

Back to the Future:
The Changing Social Contract
between the University and the Nation

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Abstract

The federal government has long played an important role in shaping the social contract between the university and American society through federal policies and actions such as the land-grant Acts aimed at industrializing the nation and educating the working class; the GI Bill and Higher Education Acts aimed at broadening and making more equitable educational opportunities; and the university-government research partnership aimed at achieving national security, economic prosperity, and quality health care. Today, an array of powerful social, economic, and technological forces is driving change in both the needs of our society and the nature of the social institutions. There is an increasing sense that the growth of higher education in the 21st Century will be fueled by private dollars and that public policy and public purpose will be replaced increasingly by market pressures and private investment. It may once again be time for federal policy and action to establish a new social contract between our citizens and our universities, in light of the imperatives of a new century.

Service to society and civic responsibility may be the most unique themes of higher education in America. The bonds between the university and society are particularly strong in this country. Historically our institutions have been responsible to and shaped by the communities that founded them.¹

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.

The Role of the Federal Government in Shaping Higher Education

From the earliest days of the nation, the benefits of the American university were expressed in terms of its public, democratic role. Through the writings of Jefferson and early legislation such as the Federal Ordinance of 1785, education was seen as important to the nation's democratic well being. Yet in the early

years of our nation there was a tension concerning the federal government's role, since the Constitution reserved the power over education to the states. Although the first public colleges appeared in the late 18th Century, they had strong religious ties and continued to focus on the education of the elite, much as private colonial colleges².

This changed when Congress enacted the Morrill Act of 1862, which provided a grant of land, 30,000 acres for each Senator and member of Congress, to each of the states to be used by them to establish a college. This, the first of several pieces of federal legislation known as the land-grant acts, was intended both to stimulate the states to provide broader opportunities for a college education to an expanding population, but furthermore to shape these new institutions to become actively involved in economic development. Each state was to establish colleges offering programs in applied areas, such as agriculture, engineering, and home economics, as well as in the more traditional academic subjects. The Hatch Act of 1887 expanded the service activities of these land-grant institutions by establishing Agricultural Experiment Stations aimed at developing and applying the knowledge necessary for modern agriculture. In 1914, the Smith-Lever Act established the Cooperative Extension Service, thereby bringing to land-grant colleges substantial responsibilities for public service.

It is difficult to overestimate the value that the land grant acts have been to the social and economic development of the country. They created a new paradigm for American higher education from which individual students, the states, and the nation as a whole have benefited enormously. The land-grant colleges were characterized by a new degree of openness and public responsibility. They clearly established the triad mission of teaching, research, and service for the American university.

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, perhaps best captured by the belief of the Truman Commission in 1952 that every high school graduate should have the opportunity for a college education. Largely as a result of such federal actions, today almost two-thirds of all high school graduates will continue on to college at some level.

A third form of social contract evolved between the federal government and those universities with strong research and graduate education capabilities. The seminal report, *Science, the Endless Frontier*, produced by a World War II study group chaired by Vannevar Bush, stressed the importance of this partnership: “Since health, well-being, and security are proper concerns of government, scientific progress is, and must be, of vital interest to government.”³ At the heart of this partnership was the practice of federal support of competitive, peer-reviewed grants, and a framework for contractual relationships between universities and government sponsors. In this way the federal government supported university faculty investigators to engage in research of their own choosing in the hope that significant benefits would accrue to American society in the forms of military security, public health, and economic prosperity.

The resulting partnership between the federal government and the nation’s universities has had an extraordinary impact. Federally supported academic research programs on the campuses have greatly strengthened the scientific prestige and performance of American universities. The research produced on our campuses has had great impact on society. It has made America the world’s leading source of fundamental scientific knowledge. It has produced the well-trained scientists, engineers, and other professionals capable of applying this new knowledge. This academic research enterprise has played a critical role in the conduct of more applied, mission-focused research in a host of areas including health care, agriculture, national defense, and economic development. And it has laid the technological foundations of entirely new industries such as electronics and biotechnology.

For most of our history, the growth and character of higher education in America has been sustained by tax dollars, either direct through state or federal appropriation, or indirectly through beneficial tax policy such as the deductibility of charitable giving or the status of colleges and universities as nonprofit enterprises. Public investment and public policy has both determined and protected the public purpose of higher education in America. The social contract between the university and American society has been defined and sustained at the federal level.

Today a new array of powerful social, economic, and technological forces is unleashing powerful market forces. There is an increasing sense that the growth of higher education in the 21st Century will be fueled by private dollars and that public policy and public purpose will be replaced increasingly by market pressures and private investment. It may once again be time for federal policy and action to establish a new social contract between our citizens and our universities, in light of the imperatives of a new century.

The Forces of Change

The Age of Knowledge

Today we are evolving rapidly into a postindustrial, knowledge-based society, just as a century ago an agrarian America evolved into an industrial nation.⁴ 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.⁵ Unlike natural resources such 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 that create knowledge, that educate people, and that provide them with knowledge and learning resources throughout their lives.⁶

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.⁷ 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 Globalization of America

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 intensely interdependent with other nations and other peoples.⁸ Worldwide communication networks have created an international market, not only for conventional products, but also for knowledge professionals, research, and educational services. 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.

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, led to a tightly controlled competitive market. Universities enjoyed a monopoly over advanced education because of geographical location and their monopoly on the accreditation of academic programs necessary for awarding degrees. 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 as new competitive forces 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 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 demand 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.

Brave, New World

Higher education has been and will continue to be greatly affected by the changes in our society and our world. In an increasingly knowledge-driven society, more and more people seek education as the hope for a better future, the key to good jobs and careers, to meaningful and fulfilling lives. The knowledge created on our campuses addresses many of the most urgent needs of society, for example, health care, national security, economic competitiveness, and environmental protection. The complexity of our world, the impact of technology, the insecurity of employment, and the uncertainty of our times have led all sectors of our society to identify education in general and higher education in particular as the key to the future.

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.

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 to challenge both our experience and our concept of the university?

The forces driving change in higher education, both from within and without, may be far more powerful than most people realize. It could well be that both the pace and nature of change characterizing the higher education enterprise both in America and worldwide will be considerably beyond that which can be accommodated by business-as-usual evolution. While some colleges and universities may be able to maintain their current form and market niche, others will change beyond recognition. Still others will disappear entirely. New types of institutions—perhaps even entirely new social learning structures—will evolve to meet educational needs. In contrast to the last several decades, when colleges and universities have attempted to become more similar, the years ahead will demand greater differentiation. There will be many different paths to the future.

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 structures, we must bear in mind the importance of preserving the ability of the university to serve a broader public purpose.

Furthermore, our experience with market-driven, media-based enterprises has not been 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 future, the college campus could well become the gated community of the higher education enterprise, available only to the rich and privileged.

There is an important lesson here. Without a broader recognition of the growing learning needs of our society, an exploration of more radical learning paradigms, and an overarching national strategy that acknowledges the public purpose of higher education and the important values of the academy, higher education could face many of the same pressures that have contributed so heavily to the current plight of K–12 education. Education could become viewed primarily as an industry, demanding higher productivity according to poorly designed performance measures. The political forces associated with mass education could intrude on academic leadership in general and governing boards in particular. Our faculties could have no recourse but to circle the wagons, to accept a labor-management relationship, and to cease to regard their vocation as a calling rather than a job.

A Society of Learning

Yet there is a far brighter vision for the future of higher education in America. 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. One's education, knowledge, and skills have become primary determinants of one's personal standard of living, the quality of one's life. Just as our society has historically accepted the responsibility for providing needed services such as military security, health care, and transportation infrastructure in the past, today education has become a driving social need and societal responsibility. Today it has become the responsibility of democratic societies to provide their citizens with the education and training they need, throughout their lives, whenever, wherever, and however they desire it, at high quality and at an affordable cost.

Of course, this has been one of the great themes of higher education in America. Each evolutionary wave of higher education has aimed at educating a broader segment of society, at creating new educational forms to do that—the public universities, the land-grant universities, the normal and technical colleges, the community colleges. But today, we must do even more.

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

- *Learner-centered*: Just as other social institutions, our universities must become more focused on those we serve. We must transform ourselves from faculty-centered to learner-centered institutions.

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

Perhaps access to advanced educational opportunities will be the defining domestic policy issue for a knowledge-driven society. Rather than an "age of knowledge," we might instead aspire to a "society of learning," in which people are continually surrounded by, immersed in, and absorbed in learning experiences. 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.

Back to the Future: A Social Contract for the 21st Century

As we enter the new century, there is an increasing sense that the social contract represented by the government-university research partnership may need to be reconsidered and perhaps even renegotiated.⁹ 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 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, the government-university partnership has not adequately taken into account other key stakeholders in the scientific enterprise. Academic researchers often seem to place the support for the specialized pursuit of their self-initiated projects well above the importance of addressing the social and economic challenges of our nation.

For the past half-century, the Bush paradigm of 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 society seems reluctant to make such long-term investments, preferring instead to seek short-term services from universities. While quality is important, even more so is cost, the marketplace seeks low-cost, quality services rather than prestige. The public is asking 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.

Perhaps it is time to reconsider the type of social contract between the university and American society 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. This social contract was best manifested in the series of land grant acts and contained the following 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.

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 twenty-first century.

Of course, a 21st Century land-grant act is not a new concept.^{10,11} Some 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 bandwidth to traditional broadcasting and telecommunications companies.

The land-grant paradigm of the nineteenth and twentieth centuries was focused on developing the vast natural resources of our nation.¹² Today, however, we have come to realize that our most important national resource for the future will be our people. Today, 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. Indeed, one might suggest that this will be the new social contract that will determine the character of our educational institutions, just as the government-university research partnership did in the latter half of the twentieth 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.

A land-grant university for the next 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 could be directed to the needs and the development of the people in the region. While traditional professional fields would continue to have major educational and service roles and responsibilities, new interdisciplinary fields should 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. 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 tend to benefit. The theme of a 21st Century land 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 on 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. The states would commit to matching the federal contributions, perhaps by developing the research parks and assisting their public 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, forming the basis for a new social contract. 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, academics 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 19th Century.

Conclusion

As we enter a new century, we can take great pride in the accomplishments of our universities. Working together, Americans have built the finest system of higher education in the world. But we have built universities for the twentieth century, and that century has come to an end. The universities that we have built, the educational and research paradigms in which we have so excelled, may no longer be relevant to a twenty-first century world.

As we look to the profound changes ahead of us, as we explore possible visions for the future, it is important to keep in mind that throughout their history, universities have evolved as integral parts of their societies to meet the challenges of their changing environments. They continue to evolve today. This disposition to change is a basic characteristic and strength of university life, the result of our constant generation of new knowledge through scholarship that, in turn, changes the education we provide and influences the societies that surround us.

There should be little doubt that 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 culture 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.¹³

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.

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

² Frederick Rudolph, *The American College and University* (Athens: University of Georgia Press, 1962).

³ Vannevar Bush, *Science, the Endless Frontier*, a report to the President on a Program for Postwar Scientific Research (Office of Scientific Research and Development, July 1945; Washington, D.C.: National Science Foundation, 1990), 192.

⁴ 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).

⁵ Erich Bloch, National Science Foundation, testimony to Congress, 1988.

⁶ Derek Bok, *Universities and the Future of America* (Durham: Duke University Press, 1990).

⁷ Harold L. Hodgkinson, *All One System: Demographics of Education—Kindergarten through Graduate School* (Washington, D.C.: Institute for Educational Leadership, 1985).

⁸ Walter B. Wriston, *The Twilight of Sovereignty: How the Information Revolution Is Transforming Our World* (New York: Scribner, 1992).

⁹ Vernon Ehlers, "Unlocking Our Future: Toward a New National Science Policy," a report to Congress by the House Committee on Science (September 24, 1998).

¹⁰ Walter E. Massey, "The Public University for the Twenty-First Century: Beyond the Land Grant," 16th David Dodds Henry Lecture, University of Illinois at Chicago, (1994); J. W. Peltason, "Reactionary Thoughts of a Revolutionary," 17th David Dodds Henry lecture, University of Illinois at Urbana-Champaign (October 18, 1995).

¹¹ Daniel Alpert and William C. Harris, "Renewal of the University's Compact with the Society It Serves," draft (September 18, 1996), 18.

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