

A Society of Learning:  
A Vision for the Future of the University  
In the New Millennium

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As we prepare to enter the new millennium, it is appropriate that we consider the future of one of society's most enduring institutions, the university. The university remains one of the most extraordinary and important social institutions of our civilization. For a thousand years, it has not only served as a custodian and conveyor of knowledge, wisdom, and values, but it has transformed the very society it serves, even as social forces have transformed it in turn. Yet, during most periods, change in the university has proceeded in slow, linear, incremental steps—improving, expanding, contracting, and reforming without altering our fundamental institutional mission, approach, or structure. The old saying that progress in a university occurs one grave at a time is sometimes not far off the mark. Today, however, we do not have the luxury of continuing at this leisurely pace, nor can we confine the scope of changes under way. We are witnessing a significant paradigm shift in the very nature of the learning and scholarship, both in America and worldwide, which will demand substantial rethinking and reworking on the part of our institutions.

Perhaps the unique characteristic of higher education in America has been the strong bond between the university and society. Historically our institutions have been shaped by, drawn their agenda from, and been responsible to the communities that founded them. Each generation has established a social contract between the university and the society it serves.<sup>1</sup>

Early in our nation's history, the Federal Ordinance of 1785 defined the public role of the university in sustaining a young democracy. A century later, the land-grant acts (i.e., the Morrill Act of 1862, the Hatch Act of 1887, and the Smith-Lever Act of 1914) stimulated the states to create public universities to broaden educational opportunities to include the working class, help develop the vast natural resources of the nation through programs such as agricultural extension and engineering experiment stations, and make public service and engagement key features of their academic programs.

In the decades following World War II, the federal government extended this social contract to broaden the opportunities for a college education through a series of actions such as the GI Bill, the Higher Education Acts, and federal financial aid programs such as the Pell Grants. During this period higher education expanded from its traditional role of educating the elite for leadership roles to providing mass education. Yet another form of social contract evolved in the post-war years to address the research needs of the nation through a partnership where the federal government supported faculty investigators to engage in research of their own choosing in the expectation that significant

benefits would accrue to American society in the forms of military security, public health, and economic prosperity.

Today, an array of powerful social, economic, and technological forces are driving change in both the educational needs of our society and the institutions created to respond to these needs. It is time once again to reconsider both the nature of the university in the new millennium, and the social contract that may evolve between the university and the nation.

## The Forces of Change

There are many ways to classify the powerful forces driving change in our society, but let me do so in the following way:

### The Age of Knowledge

Today we are evolving rapidly into a post-industrial, knowledge-based society, just as a century ago an agrarian America evolved into an industrial nation.<sup>2</sup> 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.<sup>3</sup> 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.<sup>4</sup>

### Technology-Driven Change

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 increased vastly 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 change driven by technology, for example, the impact of the steam engine, telephone, automobile, and railroad in the late nineteenth century, which created our urban industrialized society.<sup>5</sup> But never before have we experienced a technology that has evolved so rapidly, increasing in power by a hundred-fold every decade, obliterating the constraints of space and time, and reshaping the way we communicate, think, and learn.

So too, the rapid advances in understanding, modifying, and perhaps even creating living organisms from the microscopic level of molecular genetics presents our society with unprecedented opportunities and challenges. With the completion of the Human Genome Project scheduled for next year, we are rapidly developing the capacity not only to identify and address the causes of many of the diseases plaguing our society, but perhaps to even modify the genetic structure of the human species itself.

Stephen Jay Gould refers to so-called punctuation points in the evolution of biological species, when gradual evolution suddenly experiences a discontinuity, perhaps induced by an external event (e.g., the extinction of the dinosaurs possibly caused by meteor impact). Of course, we came very close to just such a punctuation point during the present century with the nuclear arms race, and recent films have suggested that mankind could be extinguished like the dinosaurs by a meteor impact or a plague such as an airborne form of Ebola or AIDS virus.

But technology could create just such a punctuation point in the evolution of the human species in the century ahead. For example, if computing power continues to increase at its present pace, the \$1,000 laptop computer in twenty years will have the power of the human brain—except it will be so tiny as to be almost invisible, and connected by a vast global communications network to billions of other computers. By the late 21<sup>st</sup> century, we may succeed in developing machine intelligence to levels comparable to or exceeding human intelligence. Genetic engineering also poses great challenges, particularly as we use it to improve or create new life forms (perhaps even stimulating the next major evolutionary phase of the human species itself).

### Spaceship Earth

But there is a far more probable punctuation point faced by our civilization, and that involves our habitat, Spaceship Earth, itself. There is mounting evidence that the growing population and invasive activities of humankind are now altering the fragile balance of our planet.

The concerns are both multiplying in number and intensifying in severity:

- the destruction of forests, wetlands, and other natural habitats by human activities
- the extinction of thousands of biological species and the loss of biodiversity;
- the buildup of greenhouse gases such as carbon dioxide and their possible impact on global climates;
- the pollution of our air, water, and land.

With the world population now at 6 billion, we are already consuming 40 percent of the world's photosynthetic energy production.<sup>6</sup> Current estimates place a stable world population at 8-10 billion by the late twenty-first century, assuming fertility rates continue to fall over the next several decades. Yet even at this reduced rate of population growth, we could eventually consume all of the planet's resources, unless we take action. Because of this overload of the world's resources, even today, over 1.2 billion of the world's population live below the subsistence level, and 500 million live below the minimum caloric-intake level necessary for life.

It could well be that coming to grips with the impact of our species on our planet, learning to live in a sustainable fashion on Spaceship Earth, will become the greatest challenge of all to our generation. This will be particularly difficult for a society that has difficulty in looking more than a generation ahead, encumbered by a political process that generally functions on an election-by-election basis, as the current debate over global change makes all too apparent.

### The Globalization of America

There is another aspect of this increasing global interdependence. 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, spanning the globe and are intensely interdependent with other nations and other peoples.<sup>7</sup>

As we have been throughout our history, we continue to be nourished and revitalized by wave after wave of immigrants coming to our shores with unbounded energy, hope, and faith in the American dream. Today, America is evolving into a “world nation” with not simply economic and political ties, but also ethnic ties to all 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. Ironically, the contemporary American university is 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.

Yet, 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.

### Demographic Change: The New Majorities

When Americans hear references to the demographic changes occurring in our nation, we probably first think of the aging of our population.<sup>8</sup> Yet an equally profound demographic phenomenon is the increasing diversity of American society with respect to race, ethnicity, and nationality. 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 for a diminished role in the global community and increased 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 segregation and nonassimilation of minority cultures. Both the courts and legislative bodies are now challenging long-accepted programs such as affirmative action and equal opportunity. Yet our social pluralism is also among our most important opportunities, because it gives us an extraordinary vitality and energy as a people. As both a reflection and leader of society at large, 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.

### The Post–Cold War World

For almost half a century, the driving force behind many of the major public investments in our national infrastructure has been the concern for national security in the era of the Cold War. The evolution of the research university, the national laboratories, the interstate highway system, our telecommunications systems and airports, and the space program were stimulated by concerns about the arms race and competition with the Communist bloc. Many of the technologies that we take for granted, from semiconductors to jet aircraft, from computers to composite materials, were originally spin-offs of the defense industry.

In the wake of the extraordinary events of the last decade, the disintegration of the Soviet Union, the reunification of Germany, and the major steps toward peace in the Middle East, the driving force of national security has weakened—at least from superpower confrontation if not from terrorism and regional ethnic conflict—and, along with it, much of the motivation for major public investment. Peace has not freed up new resources in the post–Cold War world for investment in key areas such as education and research; instead the nation is drifting in search of new driving imperatives. While there are numerous societal concerns, such as economic competitiveness, national health care, crime, and K–12

education, none of these has yet assumed an urgency sufficient to set new priorities for public investment.

### Market Forces

We generally think of higher education as public enterprise, shaped by public policy and actions to serve a civic purpose. Yet market forces also act on our colleges and universities. 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 the experience with other restructured sectors of our 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.



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.

### The Best of Times ... and the Worst of Times

We must 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, while preserving the most important of our values and our traditions.

To borrow a phrase from Dickens, it does indeed seem like the best of times and the worst of times for higher education. Universities are increasingly seen as key sources to the new knowledge and educated citizens so necessary for a knowledge-driven society. After two decades of eroding public support at the state and federal level, today we see signs of a commitment to restore investments in higher education.

Yet there is great unease on our campuses. Throughout society we see erosion in support of important university commitments such as academic freedom, tenure, broad access, and racial diversity. Even the concept of higher education as a public good is being challenged, as society increasingly sees a college education as an individual benefit determined by values of the marketplace rather than the broader needs of a democratic society. The faculty feels increasing stress, fearing an erosion in public support as unconstrained entitlements grow, sensing a loss of scholarly community with increasing disciplinary specialization, and being pulled out of the classroom and the laboratory by the demands of grantsmanship.

Some have even deeper fears, as illustrated by the following three quotes:

“Thirty years from now the big university campuses will be relics. Universities won’t survive. It is as large a change as when we first got the printed book.” Peter Drucker

“If you believe that an institution that has survived for a millennium cannot disappear in a just a few decades, just ask yourself what has happened to the family farm.” William Wulf

“I wonder at times if we are not like the dinosaurs, looking up at the sky at the approaching asteroid and wondering whether it has an implication for our future.” Frank Rhodes

So what are we 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 paradigms, 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 the tidal wave of societal forces sweep over the academy, both transforming the university in unforeseen and unacceptable ways while creating new institutional forms, from cyberspace universities to global learning networks to for-profit learning assessment corporations, to challenge both our experience and our concept of the university?

We have come to a fork in the road that might best be illustrated by imaging two sharply contrasting futures for higher education in America. The first is a rather dark, market-driven future in which strong market forces drive 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 shifting societal needs, rapidly evolving technology, and aggressive for-profit entities and commercial forces. Together these drive the higher education enterprise 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 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 and 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.

Let us consider briefly each of these scenarios to better understand the challenges and opportunities characterizing the future of the university.

### The Brave, New World of Market-Driven Postsecondary Education

In recent years we have seen an explosion in the number of new competitors in the higher education marketplace. It is estimated that in 1998 the revenues of for-profit and proprietary educational providers were in excess of \$3.5 billion and growing rapidly. Today we are bombarded with news concerning the impact of information technology on the marketplace, from “e-commerce” to “e-learning” to “virtual universities” to “I-campuses” (as MIT calls its Faustian bargain with Microsoft).

Many of these efforts target highly selective markets, such as the University of Phoenix, which already operates over one hundred learning centers in thirty-two states, serving over fifty thousand students. Phoenix targets the educational needs of adult learners whose career and family responsibilities make access to traditional colleges and universities difficult. By relying on highly structured courses, arranged in a form convenient to the student, and taught by practitioners as part-time instructors, Phoenix has developed a highly competitive paradigm

Other for-profit industry-based educational institutions are evolving rapidly, such as Sylvan Learning Systems and its subsidiaries, Athena University, Computer Learning Centers, and the World Learning Network. These join an existing array of proprietary institutions such as the DeVry Institute of Technology and ITT Educational Services. Not far behind are an array of sophisticated industrial training programs, such as Motorola University and the Disney Institute, originally formed to meet internal corporate training needs, but now exploring offering educational services to broader markets. Of particular note here are the efforts of information services companies such as Anderson Consulting that are increasingly viewing education as just another information service.

It is important to recognize that while many of these new competitors are quite different than traditional academic institutions, they are also quite sophisticated

in their pedagogy, their instructional materials, and their production and marketing of educational services. For example, some such as Caliber Learning and the Open University invest heavily in the production of sophisticated learning materials and environments, utilizing state-of-the-art knowledge concerning learning methods from cognitive sciences and psychology. They develop alliances with well-known academic institutions to take advantage of their brand names (e.g., Wharton in business and MIT in technology). They approach the market in a highly sophisticated manner, first moving into areas characterized by limited competition, unmet needs, and relatively low production costs, but then moving rapidly up the value chain to more sophisticated programs.

In the face of such competition, traditional colleges and universities are also responding with an array of new activities. Most university extension programs are moving rapidly to provide Internet-based instruction in their portfolios. University collaboratives such as the National Technological University and the Midwest University Consortium for International Activities have become quite formidable competitors. They are being joined by a number of new organizations such as the Western Governors' University, the Michigan Virtual University, and an array of university-stimulated "dot-coms" such as *Unext.com* and *Versity.com* that aim to exploit both new technology and new paradigms of learning.

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 a 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 institutions, we must bear in mind the importance of preserving the ability of the university to serve a broader public purpose. While universities teach skills and convey knowledge, they also preserve and convey our cultural heritage from one generation to the next, perform the research necessary to generate new knowledge, serve as constructive social critics, and provide a broad array of knowledge-based services to our society, ranging from health care to technology transfer.

Furthermore, our experience with market-driven, media-based enterprises has not been altogether positive. The broadcasting and publication industries suggest that commercial concerns can lead to mediocrity, an intellectual wasteland in

which the lowest common denominator of quality dominates. For example, although the campus will not disappear, the escalating costs of residential education could price this form of education beyond the range of all but the affluent, relegating much if not most of the population to low-cost (and perhaps low-quality) education via shopping mall learning centers or computer-mediated distance learning. In this dark, market-driven future, the residential college campus could well become the gated community of the higher education enterprise, available only to the rich and privileged.

## A Learning Society

The Kellogg Commission on the Future of the State and Land Grant Universities<sup>9</sup> proposes a vision for the future of education known as "a learning society", a term implying socially inclusive learning opportunities for all of its members, including children, young and older adults, the elderly, the employed and the unemployed, the advantaged and the disadvantaged. In such a society, all students are educated to the highest levels they can reach, recognizing that everyone can learn, but that not everyone learns in the same way.

Such a society would value and foster habits of lifelong learning, ensuring that there are responsive and flexible learning programs and learning networks to address all students' needs. Of particular importance would be the use of emerging information technologies, capable both of enriching, distributing, and customizing learning opportunities. This vision would require new public policies that ensure equity of access to learning, information, and information technologies, recognizing that investments in learning contribute to overall competitiveness and the economic and social well-being of the nation.

Yet, while the Commission challenges both our universities and our government leaders to envision such a "learning society" as a goal, the study raises many concerns, among them:

- A current educational paradigm that emphasizes teaching rather than learning.
- The lack of a student-centered and customer-driven orientation to education in our institutions.
- The lack of extensive faculty involvement in distance learning and instructional technology.
- And the limited institutional flexibility to bring about the change.

But let me suggest that there may be another problem with this vision. The concept of "a learning society" may be too narrow. While it is based on universal access, it also suggests that while the "society is learning," its individual members may not all be so benefited.

## A Society of Learning

Instead, perhaps we should turn the phrase and consider instead 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. Let me explain.

We have entered an era in which educated people and the knowledge they produce and utilize have become the keys to the economic prosperity and well-being of our society. Education, knowledge, and skills have become primary determinants of one's personal standard of living. 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, education today has become a driving social need and societal responsibility. 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.

So what would be the nature of a university of the twenty-first century capable of creating and sustaining a society of learning? It would be impractical and foolhardy to suggest one particular model. 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 that will almost certainly factor into at least some part of the higher education enterprise.

- *Learner-centered*: Our universities, 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,

becoming more responsive to what our students need to learn rather than simply what our faculties wish to teach.

- *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 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.
- *Lifelong Learning:* 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. 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:* The great diversity characterizing higher education in America will continue, as it must to serve an increasingly diverse population with diverse needs and goals.
- *Intelligent and adaptive:* Knowledge and distributed intelligence technology will increasingly allow us to build learning environments that are not only highly customized but adapt to the needs of the learner.

Many colleges and universities have already launched major strategic efforts to understand these themes and to transform themselves into institutions that are better capable of serving a knowledge-driven society. Yet such efforts to explore new learning paradigms extend far beyond the traditional higher education enterprise to include an array of new participants, ranging from publishing

houses (e.g., Harcourt-Brace) to entertainment companies (e.g., Disney) to information services providers (e.g., Anderson Consulting) to information technology corporations (e.g., IBM). 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.

Perhaps access to advanced educational opportunities will be the defining domestic policy issue for a knowledge-driven society. If so, however, we will need to develop new paradigms 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.

In a society of learning, people would be 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. Let me illustrate with two examples:

### Learning Networks

Driven by information technology, the network has become more than a web which links together learning resources. It has become the architecture of advanced learning organizations.<sup>10</sup> Information, knowledge, and learning opportunities are now distributed across robust computer networks to hundreds of millions of people. The knowledge, the learning, the cultural resources that used to be the prerogative of a privileged few are rapidly becoming available anyplace, anytime, to anyone.



The impact on all social organizations has been profound. Business and industry are moving rapidly away from the hierarchy of the organizational pyramid to networked organizations of relatively autonomous components. The command-communication-control structure of General Motors and IBM has been replaced by the “chaordic” network organization of Visa.<sup>11</sup>

It is important for the academy to appreciate how profound this new network architecture is for learning organizations.<sup>12</sup> Today’s learners can learn anywhere, anytime, acquiring learning and knowledge from sources in any location.<sup>13</sup> Today, learners are in command of what, how, where, and when they learn, and they will be increasingly in control of what they pay for the learning opportunity as well.

The implications of a networked or open learning architecture are manifold. First, it makes less and less sense for institutions to attempt to be comprehensive, to go it alone. Rather the key will be forming alliances, sharing resources, specializing in what they can be really good at, and relying on other focused institutions to provide the rest. This does not mean that the largest, most prestigious institutions will necessarily be the most successful. Indeed, smaller, more focused, and more nimble institutions may be able to develop world-class learning services that could compete very effectively with traditional offerings.

Learning networks may also work to couple together different levels of education. For example, we are already seeing evidence that many high school students are entering college with degree credit in college-level courses taken over the Net. By the same token, many colleges must provide remedial education at the secondary school level. At the other end, adults are seeking further educational services from higher education to respond to changing career requirements. A network architecture works best for the delivery of educational services when and where they are needed—that is, for “just in time” rather than “just in case” education. It may also be best configured for “just for you” education, that is, educational programs highly customized to the learning needs of the student.

One can imagine the learning networks evolving into a seamless continuum of educational opportunities and services, in which the degree becomes less and less relevant, and what a person has learned becomes far more significant. Learning communities will be more extended and diverse with a network architecture. Since they will evolve unconstrained by space and time, the number of off-campus learners will vastly outnumber on-campus students. Beyond that,

the distinction between learner, teacher, and researcher may become blurred. All will be able to make contributions to learning, teaching, and scholarship.

### New Civic Lifeforms

Today, as knowledge becomes an ever more significant factor in determining both personal and societal well being, and as rapidly emerging information technology provides the capacity to build new types of communities, we might well see the appearance of new social structures.<sup>14</sup> A century ago, stimulated by the philanthropy of Andrew Carnegie, the public library became the focal point for community learning. Today, however, technology allows us to link together public and private resources such as schools, libraries, museums, hospitals, parks, media, and cultural resources. Further, communities can easily be linked with the knowledge resources of the world through the Internet.

There are some interesting trends in technology that suggest that new types of “community knowledge structures” may, in fact, appear, ones that will not be derivative of traditional institutions such as schools or libraries. One such trend involves the evolution of global computer networks such as the Internet. In addition to their ability to link people together into electronic communities, they link us as well to increasingly diverse and rich sources of knowledge. In a sense, they have become “knowledge networks,” giving us the capacity to build communities with access to vast intellectual resources.

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

Although market forces are far more powerful than most realize, I also believe that it is possible to determine which of these or other paths is taken by higher education in America. Key in this effort is our ability as a society to view higher education as, in part, 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.

### From Land-Grant to Learn-Grant

As we enter the new millennium, there is an increasing sense that the social contract between the university and American society, perhaps best represented

by today's government-university research partnership may need to be reconsidered and perhaps even renegotiated.<sup>15</sup> The number and interests of the different stakeholders of the university have expanded and diversified, drifting apart without adequate means to communicate and reach agreement on priorities. Political pressures to downsize federal agencies, balance the federal budget, and reduce domestic discretionary spending may reduce significantly the funding available for university-based research. Government officials are concerned about the rapidly rising costs of operating research facilities and the reluctance of scientists and their institutions to acknowledge that choices must be made to live with limited resources and set priorities.

While the government-university research partnership has had great impact in making the American research university the world leader in both the quality of scholarship and the production of scholars, it has also had its downside. Pressures on individual faculty for success and recognition have led to major changes in the culture and governance of universities. The peer-reviewed grant system has fostered fierce competitiveness, imposed intractable work schedules, and contributed to a loss of collegiality and community. It has shifted faculty loyalties from the campus to their disciplinary communities. Publication and grantsmanship have become a one-dimensional criterion for academic performance and prestige, to the neglect of other important faculty activities such as teaching and service. Furthermore, while the government-university partnership has responded well to the particular interests of academic researchers, one might well question whether the needs of other stakeholders, including the tax-paying public, have been adequately addressed.<sup>16</sup>

For the past half-century, the government-university research partnership has been built upon the concept of relatively unconstrained patronage. The government provided faculty members with the resources to do the research they felt was important, in the hopes that this research would benefit society in the future. Since the quality of the faculty, the programs, and the institution was felt to be the best determinant of long-term impact, academic excellence and prestige were valued.

Today there seems to be a shift in what society seeks from the university. Students and parents increasingly choose professional degree programs appropriate for their first job rather than the liberal education capable of enriching their lives. Politicians value productivity measures rather than academic rankings. Higher education has fallen behind health care, prisons, and civil infrastructure in its capacity to compete for limited state tax dollars.<sup>17</sup>

In a sense, society is telling us that while quality is important, even more so is cost. The marketplace seeks low-cost, quality services rather than prestige. Parents and students ask increasingly, “If a Ford will do, then why buy a Cadillac?” It could be that the culture of excellence, which has driven both the evolution of and competition among research universities for over half a century, will no longer be accepted and sustained by the American public. We may be seeing a shift in public attitudes toward higher education that will place less stress on values such as “excellence” and “elitism” and more emphasis on the provision of cost-competitive, high-quality services—from “prestige-driven” to “market-driven” philosophies.

One of my colleagues refers to this phenomenon as the “de-Harvardization” of higher education in America that is likely to occur in the century ahead. By this he means that our colleges and universities, which have long aspired to emulate elite institutions such as Harvard, are beginning to recognize that a paradigm which simply focuses more and more resources on fewer and fewer, while acting as a predator to raid the faculty of less prosperous institutions, clearly does not serve the needs of American society.

Rather than allowing the marketplace alone to redefine the nature of higher education in America, perhaps it is time to reconsider the social contract between the university and American society. But rather than create an entirely new model, perhaps it is more appropriate to first consider the relationship that characterized the early half of the twentieth century: *the land-grant university model*.

Recall that a century and a half ago, America was facing a period of similar change, evolving from an agrarian, frontier society into an industrial nation. At that time, a social contract was developed between the federal government, the states, and public colleges and universities designed to assist our young nation in making this transition. The land-grant acts were based upon several commitments: First, the federal government provided federal lands for the support of higher education. Next, the states agreed to create public universities designed to serve both regional and national interests. As the final element, these public or land-grant universities accepted new responsibilities to broaden educational opportunities for the working class while launching new programs in applied areas such as agriculture, engineering, and medicine aimed at serving an industrial society, while committing themselves to public service, engagement, and extension.

Today our society is undergoing a similarly profound transition, this time from an industrial to a knowledge-based society. Hence it may be time for a new social contract aimed at providing the knowledge and the educated citizens necessary for prosperity, security, and social well-being in this new age. Perhaps it is time for a new federal act, similar to the land grant acts of the nineteenth century, that will help the higher education enterprise address the needs of the 21<sup>st</sup> Century. Of course, a 21<sup>st</sup> Century land-grant act is not a new concept.<sup>18</sup> In fact, several of the earlier David Dodds Henry lecturers, including Frank Rhodes, Walter Massey, and Jack Peltason have advocated just such a concept. Others have recommended an industrial analog to the agricultural experiment stations of the land-grant universities. Others have suggested that in our information-driven economy, perhaps telecommunications bandwidth is the asset that could be assigned to universities much as federal lands were a century ago. Unfortunately, an industrial extension service may be of marginal utility in a knowledge-driven society. Furthermore, Congress has already given away most of the available bandwidth to traditional broadcasting and telecommunications companies.

The land-grant paradigm of the 19<sup>th</sup> and 20<sup>th</sup> Century was focused on developing the vast natural resources of our nation.<sup>19</sup> Today, however, we have come to realize that our most important national resource for the future will be our people. At the dawn of the age of knowledge, one could well make the argument that education itself will replace natural resources or national defense as the priority for the twenty-first 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 that would rival the research university in importance. In a sense, the 21<sup>st</sup> Century analog to the land-grant university might be termed a *learn-grant university*.

A learn-grant university for the 21<sup>st</sup> Century might be designed to develop our most important resource, our human resources, as its top priority, along with the infrastructure necessary to sustain a knowledge-driven society. The field stations and cooperative extension programs—perhaps now as much in cyberspace as in a physical location—could be directed to the needs and the development of the people in the region. While traditional academic disciplines and professional fields would continue to have major educational and service roles and responsibilities, new interdisciplinary fields such as complexity and global change might be developed to provide the necessary knowledge and associated problem-solving services in the land-grant tradition.

In an era of relative prosperity in which education plays such a pivotal role, it may be possible to build the case for new federal commitments based on just such a vision of a society of learning. But certain features seem increasingly apparent. New investments are unlikely to be made within the old paradigms. For example, while the federal government-research university partnership based on merit-based, peer-reviewed grants has been remarkably successful, this remains a system in which only a small number of elite institutions participate and benefit. The theme of a 21<sup>st</sup> Century *learn-grant act* would be to broaden the base, to build and distribute widely the capacity to contribute both new knowledge and educated knowledge workers to our society, not simply to channel more resources into established institutions. Furthermore, while both Congress and the White House seem increasingly confident in the strength of our economy, they are unlikely to abandon entirely the budget balancing constraints that many believe contributed to today's prosperity. Hence, major new investments via additional appropriations seem unlikely. However, there is another model, provided, in fact, by the 1997 Budget Balancing Agreement, in which tax policy was used as an alternative mechanism to invest in education.

An example illustrates one possible approach. Suppose the federal government were to provide a permanent R&D tax credit to industry for those research and educational activities undertaken jointly with public universities in special research parks or networked organizations. The states would commit to matching the federal contributions, perhaps by developing the research parks and assisting their colleges and universities in building the capacity to partner with industry. The participating universities would not only agree to work with industry on projects of interest, but would restructure their intellectual property ownership policies to facilitate such partnerships. Participating universities would go beyond this to build the capacity to provide more universal educational opportunities, perhaps through network-based learning or virtual universities. Universities would also agree to form alliances, both with other universities as well as with other parts of the education enterprise such as K-12 education and workplace training programs.

Other national priorities such as health care, the environment, global change, and economic competitiveness might be part of an expanded national service mission for universities. Institutions and academic researchers would then commit to research and professional service associated with such national priorities. To attract the leadership and the long-term public support needed for a valid national public service mission, faculties would be called upon to set new priorities, collaborate across campus boundaries, and build upon their diverse capabilities.

This is but one example of many. But the point seems clear. It may be time to consider a new social contract, linking together federal and state investment with higher education and business to serve national and regional needs, much in the spirit of the land-grant acts of the 19<sup>th</sup> Century.

## Conclusion

As our society changes, so too must change societal institutions such as the university. But change has always characterized the university, even as it sought to preserve and propagate the intellectual achievements of our civilization. Although the university has endured as an important social institution for a millennium, it has evolved in profound ways to serve a changing world. Higher education in America has likewise been characterized by change, embracing the concept of a secular liberal education, then weaving scholarship into its educational mission, and broadening its activities to provide public service and research to respond to societal needs.

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.

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.<sup>20</sup>

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.

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<sup>1</sup> Derek C. Bok, *Beyond the Ivory Tower: Social Responsibilities of the Modern University* (Cambridge: Harvard University Press, 1982).

<sup>2</sup> 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).

<sup>3</sup> Erich Bloch, National Science Foundation, testimony to Congress, 1988.

<sup>4</sup> Derek Bok, *Universities and the Future of America* (Durham: Duke University Press, 1990).

<sup>5</sup> Steve Lohr, "The Future Came Faster in the Old Days," *New York Times* (October 5, 1998).

<sup>6</sup> Donald E. Osterbrock and Peter H. Raven, eds., *Origins and Extinctions* (New Haven: Yale University Press, 1992).

<sup>7</sup> 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)

<sup>8</sup> Harold L. Hodgkinson, *All One System: Demographics of Education – Kindergarten through Graduate School* (Washington, D.C.: Institute for Educational Leadership, 1985).

<sup>9</sup> <http://nasulgc.org/Kellogg>

<sup>10</sup> 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).

<sup>11</sup> Dee Hock, "Chaordic Organizations"; see also the website for the Chaordic Alliance at <http://www.chaordic.org>.

<sup>12</sup> Carol A. Twigg, "The Need for a National Learning Infrastructure," *Educom Review* (September/October 1994), 17-24.



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<sup>13</sup> Carol Twigg, "Toward a National Learning Infrastructure: Navigating the Transition," National Learning Infrastructure, Part 3, *Educom Review* (November/December 1994), 3. Posted on the Internet to the Horizon List courtesy of Dr. Twigg.

<sup>14</sup> *Buildings, Books, and Bytes: Libraries and Communities in the Digital Age* (Washington, D.C.: Benton Foundation, 1996), Funded by the W. R. Kellogg Foundation.

<sup>15</sup> Vernon Ehlers, "Unlocking Our Future: Toward a New National Science Policy," a report to Congress by the House Committee on Science (September 24, 1998).

<sup>16</sup> *Evaluating Federal Research Programs: Research and the Government Performance and Results Act*, Committee on Science, Engineering, and Public Policy (National Academy Press, Washington, 1999)

<sup>17</sup> Robert Zemsky and Gregory R. Wegner, eds., "A Very Public Agenda," *Policy Perspectives*, 8, 2 (1998).

<sup>18</sup> Walter E. Massey, "The Public University for the Twenty-First Century: Beyond the Land Grant," 16<sup>th</sup> David Dodds Henry Lecture, University of Illinois at Chicago, (1994); J. W. Peltason, "Reactionary Thoughts of a Revolutionary," 17<sup>th</sup> David Dodds Henry lecture, University of Illinois at Urbana-Champaign (October 18, 1995).

<sup>19</sup> Frank Rhodes, "The New American University," *Looking to the Twenty-First Century: Higher Education in Transition* (Champaign-Urbana: University of Illinois Press, 1995).

<sup>20</sup> 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