reflect the best practices of corporate boards. And, like corporate boards, university governing members should be held accountable for their decisions and actions through legal and financial liability.

Again, although it may be politically incorrect within the academy to say so, the leadership of the university must be provided with the authority commensurate with its responsibilities. The president and other executive officers should have the same degree of authority to take actions, to select leadership, to take risks and move with deliberate speed, that their counterparts in the corporate world enjoy. The challenges and pace of change faced by the modern university no longer allow the luxury of "consensus" leadership, at least to the degree that "building consensus" means seeking the approval of all concerned communities. Nor do our times allow the reactive nature of special interest politics to rigidly moor the university to an obsolete status quo, thwarting efforts to provide strategic leadership and direction.

Yet a third controversial observation: While academic administrations generally can be drawn as conventional hierarchical trees, in reality the

connecting lines of authority are extremely weak. In fact, one of the reasons for cost escalation is the presence of a deeply ingrained academic culture in which leaders are expected to “purchase the cooperation” of subordinates, to provide them with positive incentives to carry out decisions. For example, deans expect the provost to offer additional resources in order to gain their cooperation on various institution-wide efforts. Needless to say, this “bribery culture” is quite incompatible with the trend toward increasing decentralization of resources. As the central administration relinquishes greater control of resource and cost accountability to the units, it will lose the pool of resources that in the past was used to provide incentives to deans, directors, and other leaders to cooperate and support university-wide goals.

Hence, it is logical to expect that both the leadership and management of universities will need increasingly to rely on lines of real authority just as their corporate counterparts. That is, presidents, executive officers, and deans will almost certainly have to become comfortable with issuing clear orders or directives, from time to time. So, too, throughout the organization, subordinates will need to recognize that failure to execute these directives will likely have significant consequences, including possible removal from their positions. While collegiality will continue to be valued and honored, the modern university simply must accept a more realistic balance between responsibility and authority.

The Need to Restructure University Governance.

Many universities find that the most formidable forces controlling their destiny are political in nature—from governments, governing boards, or perhaps even public opinion. Unfortunately, these bodies are not only usually highly reactive in nature, but they frequently either constrain the institution or drive it away from strategic objectives that would better serve society as a whole. Many university presidents—particularly those associated with public universities—believe that the greatest barrier to change in their institutions lies in the manner in which their institutions are governed, both from within and from without. Universities have a style of governance that is more adept at protecting the past than preparing for the future.

The 1996 report of the National Commission on the Academic Presidency¹⁴ reinforced these concerns when it concluded that the governance structure at most colleges and universities is inadequate. "At a time when higher education should be alert and nimble, it is slow and cautious instead, hindered by traditions and mechanisms of governing that do not allow the responsiveness and decisiveness the times require." The Commission went on to note its belief that university presidents were currently unable to lead their institutions effectively, since they were forced to operate from "one of the most anemic power bases of any of the major institutions in American society."

This view was also voiced in a study¹⁵ performed by the RAND Corporation, which noted, "The main reason why institutions have not taken more effective action (to increase productivity) is their outmoded governance structure—i.e., the decision-making units, policies, and practices that control resource allocation have remained largely unchanged since the structure's establishment in the 19th century. Designed for an era of growth, the current structure is cumbersome and even dysfunctional in an environment of scarce resources."

It is simply unrealistic to expect that the governance mechanisms developed decades or, in some cases, even centuries ago can serve well either the contemporary university or the society it serves. It seems clear that the university of the twenty-first century will require new patterns of governance and leadership capable of responding to the changing needs and emerging challenges of our society and its educational institutions. The contemporary university has many activities, many responsibilities, many constituencies, and many overlapping lines of authority. From this perspective, shared governance models still have much to recommend them: a tradition of public oversight and trusteeship, shared collegial internal governance of academic matters, and, experienced administrative leadership.

Yet shared governance is, in reality, an ever-changing delegation of responsibility and authority among faculty, trustees, staff, and administration. The increasing politicization of public governing boards, the tendency of faculty councils to use their powers to promote special interests, delay action, and prevent reforms; and weak, ineffectual, and short-term presidential leadership all

pose risks to the university. Clearly it is time to take a fresh look at the governance of our institutions.

Governing boards should focus on policy development rather than management issues. Their role is to provide the strategic, supportive, and critical stewardship for their institution. Faculty governance should become a true participant in the academic decision process rather than simply watchdogs of the administration or defenders of the status quo. Faculties also need to accept and acknowledge that strong leadership, whether from chairs, deans, or presidents, is important if their institution is to flourish during a time of significant change.

The contemporary American university presidency also merits a candid reappraisal and likely a thorough overhaul. The presidency of the university may indeed be one of the more anemic in our society, because of the imbalance between responsibility and authority. Yet it is nevertheless a position of great importance. Governing boards, faculty, students, alumni, and the press tend to judge a university president on the issue of the day. Their true impact on the institution is usually not apparent for many years after their tenure. Decisions and actions must always be taken within the perspective of the long-standing history and traditions of the university and for the benefit of not only those currently served by the institution, but on behalf of future generations.

Alliances

Public universities should place far greater emphasis on building alliances with other institutions that will allow them to focus on core competencies while relying on alliances to address the broader and diverse needs of society. For example, flagship public universities in some states will be under great pressure to expand enrollments to address the expanding populations of college age students, possibly at the expense of their research and service missions. It might be far more constructive for these institutions to form close alliances with regional universities and community colleges to meet these growing demands for educational opportunity.

Here alliances should be considered 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.

Experimentation

We must recognize the profound nature of the rapidly changing world faced by higher education. Many of the forces driving change are disruptive in nature, leading to quite unpredictable futures. This requires a somewhat different approach to transformation.

A personal example here: during the 1990s we led an effort at the University of Michigan to transform the institution, to re-invent it so that it better served 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 Michigan 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, with each objective we achieved, we became increasingly uneasy. The forces driving change in our society and its institution were far stronger and more profound than we had first thought. Change was occurring far more rapidly than 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, we explored the possible future of becoming a privately supported but publicly committed university by completely restructuring our financing, raising over \$1.4 billion in a major campaign, increasing tuition

levels, and dramatically increasing sponsored research support to #1 in the nation. Ironically, the most state support declined as a component of our revenue base (dropping to less than 10%), the higher our Wall Street credit rating, finally achieving the highest AAA rating (the first for a public university).

-
- Through a major strategic effort known as the Michigan Mandate, we altered very significantly the racial diversity of our students and faculty, doubling the population of underrepresented minority students and faculty over a decade, 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 played leadership roles first in the building and management of the Internet and now Internet2 to explore the “cyberspace university” theme.

But, of course, not all of our experiments were successful. Some crashed in flames, in some cases spectacularly:

- We tried to spin off our academic health center, merging it with a large hospital system in Michigan to form an independent health care system. But our regents resisted this strongly, concerned that we would be giving away a valuable asset (even though we would have netted well over \$1 billion in the transaction and avoided the \$100 million annual losses we are now experiencing as managed care sweeps across Michigan.
- Although we were successful eventually in getting a Supreme Court ruling that provided relief from intrusive nature of the state’s sunshine laws, we ran into a brick wall attempting to restructure how our governing board was selected and operated. (It remains one of the very few in the nation entirely determined by public election and partisan politics.)
- And we attempted to confront our own version of Tyrannosaurus Rex by challenging our Department of Athletics to better align their athletic activities

with academic priorities, e.g. recruiting real students, reshaping competitive schedules, throttling back commercialism...and even appointing a real educator, a former dean, as athletic director. Yet today we are posed to spend \$100 million on skyboxes for Michigan Stadium after expanding stadium capacity two years ago to over 110,000.

Nevertheless, in most of these cases, at least we learned something (if only our own ineffectiveness in dealing with cosmic forces such as college sports). More specifically, all of these efforts were driven by the grass-roots interests, abilities, and enthusiasm of faculty and students. 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.

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!” We tried to ban the word “NO” from our administrators.

Turning Threats into Opportunities

It is important for university leaders to approach issues and decisions concerning transformation not as threats but rather as opportunities. True, the status quo is no longer an option. However, once we accept that change is inevitable, we can use it as a strategic opportunity to control our destiny, while preserving the most important of our values and our traditions.

Creative, visionary leaders can tap the energy created by threats such as the emerging for-profit marketplace and technology to engage their campuses. to lead their institutions in new directions that will reinforce and enhance their most important roles and values.

Finally, It Comes Back One Again to Values

The history of the public university in America is one of a social institution, created and shaped by public needs, public investment, and public policy to serve a growing nation. Yet as pointed out by Pat Callen, Bob Zemsky, and their colleagues, today policy development seems largely an aftermath of image-driven politics.¹⁶ The current political environment is dominated by media-driven strategies, fund-raising, and image-building. Such policy as exists is largely devoid of values or social priorities, but rather shaped in sound-bites to achieve short term political objectives. Perhaps as a consequence if not as a cause, our society appears to have lost confidence both in government policies and programs it once used to serve its needs. Instead it has placed its faith in the marketplace, depending on market competition to drive and fund the evolution of social institutions such as the university.

Those of us in higher education must share much of the blame for today's public policy vacuum. After all, for much of the last century the college curriculum has been largely devoid of any consideration of values. While some might date this abdication to the trauma of the volatile 1960s, in truth it extends over much of the twentieth century as scholarship became increasing professionalized and specialized, fragmenting any coherent sense of the purposes and principles of a university.

Little wonder that the future of public higher education has largely been left to the valueless dynamics of the marketplace. Most of our undergraduates experience little discussion of values in their studies. Our graduate schools focus almost entirely on research training, with little attention given to professional ethics or even preparation for teaching careers, for that matter. Our faculties prefer to debate parking over principles just as our governing boards prefer politics over policy. And, in this climate, our university leaders keep their heads low, their values hidden, and prepare their resume for their next institution.

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.¹⁷ 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.¹⁸ It is possible to shape and form the markets that will in turn reshape our institutions with appropriate civic purpose.

The past decade has been such a time of significant change in higher education, as our institutions have attempted to adapt to the changing nature of resources and respond to public concerns. Undergraduate education has been significantly improved. Costs have been cut and administrations streamlined. Our campuses are far more diverse today with respect to race and gender. Our researchers are focusing their attention on key national priorities.

Yet, these changes in the university, while important, have been largely reactive rather than strategic. For the most part, our institutions still have not grappled with the extraordinary implications of an age of knowledge, a society of learning that will likely be our future.

From this perspective, it is important to understand that the most critical challenge facing most institutions will be to develop the capacity for change. As we noted earlier, universities must seek to remove the constraints that prevent them from responding to the needs of a rapidly changing society. They 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. 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.

In this address I have raised many concerns about the administration, management, and governance of public universities. Governing boards have become overly politicized, focusing more on oversight and accountability than on protecting and enhancing the capacity of their university to serve the changing and growing educational needs of our society. Faculty governance—at least in its current shared form—is largely unworkable, in many cases even irrelevant, to either the nature or pace of the issues facing the contemporary university. University leadership, whether at the level of chairs, deans, or presidents, has insufficient authority to meet the considerable responsibilities engendered by powerful forces of change on higher education. And nowhere, either within the academy, at the level of governing boards, or in government

policy, is there a serious discussion of the fundamental values so necessary to the nature and role of the public university.

But the most important conclusion is that the complexity of the contemporary university and the forces acting upon it have outstripped the ability of lay boards and elected faculty bodies to govern and undermined the capacity of academic administrators to lead. It is time we considered replacing the existing paradigm of lay governing boards with true boards of directors, comprised of experts experienced in the activities of higher education and held publicly, legally, and financially accountable. Beyond that, we need a new culture of faculty governance, willing to accept responsibility along with authority. And we need to provide academic leaders with adequate training in the “profession” of administration, management, and leadership, even as we delegate to them a degree of authority commensurate with their executive responsibilities. It is simply unrealistic to expect that the governance mechanisms developed decades or even centuries ago can serve well either the contemporary university or the society it serves.

Clearly higher education will flourish in the decades ahead. In a knowledge-intensive society, the need for advanced education will become ever more pressing, both for individuals and society more broadly. Yet it is also likely that the university as we know it today—rather, the current constellation of diverse institutions comprising the higher education enterprise—will change in profound ways to serve a changing world. 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 society of learning, then what is currently perceived as the challenge of change may, in fact, become the opportunity for a renaissance, an age of enlightenment, in higher education in the years ahead.

For a thousand years the university has benefited our civilization as a learning community where both the young and the experienced could acquire not only knowledge and skills, but the values and discipline of the educated mind. It has defended and propagated our cultural and intellectual heritage, while challenging our norms and beliefs. It has produced the leaders of our governments, commerce, and professions. It has both created and applied new knowledge to serve our society. And it has done so while preserving those

values and principles so essential to academic learning: the freedom of inquiry, an openness to new ideas, a commitment to rigorous study, and a love of learning.¹⁹

There seems little doubt that these roles will continue to be needed by our civilization. There is little doubt as well that the university, in some form, will be needed to provide them. The university of the twenty-first century may be as different from today's institutions as the research university is from the colonial college. But its form and its continued evolution will be a consequence of transformations necessary to provide its ancient values and contributions to a changing world.

As the quote from Machiavelli in this paper suggests, leading in the introduction of change can be both a challenging and a risky proposition. The resistance can be intense, and the political backlash threatening. To be sure, it is sometimes difficult to act for the future when the demands of the present can be so powerful and the traditions of the past so difficult to challenge.

Yet, perhaps this is the most important role of university leadership and the greatest challenge for the public university in the years ahead.

¹ Peter F. Drucker, "The Age of Social Transformation," *Atlantic Monthly*, November 1994, 53–80; Peter F. Drucker, *Post-capitalist Society* (New York: Harper Collins, 1993).

² Erich Bloch, National Science Foundation, testimony to Congress, 1988.

³ Derek Bok, *Universities and the Future of America* (Durham: Duke University Press, 1990).

⁴ Walter B. Wriston, *The Twilight of Sovereignty: How the Information Revolution Is Transforming Our World* (New York: Scribner, 1992); Thomas L. Friedman, *The Lexus and the Olive Tree: Understanding Globalization* (New York: Farrar, Straus, and Girouge, 1999)

⁵ Michael G. Dolence and Donald M. Norris, *Transforming Higher Education: A Vision for Learning in the 21st Century* (Ann Arbor: Society for College and University Planning, 1997).

⁶ John S. Daniel, *Mega-Universities and Knowledge Media* (Kogan Page, London, 1996)

⁷ Marvin W. Peterson and David D. Dill, "Understanding the Competitive Environment of the Postsecondary Knowledge Industry", in *Planning and Management for a Changing Environment*, edited by Marvin W. Peterson, David D. Dill, and Lisa A. Mets (San Francisco: Jossey-Bass Publishers, 1997) pp. 3-29.

⁸ Michael Moe, *The Knowledge Web: People Power—Fuel for the New Economy* (Merrill-Lynch, New York, 2000)

⁹ *The Third International Mathematics and Science Study-Repeat*, National Science Foundation and Department of Education, 2001.

¹⁰ Douglas S. Massey, "Higher Education and Social Mobility in the United States 1940-1998 (Association of American Universities, Washington, 2000)

¹¹ Vernon Ehlers, "Unlocking Our Future: Toward a New National Science Policy," a report to Congress by the House Committee on Science (September 24, 1998).

¹² Michael G. Dolence and Donald M. Norris, *Transforming Higher Education: A Vision for Learning in the 21st Century* (Ann Arbor: Society for College and University Planning, 1995).

¹³ Patricia J. Gumpert and Brian Pusser, "Academic Restructuring: Contemporary Adaptation in Higher Education," in *Planning and Management for a Changing Environment: A Handbook on Redesigning Post-Secondary Institutions*, ed. M. Petersen, D. Dill, and L. Mets (San Francisco: Jossey-Bass, 1997).

¹⁴ National Commission on the Academic Presidency, *Renewing the Academic Presidency: Stronger Leadership for Tougher Times* (Washington, D.C.: Association of Governing Boards of Universities and Colleges, 1996).

¹⁵ Joseph L. Dionne and Thomas Kean, *Breaking the Social Contract: The Fiscal Crisis in Higher Education*, report of the Commission on National Investment in Higher Education (New York: Council for Aid to Education, 1997).

¹⁶ Robert Zemsky and Gregory Wegner, "A Very Public Agenda," *Policy Perspectives*, Vol. 8, No. 2, Knight Higher Education Collaborative, Philadelphia, (1998).

¹⁷ "The Glion Declaration: The University at the Millennium," *The Presidency*, Washington, D.C.: American Council on Education, Fall 1998): 27-31.

¹⁸ Robert Zemsky and Gregory Wegner, "A Very Public Agenda," *Policy Perspectives*, Vol. 8, No. 2 (Philadelphia: Knight Higher Education Collaborative, 1998).

¹⁹ Werner Z. Hirsch and Luc E. Weber, "The Glion Declaration: The University at the Millennium", *The Presidency*, Fall, 1998 (American Council on Education, Washington) p. 27