

**Reinventing the Research University:
An American Perspective**

Robert Zemsky
Chair, The Learning Alliance for Higher Education
The University of Pennsylvania

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

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INTRODUCTION

Over the span of a thousand years universities have adapted and evolved in profound ways to serve a modernizing world.

Today pace of university change is being driven by social, economic, and technological forces largely external to the academy. Today universities, as institutions, are much more likely to respond to rather than initiate change—and in that sense, universities are being remade rather than reinvented.

Among those forces perhaps the most dramatic, though to the public not always the most visible, is a knowledge base that is expanding exponentially while, at best, resources are growing linearly.

It is the point Donald Kennedy, then president of Stanford University, made when he asked, “How can we look so rich and feel so poor?” (Kennedy, 1997). His answer was that universities were much better at getting new things started than at finding the necessary funds to sustain them.

To this dilemma has been added the challenge of massification and the very real question of who is to pay for making higher education both broadly available and broadly affordable.

The lesson learned more than two decades ago by public universities in the United States—that no government has sufficient tax receipts to provide a higher education to all who seek it at little or not cost to the seeker—is now being absorbed by universities across Europe and Asia.

Universities everywhere are “going to market” to raise the kind of revenues that are required to sustain quality and insure stability—even as they protest what they see as the erosion of public support.

THE FORCES REMAKING THE RESEARCH UNIVERSITY

Diminishing Public Appropriations

In the United States today the most pressing concern is funding. Most public universities are facing devastating cuts in their appropriations from tax dollars—a function of the crushing budget deficits confronting most states. Private universities and the best endowed public universities face a parallel erosion of private support from gifts and endowment income—a function of a weakened economy and a sense on the part of many traditional donors that higher education no longer needs or merits the same level of philanthropy as before.

Today, the priorities of both the electorate and the makers of public policy are health care, prisons, homeland security, and reduced tax burdens for the near term rather than investment in the education of the next generation and in the future.

This situation is being exacerbated by the circumstances of those needs that, on the state level, compete directly with higher education for taxpayer support—public schools, prisons, highways, and medical care for an aging population no longer able to bear the full cost of health care.

The problem is that public primary and secondary schools cannot charge tuition; prisons cannot charge rent; highways in the United States seldom charge tolls; and the nation's politically active elders have made clear they do not want to be charged for anything.

But universities can and do charge tuitions; each time there is a downturn in the economy and a reduction in tax revenues, most universities make up for the loss in public funds by increasing the prices they charge their students. The result is that most public and all private universities in the United States are creatures of an increasingly competitive market for student enrollments as well as for research grants and private donations.

It is the market that calls the tune in the United States, and it is a market that is becoming increasingly segmented with those at the top the top of the pyramid—the

nation's medallion and name-brand universities—getting stronger while those in the middle and bottom continue to lose ground.

It is not hard to imagine higher education in the United States, a decade from now, being dominated by 20 or so super- as well as super-rich universities while the balance struggle to maintain programs and preserve quality.

Changing Student Demands

At the same time universities are being asked to do more—becoming in the process more open, more flexible, and above all more responsive to student concerns about their employability after graduation.

Expanding demands for adult education at the collegiate level will further strain higher education's capacity to serve those seeking jobs in high performance workplaces. It is now estimated that by 2010 over 50% of all university students will be working adults over the age of 25 (Almanac Issue, Chronicle of Higher Education, 2003).

Accompanying this increase in demand will be a marked shift in the kind of learning experiences most students have come to expect. What the digital- and media-savvy young as well as their adult counterparts and adult learners will increasingly demand are interactive, collaborative learning experiences, provided when and where the student needs the knowledge and skills.

It is a utilitarian view of higher education is that is having a marked—some would say, a profound—impact on American public policy. The National Governors Association notes that “The driving force behind the 21st Century economy is knowledge, and developing human capital is the best way to ensure prosperity.”

In the knowledge economy, the key asset driving corporate value is no longer physical capital or unskilled labor. Instead it is intellectual and human know-how.

Education is also becoming a powerful political force. Just as the *space race* of the 1960s stimulated major investments in research and education, there are early signs that the *skills race* of the 21st Century may soon be recognized as the dominant domestic policy

issue facing the United States. But there is an important difference here. The space race galvanized public concern and concentrated national attention on educating “the best and brightest,” the nation’s elite of tomorrow. The skills race of the 21st Century will value instead the skills and knowledge of the entire workforce as a key to economic prosperity, national security, and social well-being.

The Politics of Diversity

In this regard, the increasing diversity of the American population with respect to race, ethnicity, gender and nationality is both one of the United States’ greatest strengths and most serious challenges.

In this struggle American universities have become a major battleground as affirmative action’s opponents have sought to limit, if not actually eliminate their ability to consider race as a factor in deciding which applicants to admit.

It is a struggle that has become all the more difficult as the nation’s leading universities have become the target of a sophisticated political and legal campaign to limit programs of affirmative action. What the future holds is more of the same—more court cases, more voting initiatives designed to curtail the universities’ political autonomy, and more internal debates as to the appropriateness of making the defense of affirmative action a major institutional priority.

As the largely successful battle the University of Michigan waged in defense of its race-sensitive admissions policies demonstrated, universities can be successful in this struggle, preserving their ability to insure ethnically diverse student bodies. The salient and troubling question then becomes, at what cost in terms of dollars spent, energy invested, and political capital expended?

The Push-Pull of Technology

Today’s world is being transformed by a digital technology (computers, networks, wireless devices) that is evolving at an exponential pace. Capacity per unit price—

whether measured in terms of computing speed, memory, or network transmissions—is increasing by a factor of 100 to 1000 every decade.

The impact of these technologies on the university will be profound, rapid, and discontinuous—just as it has been and will continue to be for the economy as a whole and the full range of institutions that comprise a nation’s civil society.

What is clear is that the story is still unfolding. The underlying information technologies on which *e-learning* depends are themselves too ubiquitous and the people attracted to having them serve as learning platforms are too smart for universities not to take seriously the prospect that major changes will flow from their efforts.

The best guess is that the decade ahead will be one of continued experimentation as universities and their faculties get better at anticipating how the new technologies will impact their basic operations, both within and without the classroom. The danger is that universities will be inclined to delay, deciding to wait and see how e-learning involves before making further investments.

The Changing Nature of Research

Although the changing needs and nature of society have been important factors in the making of the university, so too has been the changing nature of research and scholarship. Intellectual transformations will in the future, just as they have in the past, play a major role in defining the nature of the university.

One way to track those changes is to note the continuing modification of the disciplines that collectively define the structure of scholarship for any given age. What are too often regarded as entrenched and fixed are in fact constantly changing, combining and splitting in a continuous process of constant discovery and invention.

Just as a century ago, Einstein's theory of relativity and the introduction of quantum mechanics revolutionized physical concepts, today speculation about dark matter and quantum entanglement suggest that yet another revolution in the physical sciences may be at hand. The articulation of the molecular foundations of life have are having the same transformative impact on the biomedical sciences. What most scholars now

understand is that twenty-first century science will be marked by increasing complexities that will overwhelm the reductionist approach on which disciplinary definitions and boundaries have traditionally depended.

At the same time the process of creating new knowledge is evolving rapidly away from the solitary scholar to teams of scholars, often spread over a number of disciplines at a variety of universities. This push to collaboration is in part a function of the enormous expense of major experimental facilities, and in part driven by the complexity of contemporary research topics. To study issues ranging from protein functions to global change to the harnessing of the new nano-technologies requires evolving teams of scholars drawn from a wide variety of disciplines.

In science and engineering education a new age is dawning, pushed by continuing progress in computing, information, and communication technology, and pulled by the expanding complexity, scope, and scale of today's challenges. The capacity of this technology has crossed thresholds that now make possible a comprehensive cyberinfrastructure on which to build new types of knowledge environments and organizations and to pursue research in new ways and with increased efficiency. The emerging vision holds that a rapidly expanding cyberinfrastructure (Atkins, 2003) will yield more ubiquitous as well as comprehensive digital environments that become interactive and functionally complete for research communities drawing together people, data, information, tools, and instruments all operating at unprecedented levels of computational speed, storage, and data transfer capacities.

The Dominance of Markets

The nation's research universities are similarly being changed by strong economic forces triggered by increasing competition and the government's reliance on market mechanisms to distribute public subsidies. One result could be the same kind of massive restructuring experienced by other sectors of the economy—for example, health care, transportation, communications, and energy to name just four.

More generally, what the modern university may be experiencing are the early stages of a process whose logical outcome is the emergence 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 (Peterson and Dill, 1997, p. 3-29).

One of the principal drivers of this process is the world-wide movement toward revenue-driven, market-responsive systems of higher education. In large part, this emphasis on raising revenues (as opposed to controlling costs) is the recognition that taxed-based revenues cannot support the massification of higher education required by knowledge-driven economies, on the one hand, and, on the other, the demands of an ever increasing proportion of the population for a university degree. Among many of higher education's key supporters and funders there is also a growing recognition that the conventional model of public funding for universities, with its emphasis on high public subsidies coupled with low student tuitions, is in itself highly regressive amounting to a subsidy of education for the rich by the tax dollars paid by the poor.

Some might argue that this emphasis on the pursuit of market revenues in lieu of public appropriations need only be temporary. A decade or two down the road a new generation of citizens will restore a more appropriate balance between the consumption needs of an aging population and the educational needs of the young.

The problem is that, while it is relatively easy to start markets, it is very hard to stop them. The world of higher education is at a point where resistance to market forces no longer yields resilience—instead the discipline of the market virtually guarantees a Darwinian process in which only the financially fit will survive.

WARNING SIGNS

The sum of these forces—the dominance of the market, the changing nature of research, the push-pool of the new electronic technologies, the politics of diversity, and the changing nature of student demands—suggest that what way may be at hand is a fundamental remaking of universities, not just in the United States but world-wide.

The danger is that universities will want to believe they remain largely immutable. The university, after all, is one of but a handful of social institutions to survive in

recognizable form for a thousand years and more. Who is to say it would not endure in much its present form for another millennium?

We are not so sure. From our perspective, the ideal of a research-intensive university is now at a tipping point. Once the forces of change carry universities beyond that point, they will have entered a different era.

More than that, they will become fundamentally different institutions no longer in control of their own destinies. The warning signs are clear and present--to ignore them will likely lead to universities that are no longer all that they should be.

Warning Sign 1: Darwinian Competition

The often corrosive effects of often unbridled competition is increasingly being reflected in the market focus of a growing number of universities. It is arms race that escalates yearly, as institutions of every stripe compete ever more aggressively for better students, better faculty, government grants, private gifts, prestige, winning athletic programs, and commercial market dominance.

At the same time the growing gap between faculty salaries characterizing private and public research universities are creating a Darwinian ecosystem in which wealthy elite universities have become predators feeding on the faculties of their less well-endowed prey, causing immense damage to the quality of the latter's programs by luring away their top faculty with offers they are unable to match.

Warning Sign 2: Commercialization of the Academy

A second warning sign is reflected in the efforts of universities and faculty members to capture and exploit the soaring commercial value of the intellectual property created by their research and instructional activities. As in the dot.com inspired investments in e-learning enterprises, research universities are focusing increasingly on for-profit ventures intended to provide the sponsoring institution robust and stable sources of revenue.

This pursuit of profits is proving both infectious and diverting. In the near term, universities and their faculty members are likely to find themselves setting aside fundamental values such as openness, academic freedom, and a willingness to challenge the status quo, in order to accommodate this growing commercial role of the research university (Press and Washburn, 2000, p. 39-54).

Warning Sign 3: From Public Good to Private Benefit

There is a deeper issue here. The American research university has been seen as an important social institution, created by, supported by, and accountable to society at large. The key social principle sustaining the university has been the perception of education as a *public good*—that is, the university was established to benefit all of society. The irony is that today, even as the needs of society for postsecondary education intensifies, there has been a visible erosion in the notion that universities provide a public good deserving of strong societal support (Zemsky, 1997).

State and federal programs have shifted from investment in the higher education enterprise (largely in the form of appropriations to institutions for the benefit of students) to investment in the marketplace for higher education services (most often through direct grants, access to capital, and indirect tax benefits to students and parents).

This shift from the perception of higher education as a public good to one that can best be described as an individual benefit has yet another implication. To the degree that higher education was a public good, benefiting all (through sustaining democratic values, providing public services), one could justify its support through taxation of the entire population. But viewed as an individual benefit, public higher education is, in fact, a highly regressive social construct since, in essence, the poor subsidize the education of the rich, largely at the expense of their own opportunities.

The implications are that the marketplace coupled with a commitment to provide educational opportunities to all, regardless of economic ability, will increasingly drive many of the best public universities toward high-tuition, high financial aid policies in

which state support becomes correctly viewed as a tax-supported discount of the price of education.

Warning Sign #4: The Loss of Public Purpose

In this process of responding to the market place by privatizing public higher education the nation is in the process of diminishing the importance of the university as a place of public purpose.

.At best, markets can be shaped by informed consumers and guided by government regulation meant to constrain the most egregious effects of unchecked competition.

At the moment higher education in the United States has few informed consumers—what most students and their families seek is a competitive edge for themselves and their children, an outcome that can best be secured by focusing on institutional prestige rather than educational quality.

Nor have governments demonstrated either the skill or inclination to enter the arena as regulators—in part because most public officials have been persuaded that universities are complex enterprises that, for the most part, can only be understood by those steeped in the traditions of the academy; and in part because these same public officials now have a vested interest in having public institutions succeed as market enterprises.

What is at stake are those core values and traditions that have afforded the research university its historic standing. Will the university retain its special role and responsibilities, its privileged position in society? Will it continue to prepare young students for roles as responsible citizens? Will it provide social mobility through access to education? Will its scholarship in pursuit of truth and openness continue to challenge society? Or will the university become, both in perception and reality, just another interest group defined largely by market forces?

A FINAL OBSERVATION

For American universities there is at least one more warning sign: the unforeseen and too often unrecognized rise of the European university as an important competitor.

Today European universities are on the edge of a parallel breakthrough. The European Union has laid out an ambitious plan of scientific investment that has at its core a pledge to create annual investment funds equal 3.5 percent of the E.U.'s gross-domestic-product (GDP). The Bologna Process and the newly established European Research Council hold out the promise of an re-invigorated set of universities with greater flexibility, more attention to market forces, and more willing to invest in the entrepreneurial instincts of their faculty.

The only remaining stumbling block is the resistance by many to the concentration of resources in fifty or so research-intensive universities. But that too is likely to change under the pressure of budget constraints and market competition.

Three possibilities describe the likely future of research universities on either side of the Atlantic. The least attractive is an era of unbridled competition, spurred in part by Europe's search for greater independence and the United States' pursuit of continued hegemony.

The least likely future is an era of cooperation in which is there is a pooling of expertise and ambition made possible by a conscious political as well as academic decision to forgo the pursuit of competitive advantage.

The middle path is one of competition mediated by cooperation. It is a path that would allow universities to shape but not control their own futures. But it is also a path that begins with a frank recognition of the current centrality of market forces and then moves with forthrightness to address the questions of the changing nature of research, the push-pull of technology, the politics of diversity, and the shifting nature of student demands.

Done right, it is a future that promises universities that are being remade in their own image.