

Introduction

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This volume poses a question of pressing importance to the American people. Today, 150 years after the Morrill Land-grant Act generated the reigning paradigm of public higher education in the United States—a model combining accessible and inexpensive undergraduate, graduate, and professional education; research, discovery, and innovation; a commitment to the practical application of knowledge to address economic and social challenges; and a mission of service for the public good—our great public universities are under threat, and some would say they are facing their hour of maximum peril.

They are among the finest centers of education and knowledge creation anywhere. Seven of the top twenty research institutions in the world according to a recent ranking are American land-grant universities (see, in this volume, Yudof and Callaghan, n. 3), and as such they strongly support, with their private peers, Fareed Zakaria's observation that "Higher education is America's best industry" (190). America's public universities greatly exceed their private peers in scale and in the importance of their contribution to national prosperity, competitiveness, and security. They perform more than 60 percent of the academic research and development in the nation. They educate some 85 percent of the students who receive bachelor's degrees at all American research universities, and 70 percent of all graduate students. They award more than 50 percent of the doctorates granted in the United States in eleven of thirteen national needs categories—including between 60 to 80 percent of the doctorates in computer and information sciences, engineering, foreign languages and linguistics,

mathematics and statistics, physical sciences, and security. Without the expansive capacity they provided after World War II to receive returning veterans and, later, the children and grandchildren of the veterans' generation, America's postwar prosperity and power would have been unthinkable and unattainable.

But today the nation's public research universities are looking down a dark vista of decline, with few discernible paths forward that would effectively sustain, let alone enhance, the public mission forged when Abraham Lincoln signed the Morrill Land-grant Act on July 2, 1862. It is a vista defined by steeply declining state appropriations, by wavering, at-risk federal investment in research, and by aging physical plants that are less and less adequate to meet the educational needs of a growing population and national needs for research-based problem solving. Reduced public funding, moreover, drives relentless upward pressure on tuition, undermining the historical commitment to a low-cost college education for all and putting public higher education on a collision course with a growing body of feeling and commentary that college may simply not be worth it. And thus the question posed in the title *Precipice or Crossroads?* comes into focus: Our public research universities are the nation's most productive centers of education and talent development, not just of physicists, engineers, biologists, and computer scientists, but also of the practitioners of virtually all of the professions and callings that together weave the fabric of our society, from nurses, social workers, accountants, and physical therapists to designers, artists, dancers, and writers; they are our most prolific sources of research, discovery, and innovation, not just in science and technology but also in philosophy and ethics, in public policy, in education itself, indeed in almost everything; can the nation, then, remain prosperous, strong, and healthy if these critical institutions have been sent careening toward a cliff edge, and can that hair-raising course be changed?

Of course, we have not yet reached the verge of the precipice, and in many respects our great public universities have never been stronger and more effective. But here is the paradox: we know that these powerful institutions, their missions of accessible education, knowledge creation, and service, and their world-leading quality are at risk when we look at the unsustainable trend lines in public funding and tuition pricing. As I was writing this introduction, I paused to read a just-published news story on public higher education reporting that nationwide "[s]tate appropriations per full-time equivalent student dropped by 4 percent in constant

dollars in 2010–11, after dropping 6 percent in 2009–10 and 9 percent in 2008–9” while in-state tuitions rose an average of 8.3 percent (paced by a 21 percent increase in California), and, moreover, that “in 2010, average American income in every quintile of the income distribution was lower in inflation-adjusted dollars than it had been a decade before” (Supiano). We only have to juxtapose these data points with the observation of Michael Crow and William Dabars in their chapter of this book that “there is a direct correlation between fiscal robustness and the capacity of an institution to pursue excellence in teaching, research, and public service, as well as its potential to contribute to the standard of living and quality of life of communities and regions” to see the vicious downward spiral threatening our public universities and American well-being as economic and political forces increase institutional reliance on tuition, pushing student costs toward levels beyond the reach of many families. Either students will be squeezed out, or institutions will lack the fiscal robustness to sustain excellence, and, in time, both of those undesirable consequences will come to pass. So the first part of the question this book poses is frankly rhetorical, the answer implicit in the question itself: the nation’s public university sector, the most important source of renewal of the nation’s human resources and of its capacity for innovation, problem solving, and economic competitiveness, is at risk; ergo, so is the nation.

The second part of the question—Can we keep from going over the precipice? Can difficulty and challenge become opportunities for the change in course symbolized by the crossroads in the title of this book?—is an open one, no doubt as open as a variety of questions that might be posed about the fate of the nation itself. Despite the forces at work at the moment that militate against government funding of any number of public goods, from high-speed rail and broadband access to health care and education, it is my belief that our great public universities—and, in turn, the nation—will decline if the political currents are not reversed, and specifically if the tide does not turn on state and federal support for public research universities. It is my hope that this volume will help to inform and fortify the efforts and voices of those who campaign for such a turn. For while it is incumbent on the leaders, the faculty, and the staff of public universities to manage the resources entrusted to them as effectively as possible, and while private giving will always play an important role in supporting the pursuit of academic excellence, only sustained, robust, and predictable funding from the states and the federal government can

ensure that the nation will continue to derive at globally competitive levels the numerous benefits that public higher education provides.

A few years ago, the *New York Times* reported on China's effort "to transform its top universities into the world's best within a decade . . . spending billions of dollars to woo big-name scholars . . . and to build first-class research laboratories," an essential element of China's project to "raise its profile as a great power." The *Times* quoted Wu Bangguo, Chairman and Party Secretary of the National People's Congress in the People's Republic of China and the nation's second-highest-ranking leader, as saying, "First-class universities increasingly reflect a nation's overall power," to which I would add that they not only reflect but to a significant degree build that power (and if power *per se* is not your thing, substitute prosperity, health, quality of life). It would be tragic if the American people were to forget this lesson in nation building, inscribed in the Morrill Land-grant Act at a crucial turning point in American history, just as other nations on the rise are taking it to heart (French, A1). "The only way to gain more leverage on China," writes Thomas Friedman in a recent *Times* column, "is to increase our savings and graduation rates—and export more and consume less" ("Barack Kissinger Obama"), and let us say amen to the graduation rates, a concern indicative of Friedman's agreement with Wu Bangguo's view of the relationship of higher education to the strength of nations.

The essays in *Precipice and Crossroads* are by several hands, but it has been our aim for them to function together as an integrated, systemic treatment, on a collaborative basis, of a well-defined and pressing subject. The volume was conceived as part of a broad-ranging effort to recognize the Sesquicentennial of the Morrill Act. Every one of its chapters thus has significant reference to the history and legacy of the Act. But our notion from the start was that the book would look forward more than backward. In addition, we aimed to expand its scope beyond the particular institutions that carry designations as land-grant institutions to all of the public research universities that in important ways have been shaped, in their character and their missions, by that powerfully generative legislation.

We open with "Democracy, the West, and Land-Grant Colleges" by historian Coy F. Cross. Cross provides the historical context for the Morrill Act. He shows how westward expansion, tied to the belief of nineteenth-century Americans in opportunity and democracy, infused the commitment Morrill inscribed in the original legislation to the democratizing of access to higher education. Cross also shows how science-based European

challenges to American agriculture, a mainstay of the American economy in the years leading up to the Civil War, played into the thinking of Jonathan Baldwin Turner, Horace Greeley, and Justin Smith Morrill himself about the need for bringing agricultural sciences into the postsecondary curriculum. The most influential editor of his time, Greeley campaigned hard for agricultural colleges in what was effectively the nation's paper of record, the *New York Tribune*, arguing that Americans needed to "make the most of what we have, by diffusing, studying, discussing, criticizing, Liebig's *Agricultural Chemistry*, Dana's *Muck Manual*, Waring's *Elements*, and the books that each treat more especially of some department of the farmer's art, making ourselves familiar, first, with the principles, then the methods, of scientific, efficient, successful husbandry." Greeley established his own farm at Chappaqua as an "experimental station."

In 1857, when Justin Smith Morrill first introduced a land-grant bill to create agricultural colleges, the Vermont congressman argued for the constitutionality of his proposal against massed Southern opposition, making the case well enough that the legislation passed both houses of Congress, only to be vetoed by President James Buchanan. Not until Abraham Lincoln had taken office and Southerners had deserted the U.S. Congress for the Confederacy was Morrill able to pass "AN ACT Donating Public Lands to the several States and Territories which may provide Colleges for the Benefit of Agriculture and Mechanic Arts" (the official title of the Morrill Land-grant Act). The 1862 legislation was broadened from its 1857 version by adding to agriculture the study of the mechanic arts and military tactics, by a commitment to "the liberal and practical education of the industrial classes," and by the stipulation that the colleges thus funded would not exclude "other scientific and classical studies." Early in his essay, Cross invokes the famous 1893 address Frederick Jackson Turner delivered to the American Historical Association on "The Significance of the Frontier in American History," and, toward the end, he cites Turner's 1910 Commencement Address at Indiana University, "Pioneer Ideals and the State University." In what must be one of the least platitudinous and longest specimens in the history of commencement addresses, Turner presents (in fifteen densely argued pages in the reprinting of his address in the *Indiana Magazine of History*) an argument that the nation's state universities are expressions of its democratic spirit and essential agents for the maintenance and success of American democracy (Ridge 210–19).

That democratizing and uplifting force is clearly evident throughout Carolyn R. Mahoney's "The 1890 Institutions in African American

and American Life,” an informative essay about the eighteen historically black colleges and universities (HBCUs) that received land-grant designations as a result of the second Morrill Act of 1890. The 1890s, as they are known for short, have been exemplars of the land-grant ideal of democratic access, making it possible for hundreds of thousands of African Americans (and nonblack students as well) to earn bachelor’s, master’s, doctoral, and professional degrees (including law and veterinary medicine) regardless of race and socioeconomic status. Their contribution to developing the human resources of the African American community and of the nation has only increased over time. Without the impressive roster of their highly accomplished graduates—from Ralph Ellison and Wilma Rudolph to Ronald McNair, Oprah Winfrey, Jesse Jackson (Sr. and Jr.), and James Clyburn—the nation would be far poorer, and its prospects dimmer. Through research, graduate, and professional education, and through their extension services, they address a wide range of fields and of community and national needs, ranging from sustainable agriculture and waste management through the biomedical sciences to food and nutrition sciences and international development. Mahoney’s is simply the best survey I know of the breadth and scale of these institutions and of their historic and continuing contribution to American life.¹

In the following two chapters leaders of two of the nation’s largest universities address the purposes of public higher education in terms that are distinctive yet highly resonant with each other. In “The Modern Public University: Its Land-Grant Heritage, Its Land-Grant Horizon,” E. Gordon Gee, president of The Ohio State University (with some 56,000 students on the main campus in Columbus), emphasizes continuity and change. He sees America’s public research universities as continuing the original Morrill Act vision of democracy and access through their stewardship of the nation’s “founding promise to create a meritocracy based not on wealth or family connections but on ability, determination, and effort.” At the same time, Gee challenges universities to be open to fundamental change, insisting that they must be highly flexible and adaptable in order to build to the highest levels their capacity to develop solutions to the “wicked problems” before the nation and the world—problems that are complex, long-term, and resistant to traditional linear analysis and that therefore require solutions forged through the multidisciplinary resources of complex universities: “To connect and extend the original ideals of the land-grant institutions to the modern era, we whose business it is to mind the mighty engine of a public university must reimagine, reinvent,

even reconceptualize the university, not merely re-thinking what we do, but, more fundamentally, re-thinking what we think, re-thinking what the American university is and what it is capable of achieving.” The public and university leaders have in Gee’s view a “sacrosanct social compact” that today requires a “full-scale recommitment.”

The higher education budget passed in California for the current year (2011–12) cut the University of California System by \$650 million, the California State System by the same amount, and the California Community Colleges by more than \$500 million. For the University of California and its ten campuses, the cut came to a little more than 23 percent of the appropriation in 2010–11. Little wonder, then, that tuition in California rose 21 percent for the current academic year, and no wonder, too, that the chapter by University of California president Mark G. Yudof (co-authored with his colleague Caitlin Callaghan) unfolds against a backdrop of crisis. In “Commitments: Enhancing the Public Purposes and Outcomes of Public Higher Education,” Yudof and Callaghan endorse as strongly as Gordon Gee the Morrill Act’s spirit of democratic access and opportunity, but that spirit, they declare, is “under threat” due to cuts in public funding of such magnitude that the institutions are struggling to maintain quality and are being pushed willy-nilly toward privatization. Privatization is not only out of synch with the democratic and egalitarian spirit public research universities have embodied for the last 150 years, but it also curtails access and shifts enormous burdens to students and their families: “Even with scholarships,” observe Yudof and Callaghan, “full pricing limits access for many families. And when students from less affluent families do find ways to attend, their educations can suffer from the demands of part-time or full-time work, the pressure to graduate on time, and the strain of growing student loan debt.”

Yudof and Callaghan describe public higher education as a hybrid public-private good, but they see the balance in public policy and perception shifting heavily toward the private side, fueled by the increasingly prevalent feeling that “only students should be responsible for their educations.” America’s great public research universities “all arose from the extraordinary nature of the state government-public university compact,” and the ongoing crisis has developed because “more and more Americans no longer believe the compact is important.” Tellingly, Yudof and Callaghan note that it is less the economy than the political process that is broken, at least in California, where the \$26 billion budget gap is just 1.3 percent of the state’s \$2 trillion economy. Yudof and Callaghan close,

accordingly, with a call for a “new national higher education compact” in which universities are committed to subjecting their operations to a “private sensibility” in order to “establish realistic priorities, eliminate weak programs, adopt money-saving information technology services, and aggressively reduce waste”; in which states “rededicate themselves to supporting . . . universities’ core functions”; and in which the federal government finds some way to contribute to the support of core institutional costs without creating a pretext for further state disinvestment. Such a new compact would demonstrate “a public commitment to, and understanding of . . . [the] societal value” of public higher education. Meanwhile, I would add, the middle class is increasingly squeezed out in a travesty of the land-grant ideal of access for all: “Over the past 10 years,” reports the Orange County Register (Schaefer), “the proportion of middle-income students attending the University of California has declined at nearly twice the rate of California middle-income households, while the share of lower- and upper-income UC students has risen.”

David E. Shulenburg’s chapter on “Challenges to Viability and Sustainability: Public Funding, Tuition, College Costs, and Affordability” is a data-rich exploration of the funding, operating costs, and pricing of public research universities. In addition, Shulenburg enlarges on a theme touched on in other chapters in *Precipice or Crossroads?*, the growing resource disparity between public and private research universities. Shulenburg’s data and analysis support conclusions that contradict many oft-repeated pseudo-facts and truisms in the national dialogue about higher education. He adduces a variety of studies, for instance, showing that the return on investment (ROI) that students and families make in educations at public research universities is significantly higher than the ROI at elite private universities, and that employers have a clear and decisive preference for graduates of the former.

Return-on-investment calculations, of course, focus on higher education as a private good, but Shulenburg provides a context by opening his chapter (after a helpful “Overview” section) with a summary he terms the “baseline” of the “incomparable contribution” public research universities make to society as well as to individual students. When he enlarges on that theme in a later section of his chapter, the private and public goods are writ very large, including, on the public good side, references to studies showing the “neighborhood effects” of higher education: for instance, “research findings that increases in the proportion of college degree holders in a given population lead to significant wage increases for those who

do not hold college degrees,” illustrating “why public subsidy that serves to increase the proportion of the population with college degrees is good for all of us.” Other public goods—beyond the significant role of public research universities in research, innovation, and technology transfer supporting regional and national competitiveness and economic vitality—include “reduced poverty; reduced public assistance expenditure; improved health (including a reduced propensity to smoke); greater cognitive skill development of children living with educated parents; increased willingness to volunteer, to give blood, to vote, and even to understand the opinions of others.”

Shulenburg’s data on the cost of operations at public research universities over time and on the cost and affordability of attending those institutions for students and families are eye-opening. For example, he shows that public higher education revenues per student have been almost flat in real dollars from 1985 to 2010 (the increase over the twenty-five years covered in that span comes to a little more than \$1,000, or roughly \$40 per year [Shulenburg’s Figure III]). He shows that public universities have controlled costs much more effectively than private universities (the rate of increase in the cost of education and related expenses per student at publics was roughly one-half the compounded annual rate of cost increases at privates from 1998 to 2008 [Shulenburg’s Figure XIV]). And he shows (see his Figure XV) that the cost of attendance as a percentage of median family income at public research universities remains quite low—and dramatically lower than at private universities: at the most research intensive private universities, sticker price in 2010–11 came to 74.3 percent of median family income, and the discounted price (after financial aid) came to 49.8 percent of median family income, compared to 15.7 percent (sticker price) at the most research intensive publics and to 12.9 percent (discounted price at research intensive publics after aid). These data provide a general context for the observation by Yudof and Callaghan that “four of our campuses, Berkeley, UCLA, Davis, and San Diego, *each* enroll more Pell grant recipients than the entire Ivy League combined.”

Shulenburg is not the only contributor to this volume who notes the growing resource gap between public and private research universities. Yudof and Callaghan point out that federal, state, and local appropriations to private not-for-profit and for-profit colleges and universities have grown steadily even as funding from those same public sources has declined as a percentage of all revenues at public institutions, drastically so

at the University of California. Duderstadt observes that public research universities “now find themselves caught with declining state support and the predatory wealthy private universities competing for the best students, faculty, and support” and that “a serious competitive imbalance has arisen in the marketplace for the best faculty, students, and resources, with private research universities now spending almost three times as much to educate each student.” Like Yudof and Callaghan, he suggests that this imbalance is in part due “to the degree to which current federal and state policies in areas such as tax benefits, student financial aid, research funding, and regulation tend to preferentially benefit and subsidize the high-cost nature of private institutions.” Shulenburger’s data put sharp teeth in such concerns. In 1980 there was rough parity between faculty salaries in public and private doctoral universities, but as Shulenburger shows (Figure VIII) by 2008–09 the gap was moving toward a 20 percent advantage for privates, and indeed data from the American Association of University Professors published in *The Chronicle of Higher Education* show that by 2010–11 that gap had widened farther, to about 25 percent (for example, the average full professor at a public doctoral university earned \$118,054, or 75 percent of the average of \$157,282 at private doctoral universities) (“Faculty Salaries Vary by Institution Type, Discipline”). It is hard to avoid the conclusion that as this trend continues the public institutions educating the vast majority of the nation’s undergraduate and graduate students—and conducting the great majority of the nation’s academic research and development—will increasingly find they can attract and retain only lower-quality faculty. Shulenburger shows other enormous resource disparities, including endowments per student at private research universities that average more than four times those of their public peers (Table 3) and expenditures per student at private universities that beggar those at the publics: for instruction at the most research intensive privates, \$49,286 per student in 2008–09 versus \$11,552 per student at publics; for academic support (for instance, libraries), \$10,804 per student at the privates versus \$3,290 at the publics; and for student services, \$5,833 at the privates versus \$1,291 at the publics (Figure VII). As Shulenburger is at pains to show, our great public universities still compete extremely well, arguably with better outcomes than the privates on some key metrics despite the resource disparity. But if these trends continue we may well ask whether the door to a democracy of opportunity through higher education opened by Justin Morrill in 1862 will become a passage to the cut-rate and second-rate, and, if it does so, whether the decline of public

institutions in relation to the much less inclusive and much less capacious elite private universities will glare out as yet another sign of destructive inequality in the United States.

Certainly, as we move to the next chapter, Michael Crow (who presides over the largest campus enrollment in the nation at Arizona State University) and his colleague William Dabars have no question that America's research universities have been indispensable in lifting the nation up. Their discussion of "University-Based R&D and Economic Development: The Morrill Act and the Emergence of the American Research University" derives from a broad body of research supportive of their view that "[t]he science-based technological innovation and industrial application that are the products of academic research are widely held to have been requisite to the trajectory of economic development that led the United States in the second half of the twentieth century to become what has been characterized as the 'world's superpower.'" And while their central thesis is there in a nutshell—without academic research there would be no innovation and industrial application, no economic development, no prosperity, no national preeminence—they also emphasize the importance of institutions that in America have led the world in combining basic and applied research with the education of students: "The economic contribution of research universities is closely tied to the basic and applied research conducted on their campuses, but of inestimable significance is their function in the production of human capital, which represents a critical national asset because of its impact on the creation of innovation capacity and thus the competitiveness of the American economy."

Crow and Dabars focus explicitly and almost exclusively on the little more than 2 percent of American colleges and universities classified by the Carnegie Foundation for the Advancement of Teaching as Very High Research Activity institutions, just 108 universities, of which 73 are public and 35 are private not-for-profit (including two private land-grant institutions, Cornell University and MIT).² Of great interest is their discussion of the importance of the Morrill Land-grant Act in the evolution of the modern research university, in part due to the "contemporaneity of the emergence of the modern American research university and the land-grant system"—six of the fifteen American institutions that emerged after the Civil War as the first modern American research universities were designated land-grants—and in part due to the paradigms and salient features of the land-grant institutions that in many respects shaped the ethos, emphases, and themes that weave throughout the history of the

American research university. One of the most important of these formative elements identified by Crow and Dabars is the decentralized nature of American higher education, which can be traced back to the rejection by the Constitutional Convention in 1787 of James Madison's proposal for the establishment of a national university. The Morrill Act reaffirmed and, as it were, extended and institutionalized decentralization, for the "land-grant system" is really not a system in any true sense: each land-grant institution operates independently of the others, and, with respect to governance, along the full spectrum from high degrees of institutional autonomy to significant elements of state-based (but not federally or nationally based) oversight and control.

The heterogeneous nature of American higher education fueled what Crow and Dabars (drawing heavily on the insights of Hugh Davis Graham and Nancy Diamond) term a "trajectory toward a decentralized and competitive 'academic marketplace,'" driven "particularly in the late nineteenth and early twentieth centuries . . . by regional competitive rivalries" and greatly accelerated and intensified after World War II by the competition for federal research dollars. Here, too, the land-grant ethos was a shaping force. The emphasis of the Morrill Act on such "useful arts" as agriculture and mechanics was foundational for the ascendancy of science and engineering in research universities and for the entrepreneurial bent of these state-based institutions that sought to be responsive to their economic environments, in service to the "shifting landscape of agriculture, business, and industry." While the utilitarian and scientific emphasis fostered by the Morrill Act could find expression in private universities as well (Harvard, Yale, and Dartmouth all established scientific schools in the mid-nineteenth century), Crow and Dabars remark that "in the estimation of some of the foremost experts in university-industry relations, public universities and 'especially those established under the Morrill Act affected the direction of the academic research enterprise during this period to a greater extent than the private Ivy League institutions.'" Cornell University, with its founder's motto that "I would found an institution where any person can find instruction in any study" and "its novel integration of the traditional humanities curriculum with science and 'practical' fields, especially engineering and agriculture . . . represented a new vision for a 'modern' university." When rising American research universities such as Cornell and MIT married the utilitarian bent for hands-on problem solving inscribed in the Morrill Act to the institutionalization of academic research pioneered in America on the Germanic model by The

Johns Hopkins University, the die was cast. By the early decades of the twentieth century, “[t]he rise of academic science . . . fostered the growth of science-based industry, which in turn increasingly correlated with economic development.”

While the federal land-grant under the Morrill Act was an important precedent for federal investment in academic research and development, massive federal investment that aimed not only to “maintain American military preeminence but also drive economic growth and improve the quality of life through the production of science-based technologies” was forged in the crucible of World War II and institutionalized through the creation of numerous federal agencies under the guiding spirit of Vannevar Bush, who had directed the wartime Office of Scientific Research and Development. In addition to the rise of federal agencies such as the National Science Foundation and the National Aeronautics and Space Administration (both founded in the postwar years), of the National Institutes of Health (which predated the war but which was massively expanded and reconfigured, as suggested by the pluralizing of Institute in 1948), and of great national laboratories staffed by university-trained scientists and technologists, Crow and Dabars emphasize the importance of the Bayh-Dole Act of 1980, which allowed “universities for the first time to patent the results of federally funded research,” thus transforming “relations between academic institutions and business and industry.” The Bayh-Dole Act was one of the critical elements that ensured that “the trajectory of economic competitiveness that marked the postwar era” would continue to be “primarily the product of the teaching and research that take place in our universities.”

Crow and Dabars follow the historical discussion in the first half of their chapter with a detailed, informative treatment of approaches to assessing and quantifying the contribution of university-based research and education to local, regional, national, and global economic development and competitiveness. They treat not only the contributions of research universities to economic development through discovery and innovation but also the important role of research universities in human capital production through their programs of undergraduate, graduate, and professional education and training. Throughout, they emphasize the key role of advances in science-based technology for economic productivity. They cite authorities who have calculated that some 85 percent of the gains in productivity and standard of living in the twentieth century arose from technological advances. Throughout, they stress the preeminence

of research universities in the “‘Triple Helix’ of university-industry-government innovation” and in the broader ecology of entrepreneurship and national systems of innovation. They also warn that “[e]ntrenchment in discipline-based departments” promotes “individualism over teamwork and the discovery of specialized knowledge over problem-based collaboration” and advise that “[t]he amalgamation of transdisciplinary and trans-institutional frameworks has the potential to advance broader social and economic outcomes.”

Crow and Dabars close with an alarm and an exhortation. The alarm is clear and present: with “[t]he American economy . . . at a crossroads,” with “the prosperity we have known during the past seventy years . . . increasingly imperiled,” and with “nations worldwide . . . investing strategically to educate broader segments of their populations,” “America has allowed its research universities . . . to lose their adaptive capacities”: “For the first time in our national history, we risk broad decline as a consequence of the insufficient adaptation of our institutions and the disinvestment that characterizes our policies toward higher education.” The exhortation brings them full circle to the service mission integral to Justin Morrill’s land-grant vision. Research universities, say Crow and Dabars, must “explicitly embrace a broader societal role” in highly innovative ways: “If research universities are to create knowledge that is as socially useful as it is scientifically meritorious, they must integrate their quest to advance discovery, creativity, and innovation with an explicit mandate to assume responsibility for the societies they serve,” which might entail “ambitious and multifaceted public outreach and engagement programs dedicated to societal advancement and regional economic development” and which must include “a commitment to the production in sufficient numbers of scientists and engineers and artists and philosophers and economists and doctors and lawyers—in short, the human capital from which we draw our future leaders in every sector.”

For John Hudzik and his colleague at Michigan State University, President Lou Anna K. Simon, it is imperative that the Crow and Dabars call on research universities to assume responsibility for the societies they serve be extended beyond locality, region, and nation to the world. They urge, as the title of their chapter proclaims, that research universities move “From a Land-Grant to a World-Grant Ideal: Extending Public Higher Education Core Values to a Global Frame.” Hudzik and Simon frame the core land-grant values as “quality, inclusiveness, and connectivity”: “the pursuit of quality in teaching and research relevant to societal needs, inclusiveness to diversify student access and widen the content of subject

matter for higher learning, and connection of higher education missions to community needs and aspirations.” Today, they urge, the “backyard” of the community a given institution serves must include the world, for “[i]n a world as interrelated and complex as ours, it is increasingly difficult to imagine any significant challenge in the context of a single location.” They illustrate this point with numerous examples, including, among many others, transnational food systems affecting food safety; the house-of-cards interconnectedness of global financial and banking systems; and the borderless dimensions of such matters as infectious disease control, energy consumption and management, and environmental sustainability. Clearly, they suggest, applied problem solving of such global challenges requires universities to embrace global engagement and responsibilities.

As in other chapters in this Sesquicentennial volume, Hudzik and Simon provide some historical context, both affirming a continuity of values extending from the original land-grant ethos to their world-grant ideal and allowing that for much of the nation’s existence “a powerful inwardness drove U.S. social, political, and cultural frames of reference” and that “[i]t was not a global environment to which the Morrill Act originally responded.” They observe that World War II and its aftermath—including the imperatives of the cold war, concerns about American scientific and military preeminence (crystallized in the nation’s consciousness by the launch of Sputnik in 1957), and increasing disquiet about America’s place in the world (captured in 1958 in Eugene Burdick’s best-selling *The Ugly American*)—made for “a massive reorientation of the American frames of reference” and a decisive departure from the nation’s historic isolationist bent. Thus began what Hudzik and Simon describe as Stage 2 of the institutional engagement of land-grant universities (Stage 1 was, of course, domestic, both local and national). Stage 2 was characterized by expanding engagement abroad both in postwar reconstruction and in international development work in other parts of the world. By and large, such work was “more assistance than partnership per se,” conditioned by an assumption of American superiority and a belief that we had much to teach but little if anything to learn from those with whom we worked abroad. Even so, Stage 2 was marked by the expansion of international engagement opportunities for faculty, students, and staff and by internationalization of curricula, some of it in language and area studies supported through the cold war–driven National Defense Education Act.

Hudzik and Simon describe Stage 3, now under way and still developing, as distinctive in several ways. Globalization—our recognition of “factors and forces that transcend borders and sovereign states”—calls

on universities to pursue a much more “comprehensive internationalization,” a commitment, confirmed through action, to infuse international and comparative perspective throughout the teaching, research, and service missions of higher education. It shapes institutional ethos and values and touches the entire higher education enterprise. It is essential that it be embraced by institutional leadership, governance, faculty, students, and all academic, service, and support units. It is an institutional imperative, not just a desirable possibility.

Comprehensive internationalization requires American institutions to embrace true partnerships abroad, with reciprocal teaching and learning and mutual benefits, or, in Hudzik and Simon’s terms, co-creation of co-prosperity. Engaging in this way, American research universities face a variety of challenges outlined by Hudzik and Simon, including, among others, the acceleration of research productivity in other nations (they report that “[t]he increased output of scholarly publications in the sciences and engineering between 1988 and 2008 was about 17 percent in the United States, about 60 percent in Europe, and in triple digits in Asia”) and the “rising inability globally—and clearly in the United States as well—for traditional public funding mechanisms to meet and sustain growing capacity needs.”

Hudzik and Simon lay out very clear rationales—a “Business Model Rationale,” a “Client/Customer Rationale,” and a “Social Needs Rationale”—for why American research universities should rise to meet these challenges through “world-grant” comprehensive internationalization. They detail what comprehensive internationalization would mean, when fully realized, for the education of students and the work of faculty and staff, for academic curricula and programs, for research and scholarship, and for the local communities universities serve. Universities should routinely provide “opportunities to connect local constituencies to global opportunities and learning.” They describe a variety of assets and attitudes that universities must develop in order to meet these challenges. And they review in detail two sets of “tensions” universities must address to move successfully from a land-grant to a world-grant orientation. “Constructive tensions,” including such pairings as “global/local, liberal/professional, rural/urban,” may inspire innovation that “bends and penetrates political, geographical, disciplinary, and cultural borders.” “Disruptive and counter-productive tensions” include our comfort with old ways that have yielded success in the past; disciplinary arrogance; the assumption that internationalization is the business of other people’s disciplines but not of one’s

own; elitist ranking schemes that affront values such as democratic access and that privilege theoretical and abstract work over practical and applied work in many fields, including some of the professional disciplines; and a misguided tendency to pit efforts in the domestic and international domains against each other, framed as a “zero-sum” game. In the last third of their chapter, finally, Hudzik and Simon survey ways to reduce and overcome internal barriers to realization of the world-grant ideal, including the promotion of cultural change; the thorough documentation of desired outcomes in many domains (learning; research, scholarship, and engagement; and inclusiveness and connectivity); the promotion of faculty engagement; the design of portals for global collaboration (partnerships, hubs, and networks); and the thoroughgoing promotion and implementation of an “assist model” of collaborations without borders. Throughout their argument, the land-grant ideal flows into and feeds the world-grant vision precisely because, in their view, it is the “combination of research and engagement that holds the greatest potential to address local and world challenges.”

Networks of collaboration—in this case within large, statewide systems of public higher education—are also the theme of the chapter by Nancy L. Zimpher, Chancellor of the State University of New York, the nation’s largest system, and her colleague Jessica Fisher Neidl. In “State-wide University Systems: Taking the Land-Grant Concept to Scale in the Twenty-First Century,” Zimpher and Neidl lucidly and compellingly make the case that statewide systems such as SUNY are better positioned than other institutions—than single land-grant campuses themselves—to fulfill the mission and aspirations Justin Morrill envisioned for higher education in 1862. Frankly addressing the tensions that at times erupt between systems and campuses, particularly the flagship research universities—a theme touched on by James Duderstadt in our next chapter, where we read that “many public research universities today find themselves constrained by university systems, characterized both by bureaucracy and system-wide policies for setting tuition levels and faculty compensation that fail to recognize the intensely competitive environment faced by research universities”—Zimpher and Neidl present a case for striking a balance between high degrees of campus autonomy and appreciation of the special identity of each unit within the system, on the one hand, and, on the other hand, system-wide, coordinated policies and services that allow for the efficient and effective attainment of the public policy ends of appropriations for postsecondary education. Theirs is a compelling argument,

particularly if one has any qualms at all about the elite public land-grant research universities having become selective in admissions (in several notable cases, highly selective to the point of being exclusionary) against the grain of the democratic and egalitarian aspirations of the Morrill Act. A system such as SUNY can address this concern even while harboring and supporting several increasingly selective institutions heavily invested in research and graduate education because, as an integrated system with a wide array of four-year and two-year institutions, including community colleges with open admissions and vocational as well as liberal arts and general education programs, it can address the needs of the citizens, the communities, and the state it serves accessibly and affordably along the full range of aptitudes and career paths that Morrill intended the land-grant colleges to cultivate.

The State University of New York is massive. Today it includes “sixty-four schools, a mix of twenty-nine state-operated campuses, and five statutory colleges—including research universities, liberal arts colleges, specialized and technical colleges, health science centers, land-grant colleges—and thirty community colleges,” and it enrolls more than 465,000 students served by some 88,000 faculty and staff. Zimpher and Neidl have many points of reference in their chapter, including the recommendations made roughly a decade ago by the Kellogg Commission on the Future of State and Land-grant Universities, Clark Kerr’s exemplary California Master Plan for Higher Education (1960), and policies and initiatives under way in university systems from Florida and Texas to Wisconsin and California. But one special value of the Zimpher-Neidl chapter is that its central example, the living laboratory in which they have tested their concept of “systemness,” is the SUNY system itself, which Zimpher is actively engaged in transforming along a number of vectors, all of which illustrate the contention that statewide systems, through their “systemness,” can fulfill the historic land-grant mission of public universities more completely and successfully than individual institutions. One of these is a cohesive and coordinated commitment to statewide economic and community development responsive to changing workforce and societal needs, with the network of SUNY campuses serving as “anchor institutions” in their communities. Those campuses effectively cover the state: “93 percent of New Yorkers live within fifteen miles of a SUNY campus, and nearly 100 percent live within thirty miles. In many communities, SUNY is the region’s largest employer.” Cohesion and coordination of the system’s community engagement requires regular assessment of community needs and of the

responsiveness throughout the system of curricula and programs to those needs. Also required is attention to the development of programs for which there is rising demand and regular review of programs for which there is less or no demand and which may be outmoded—and a willingness to terminate them. The system is able to address state and national goals of improved retention and degree completion through intensive attention to articulation protocols that allow students to transfer general education credits and many credits earned within majors according to rules that are consistently and equitably applied at all system campuses. Such procedures greatly facilitate student progress and student advising. And while granting increasing autonomy to campuses in academic matters and internal resource allocation, the system is able to offer shared services in areas such as information technology, procurement, and risk management that produce material dollar savings, resources that can then be reallocated to the core mission of teaching, research, and service.

James J. Duderstadt, who has led another of the nation's truly world-class public research universities, the University of Michigan, focuses in "Creating the Future: The Promise of Public Research Universities for America" precisely on those institutions most likely to feel constrained by the centralized "systemness" Zimpher and Neidl espouse—on the major research institutions that were also the focus of Crow and Dabars. Duderstadt is currently serving on a Research Universities ad hoc committee of the National Academies, the charge of which is to answer the following question: "What are the top ten actions that Congress, the federal government, state governments, research universities, and others could take to assure the ability of the American research university to maintain the excellence in research and doctoral education needed to help the United States compete, prosper, and achieve national goals for health, energy, the environment, and security in the global community of the 21st century?" (National Academies). While the report of that committee will not come out for some months (like this book, during the Sesquicentennial year of the Morrill Act), and while Duderstadt in his chapter is speaking only for himself, and with a focus on public research universities (whereas the National Academies committee is considering all research universities, public and private), the argument he presents is informed and shaped by deep and long immersion in efforts to address the tightly framed and extremely critical question with which the ad hoc committee has been grappling. That question, furthermore, is set forth in language that recalls the visionary power of the Morrill Land-grant Act, which engaged

Congress, the federal government, state governments, and universities in a very American, decentralized way in actions designed to help the United States “compete, prosper, and achieve national goals.”

Duderstadt swiftly and lucidly recapitulates the history that made public research universities what they are today, the “backbone of advanced education and research in the United States,” noting the irony that these state-based institutions “were not created by the states themselves but instead by visionary federal initiatives,” the Morrill Land-grant Act of 1862 and the post–World War II expansion of federal investment in “campus-based research and graduate education” championed by Vannevar Bush. Duderstadt summarizes the challenge before us—“[T]oday, despite their importance to their states, the nation, and the world, America’s public research universities are at great risk.” The risk arises from multiple causes: in the states, not only increasingly inadequate funding but also “intrusive regulation and governance” and, in the broad universe of higher education, rising, indeed “predatory competition” from wealthy private universities at home and from “rapidly evolving international universities” that threaten the capacity of public institutions “to attract and retain talented students and faculty.” Yes, the states’ budget challenges are “painfully apparent,” and, yes, “the highly competitive nature of American higher education is one of its strongest features,” but “public research universities are critical national assets” and “[i]t would be a national disaster if the crippling erosion in state support and predatory competition among institutions were to permanently damage the world-class quality of the nation’s public research universities.”

Duderstadt’s analysis of current challenges is telling. First, changing public priorities and demands have put public research universities between the rock and hard place of being asked to do more with less: “[P]ublic support of higher education and research is no longer viewed as an investment in the future but rather as an expenditure competing with the other priorities of aging populations” and, on the heels of cuts in appropriations in many states ranging from 20 percent to 50 percent, “state governments are urging their research universities to wean themselves from state appropriations by developing and implementing strategies to survive what could be a generation-long period of state support inadequate to maintain their capacity, quality, and reputation.” Second, the relationship between universities and government is changing along very damaging lines, with governments intensifying their regulatory and accountability regimens in part, apparently, in an effort “to retain control over