TECHNOLOGY

ITS POTENTIAL IMPACT ON THE NATIONAL NEED TO IMPROVE EDUCATIONAL OUTCOMES AND CONTROL COSTS

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Remarks by William G. Bowen, Oct 13, 2014

Ithaka S+R

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Thank you, Jeff, for that overly gracious introduction. When President Leebron invited me to give this talk, I accepted at once because of my admiration for him and for Rice. I count as good friends a number of trustees and other luminaries, and I am especially sorry not to be able to greet today the late Gil Whitaker, who played a critical role in the creation of JSTOR. He was a visionary leader—and, more than that, a great man.

In these remarks, I am going to march right along so that there is time for discussion. Also, I will not hesitate to make assertions, which I hope you will feel free to challenge. I begin with a framing question:

How Are We Doing in Satisfying the Nation's Need for Improved Educational Outcomes?

The short answer is: not very well. In my view, we need to be more sharply focused than many of us are on the inability to date of our system of higher education to meet pressing national needs for both improved educational outcomes and restraints on cost increases. (Obviously, the quality of the education delivered is of great importance, but I do not deal with that issue in this talk because of its great complexity.) I suspect that at least some of us fail to appreciate fully the magnitude of what is (or is not!) transpiring at the national level, and that is why I am going to devote the first part of this talk to describing in some detail four specific dimensions of what seems to me to be a very serious and interconnected "nest" of problems. This is the context within which I hope many of the specific questions on this conference's agenda will be considered.

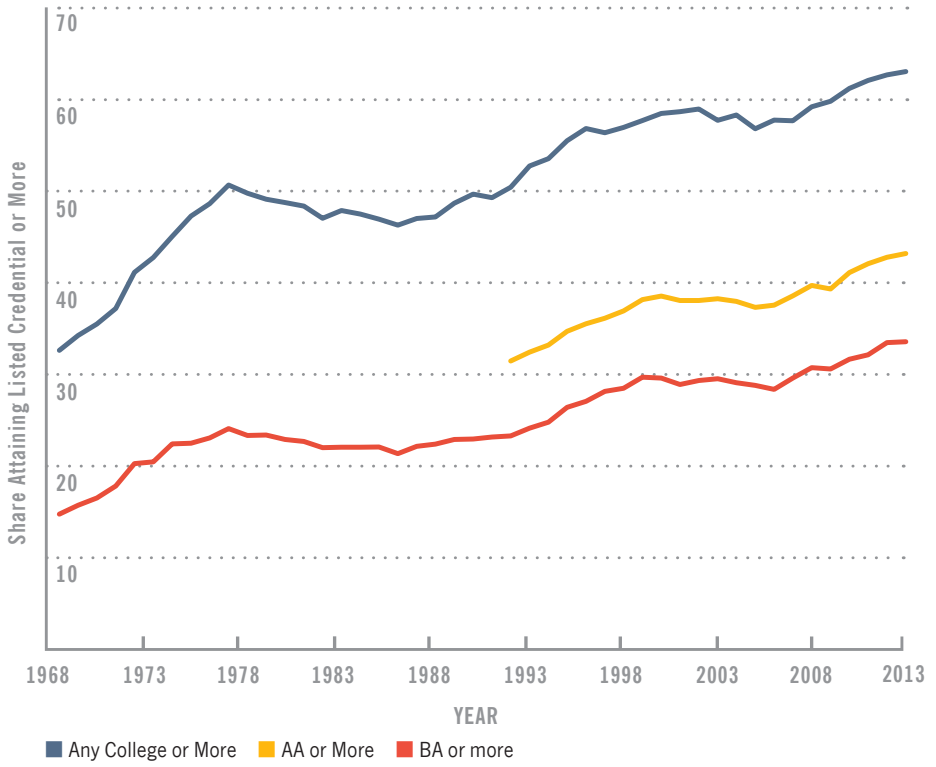
1. A Near-stagnant (and Low) Overall Rate of Educational Attainment

When Matt Chingos, Mike McPherson and I published *Crossing the Finish Line: Completing College at America's Public Universities* five years ago, we emphasized that educational attainment in the U.S. had been stuck on a plateau since the late 1970s. This unwelcome state of affairs followed a long period of steady increases in attainment, dating back to the "high school movement" of the early 1900s that was responsible for producing the base of college-ready students that made possible this country's remarkably high level of degree completion.[1]

1 See Figure 1.2 and associated commentary in William G. Bowen, Matthew M. Chingos and Michael S. McPherson, *Crossing the Finish Line: Completing College at America's Public Universities* (Princeton University Press, 2009). Claudia Goldin and Lawrence F. Katz deserve the credit for explicating both the long record of increasing educational attainment in the U.S. and the subsequent plateau (see Goldin and Katz, *The Race between Education and Technology*, Harvard University Press, 2008).

It would be a mistake, however, to assume that we are still on this plateau. More recently, there has been an uptick in the educational attainment of 25-29 year olds, with the percentage holding BAs or higher degrees increasing from 30 percent in 2007 (it was also 30 percent in 1999) to 34 percent in 2013. Figure 1 tells the story.[2] The most recent Lumina Foundation report (2014) presents different data that show essentially the same pattern.[3]

Figure 1. Educational Attainment of 25-to 29-year-olds, 1968-2013



Source: Current Population Survey

A key question is, can we count on continued improvement in overall measures of educational attainment? No one knows the answer. In its 2014 report, Lumina Foundation strikes an optimistic note (as did President Obama in his Northwestern talk on October 2, 2014), emphasizing that a Gallup/Lumina poll shows that "the hunger for higher education is stronger than ever." But the report is also careful to note that the changing demographics of America warn us that elements of the population with below-average attainment rates (especially Hispanics) are growing relative to the main group with above-average rates (the

2 I am indebted Matthew M. Chingos of the Brookings Institution for updating Figure 1.2 from *Crossing the Finish Line*.

3 See Lumina Foundation, *A Stronger Nation through Higher Education* (2014 Report). This document reports the same recent uptick in completion rates, although it uses a different base population group (25-64), a different data source (U.S. Census, American Community Survey), and includes both BAs and AAs in the numerator of its attainment ratio. Lumina reports that educational attainment measured in this way increased from 37.9 percent in 2008 to 39.4 percent in 2012.

white population); Lumina calculates that if attainment rates were to stay the same for all racial/ethnic sub-groups, the overall attainment rate would fall by roughly one percentage point between now and 2025.[4]

Another reason for caution in extrapolating progress is that we do not know how much of the recent uptick in attainment rates is due to the 2007-2008 recession.[5] As is well known, recessions induce more students to complete high school and college, for the simple reason that the main alternative—entering the labor market—is less attractive when jobs are hard to find. Most recently, full-time undergraduate enrollment was 3 percent lower in 2012 than in 2010, presumably because of improving conditions in the labor market. We should expect some part of the uptick in attainment rates to be eroded by this this enrollment dip, and one should be very cautious in predicting the slope of the prospective attainment rate curve.

One thing we do know is that the absolute level of educational attainment remains unacceptably low if the U.S. is to compete effectively in an increasingly knowledge-driven world—a world in which other countries have been improving their attainment rates much more rapidly than we have.[6] Highly relevant, as David Autor points out in *Science*, is that the skill premium associated with cognitive achievement is much higher in the U.S. than in any of the other 21 developed countries for which data are available. This is a clear market signal that more Americans need to complete college.[7] The economic incentives are clear, and the important question is why more Americans are not responding to them. This is an absolutely central issue that policy makers, educational leaders, and researchers need to confront directly.

4 *A Stronger Nation through Higher Education* (2014), p. 2.

5 Here is an important research question that, to the best of my knowledge, has not been pursued aggressively (if at all).

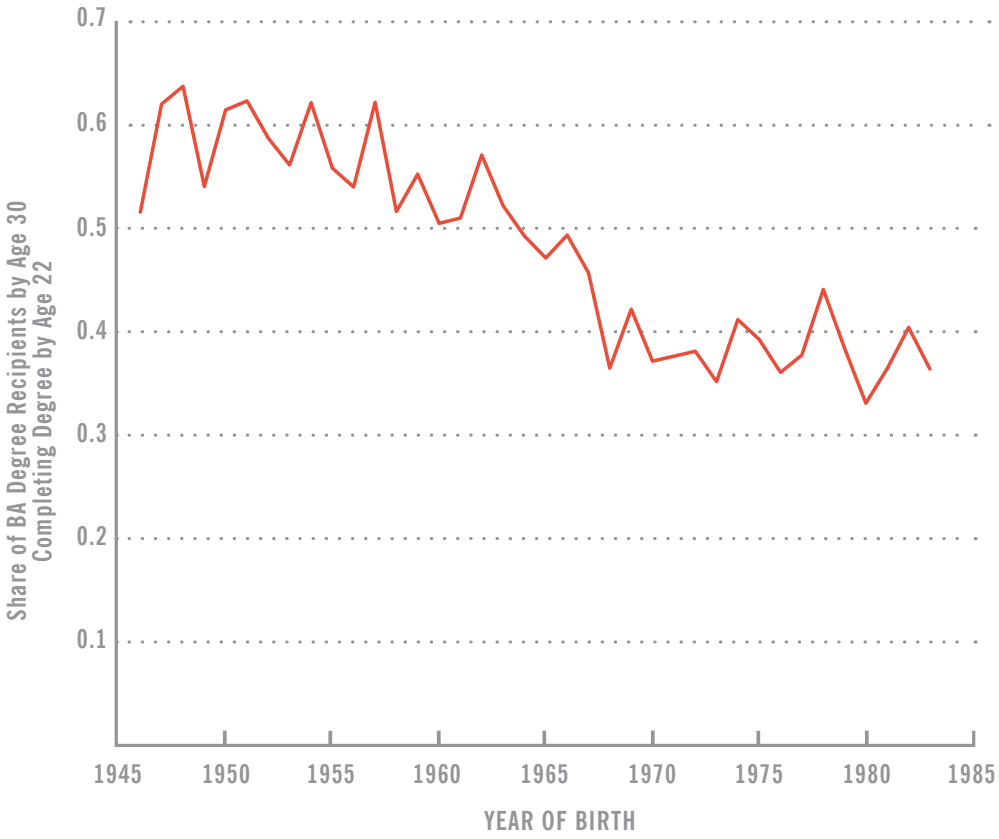
6 U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey" (IPEDS-EF: 90–99); IPEDS Spring 2001 through Spring 2013, Enrollment component. See *Digest of Education Statistics* 2013, tables 105.20 and 303.70.

7 David Autor, "Skills, Education, and the Rise of Earnings Inequality Among the 'Other 99 percent'," *Science*, 344, 843 (2014); May 23, 2014. This is an exceptionally well crafted discussion, written in non-technical terms, of why skill premiums have changed as they have in the U.S. Autor, a highly regarded economist at M.I.T., uses a simple supply/demand framework to great effect. He emphasizes that: "Demand for cognitive skills has increased steadily: "[The] ongoing process of machine substitution for routine human labor [benefits] educated workers who excel in abstract tasks that harness problem-solving ability, intuition, creativity, and persuasion—tasks that are at present difficult to automate but essential to perform" (p. 846). It is important to note that Autor is not talking about vocationally-oriented training, but about deeper, more flexible, and more transferrable skills. Supply of skills is more volatile than demand, and Autor tracks major changes on the supply side of the equation. He is careful to recognize that the power of supply and demand in the labor market does not make policy or actions by institutions irrelevant—not at all. See also David Leonhardt's article in the *New York Times*, "Is College Worth It? Clearly, New Data Say," *The Upshot*, May 27, 2014. Leonhardt points out that the pay gap between college graduates and everyone else reached a record high last year. He goes on to quote David Autor as concluding that the data tell us that we have too few college graduates, and too few people prepared for college.

2. Long (and Increased) Time-to-Degree

A second dimension of our problem is the long time-to-degree (TTD) experienced by many of the students who do earn baccalaureates. Aggregate data from the CPS reveal a trend of steep increases in the time it takes an average graduate to complete his/her studies that seems to have started with birth cohorts in the 1950s (who attended college in the mid-1970s) and lasted until at least the birth cohorts of around 1970 (who attended college in the late 1980s); see Figure 2.[8] The recent update of these data by ITHAKA colleagues suggests that the steady increase in TTD seems to have come to something of a halt among the birth cohorts of the early 1970s; subsequent increases have been very small (and are probably insignificantly different from zero). This finding is not surprising, given both the evident interest of at least some state systems in controlling increases in time-to-degree and the likely effects on students of increasing net tuition costs (see next section) associated with their staying in school for extended periods of time. In addition, the

Figure 2. Time to BA by Year of Birth, Share of BA Degree Recipients Completing by Age Twenty-two



8 We are indebted to Matthew Staiger for updating the CPS data compiled for birth cohorts from 1945 through 1970 by Sarah Turner (Sarah E. Turner, "Going to College and Finishing College," in Hoxby, ed., *College Choices: The Economics of Where to Go, and How to Pay For It*, NBER (September 2004), Figure 1.6).

aggregate data may well conceal important differences among sub-groups that are related to the increasing stratification of American higher education (time-to-degree may well be falling at top-tier public and private institutions at the same time that it may be continuing to increase at institutions that are more resource-constrained). This is another set of issues that deserves much more attention from researchers than it has received.[9]

In any case, the most important finding is that TTD has not fallen from its high levels and remains a very serious problem. A valuable window on this problem is provided by a careful comparison of evidence from two longitudinal databases (NELS-72 and NELS-88). Overall, the percentage of students completing their studies in four years fell from 58 percent for the earlier NELS cohort to 44 percent for those in the putative high school class of 1992.[10] According to the most recent CPS data available (refer back to Figure 2), under 40 percent of BA recipients complete their degrees by age 22, whereas the comparable figure was about 60 percent for cohorts born in the late 1950s.

Evidence shows that increased time spent on earning a BA does not result from students earning more credits (learning more), and increased TTD clearly raises costs for both individuals and institutions.[11] It is highly likely that the prospect of long time-to-degree deters some students from ever starting—never mind finishing—their degree programs, and thus contributes directly to low overall levels of educational attainment. Prolonged time-to-degree, then, is wasteful in and of itself, is a deterrent to raising completion rates, and is, as we will see in the next section, a contributor to increasing disparities in educational outcomes related to a child's place in the socioeconomic hierarchy.

3. Pronounced Disparities in Outcomes by Socioeconomic Status (SES)

A third, very troubling, "fact of life" is that in America today there are serious disparities in both completion rates and time-to-degree associated with socioeconomic status—and that, once again, the problem appears to have worsened in recent years. At the turn of the 21st century, the odds of earning a BA were *seven to eight* times higher for a student from a family in the top income quartile in which at least one parent graduated from college than for a student with opposite characteristics—i.e., from a family in the bottom income quartile with no parent having graduated from college (*68% vs 9%*).[12]

9 I am indebted to Sarah Turner for sharing with me her conjectures as to what is happening (in a phone conversation). The effects of the growing stratification of American higher education (growing differences of all kinds between the "have" and "have not" institutions) deserve careful study.

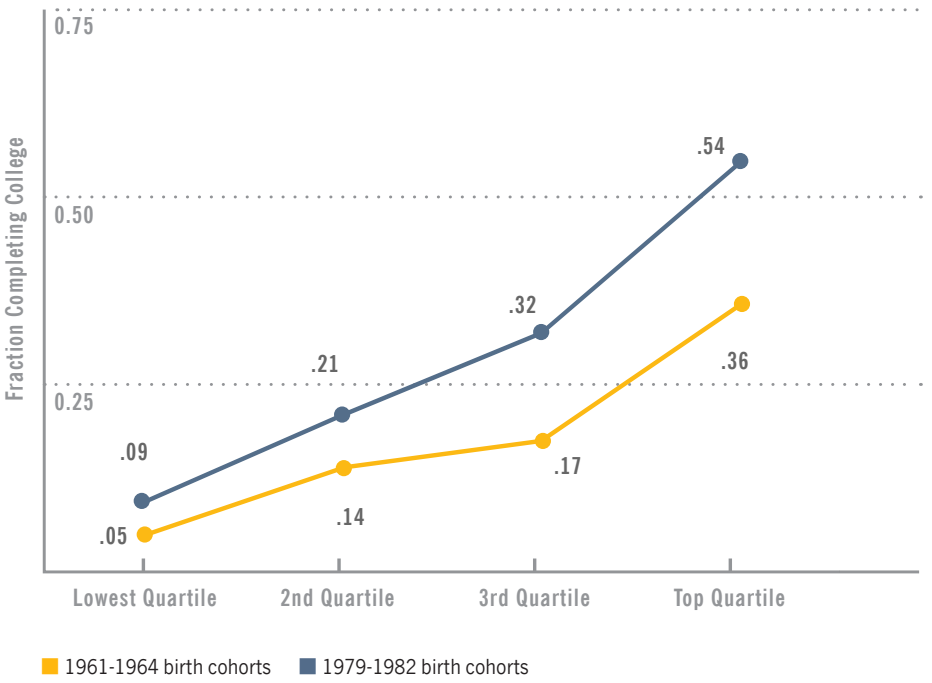
10 See John Bound, Michael F. Lovenheim, and Sarah Turner, "Increasing Time to Baccalaureate Degree in the United States," Population Studies Center Research Report 10-698 [University of Michigan], April 2010 [also published later in various places], Table 1.

11 See "The Real Cost of College: Time & Credits to Degree at California Community Colleges and California State University," Campaign for College Opportunity, June 2014.

12 *Crossing the Finish Line* (2009), Figure 2.2; data are derived from NELS longitudinal database, 1988/2000.

While we cannot update these exact figures because more recent longitudinal data are unavailable, there are straws in the wind that are anything but encouraging. Bailey and Dynarski have shown that disparities in graduation rates by income quartile have not only persisted, they have widened (Figure 3).[13] This striking figure reveals two truths: (1) pronounced disparities in graduation rates by income quartile are all too evident in *both* the 1961-1964 birth cohort and the 1979-1983 cohort; (2) the disparities between those in the top and bottom income quintiles are appreciably greater in the more recent cohort (54-09=45 points versus 36-05=31 points). These findings are troubling on their own terms for those of us who are concerned about inequality in America and who believe that we should be reducing disparities in educational outcomes. David Autor reminds us that, contrary to what he calls "conventional civic mythology," America has not been, and is not, anything like the "land of opportunity" that we are inclined to claim is the case. Other countries fare much better than we do when it comes to intergenerational

Figure 3. Fraction of Students Completing College, by Income Quartile and Year of Birth



Source: Author's calculation based on data from the National Longitudinal Survey of Youth, 1979 and 1997 (U.S. Bureau of Labor Statistics, 2010a, 2010b)

13 Martha J. Bailey and Susan M. Dynarski, "Gains and Gaps: Changing Inequality in U.S. College Entry and Completion," NBER Working Paper No. 17633, December 2011, Figure 3. (We reproduce this figure here as Figure 3.)

mobility, and these gaps appear to be widening.[14] Autor concludes that, in the U.S., "Lifetime relative disadvantage of children born to low- versus high-income families has increased substantially."[15] As one of our colleagues (Chancellor William (Brit) E. Kirwan of the University System of Maryland) puts it: "Absent greater participation and completion rates by the poor, we will have recreated (if we have not already) the economic caste system many of our ancestors left England to escape."

A further reason for being concerned about these pronounced disparities in graduation rates is that, as we have already noted, sizeable demographic changes are afoot in America. We cannot hope to reach optimistic goals in overall educational attainment, such as those enunciated by President Obama and Lumina Foundation, without making real progress—much more progress than we have made to date—in improving markedly graduation rates for students from lower-income families and certainly for the rapidly growing Hispanic population.[16] Much as we would like to do better with all groups, increasing the educational attainment rate among the relatively affluent members of the white population, which is already relatively high, will not move the needle of overall educational attainment to the desired level. While elite institutions such as Rice have a definite role to play in moving us forward, the real "action" has to take place at the far larger set of mid-level educational institutions that educate both a high fraction of all students and a still higher fraction of disadvantaged students.[17]

14 OECD (2014). In its 2014 Report, the OECD shows that the U.S. ranks second from the bottom (only Israel is lower) in the percentage point difference since 2000 between the 25-34 and 55-64 year-old populations with tertiary education (Table A1.3a.) For a lengthy discussion of the significance of this important finding, see Eduardo Porter, "Equation Is Simple: Education = Income," *New York Times*, Sept 11, 2014, p. B1. Porter emphasizes that America is lagging the world in reducing inequality in educational outcomes (as measured by differences in educational attainment between parents and their children). What explains this pattern—and whether it is in part inevitable—is an important research question. See the discussion in Autor, next citation.

15 *Science* (May, 2014), p. 848-9. Autor writes: "Contrary to conventional civic mythology, US intergenerational mobility is relatively low" (compared to other countries). "In one sense, this is not surprising, because countries with high returns to education [such as the U.S.] tend to have relatively low mobility for the simple reason that educational attainment is highly persistent within families. Well-off families can afford to invest heavily in the educational preparation of their children, which is a principal reason why children of higher income families do so well in the competition for places in selective colleges and universities.

16 Regrettably, very large racial gaps in test scores persist. See Charlie Tyson, "ACT's Annual Report Shows Languishing Racial Gaps, Mediocre Scores," *Inside Higher Ed*, August 20, 2014. In 2014, "Asian-American test-takers did best, with 57 percent meeting three or more [college readiness benchmarks]. 49 percent of white test-takers met three or more standards—compared to 23 percent of Latino test-takers and 11 percent of African-American test-takers." Since 2010, these gaps have remained eerily constant.

17 It is disappointing that relatively little attention is paid to the distinctive problems of this critically important sector of higher education. Without wanting to offend anyone, let me say categorically that what happens at these mid-level institutions is far more consequential nationally than what happens at the Rices (and the Michigans) of this world. Elite, highly selective institutions in both the private and public sectors are naturally focused on improving their own already high academic standards; thus, they tend to focus on how advances in technology can improve their own teaching programs. This is fine, up to a point. But it is hard to avoid asking if, at least at times, there is not too much "navel-gazing" going on, and if these institutions could do more to help less-advantaged places do better. This is, at its root, a problem of misalignment nationally of roles and responsibilities. The institutions with the most capacity (financial resources and highly qualified faculty members) to contribute directly to meeting the needs of the less-well-off institutions are not the same as the "have-not" institutions with the greatest need for new, cost-effective, approaches.

Compounding the problem of greater disparities in graduation rates is increased disparities in time-to-degree. The Bound-Lowenheim-Turner study comparing outcomes between the NELS-72 and NELS-88 cohorts found that increases in time-to-degree were localized among those who began postsecondary education at public colleges outside the most selective universities (the non-top 50 publics). In addition, increases in time-to-degree were most marked among low-income students. Contrary to what one might have thought, differences in college preparedness were not the explanation for these trends (and actually push in the opposite direction). Instead, the rich data in these longitudinal databases that allow us to link time-to-degree to individual and institutional attributes suggest that declines in resources in the less-selective public sector were a major factor accounting for increased time-to-degree (mainly because of classroom crowding and limited access to gateway courses). Another factor at work was increased hours of employment among students, especially low-income students, who encountered difficulty meeting the increasing costs of college attendance; working longer-hours surely impedes timely degree completion.[18]

4. Affordability?

The fourth item on my list of problems afflicting higher education is the issue of whether higher education remains "affordable." As is well known, the combination of rising institutional costs and reductions in state support has led many institutions to impose sharp increases in tuition that (setting aside the special circumstances of the wealthiest private institutions) have been offset only in part by increases in financial aid. For example, increases in Pell Grants have not kept pace with increases in tuition costs. Moreover, students just above the Pell Grant cut-off (sometimes referred to as "the near poor") have received only modest increases in aid at most institutions, and their net costs have risen appreciably. This trend is exacerbated by what David Leonhardt calls "The Great Wage Slowdown of the 21st Century"—the fact that "The typical American family [today] makes less than the typical family did 15 years ago, a statement that hadn't previously been true since the Great Depression."

One consequence of this financial squeeze is, as already noted, that many students from modest backgrounds have been driven to spend more time working while in school. Rising student debt is another, more widely-publicized consequence,

18 See John Bound, Michael F. Lovenheim, and Sarah Turner, "Increasing Time to Baccalaureate Degree in the United States," Population Studies Center Research Report 10-698 [U of Michigan], April 2010 [also published later in various places]. A wealth of data is presented in Table 1 of this study, which shows, for example, that the percentage of students at non-top-50 public institutions earning degrees in four years fell from 56 percent in the NELS-72 cohort to 35 percent in the NELSS-88 cohort and from 41 percent all the way to 17 percent in the community college sector. In sharp contrast, the percentage of four-year finishers in the highly selective private sector increased from 68 to 76 percent over this interval. The empirical findings in this study on the effects of hours of employment on timely degree completion support strongly conjectures in *Crossing the Finish Line* that suggested exactly this same pattern.

though the magnitude of this aspect of the problem is often exaggerated.[19] (Moreover, to speak heresy, I believe that some students borrow too little, not too much, and harm themselves by substituting long hours of work for incurring modest amounts of debt, thereby impeding timely completion of programs.)

In addition to the direct impact of tuition increases on affordability, there is also a growing sense, justified or not (I think not), that college is "too expensive." This perception can of course lead to reluctance on the part of poor and near-poor students to earn degrees from institutions for which they are qualified.[20]

As yet another (related) dimension of the problem, mention must be made of the erosion of public support for institutions of higher education that goes beyond cutbacks in funding. Higher education has traditionally been one of our society's most trusted institutions. The trends described above are putting that trust at risk, not only from the perspective of politicians, legislators and the media, but in the minds of the general public as well. There is skepticism that institutions are doing all that they can to operate more efficiently, and there are oft-stated concerns about rigidities and failures to be sufficiently forward-looking and nimble. Such criticisms are often unfair, but that does not alter the underlying loss of confidence; perceptions matter and can have long-term effects on support for research-intensive institutions, as well as on direct forms of aid to other institutions and students generally. These "ill winds" also make it harder to recruit and retain outstanding leadership. A recent issue of *The Economist* observes that "Politically, the mood has shifted….Both Bill Clinton and Barack Obama have said that universities face a poor outlook if they cannot lower their costs, marking a shift from the tendency of centre-left politicians to favour more public spending on academia."[21] So:

How Can We Do Better? Can Technology Help?

Many voices are heard exhorting legislatures to be more generous in supporting public universities. The argument for restoring cuts in public funding is persuasive to many who believe that national priorities are askew. Improving economic conditions have, in fact, led to modest increases in appropriations in some states. It seems clear, however, that the substantial increases in public support that would be needed to make a real difference, desirable or even justifiable as they may be, are unlikely to be forthcoming in the foreseeable future, given fiscal and political constraints. Voices urging a return to the "golden age" of the 1950s represent a modern day version of "blowing in the wind." As Hanna Holborn Gray has explained, the

19 See Beth Akers and Matthew M. Chingos, "Is a Student Loan Crisis on the Horizon?" Brown Center on Education Policy at Brookings, June 2014. See also Barry Glassner and Morton Schapiro, "Beware Higher-Ed Doomsayers," *Chronicle of Higher Education*, October 6, 2014. This generally excellent piece suffers, however, from the danger that readers will interpret the de-bunking of disaster scenarios as implying that "business as useful" will suffice to ward off storm clouds. I do not think that it will.

20 See two recent pieces by David Leonhardt that criticize overly-dramatic complaints about affordability. David Leonhardt, "Is College Worth It? Clearly, New Data Say," *NYT Upshot*, May 27, 2014; and "How Government Exaggerates College's Costs," *NYT Upshot*, July 29, 2014. The first piece uses data on pay gaps to demonstrate that the return on investing in college remains very high. The second piece points out that government data on tuition increases often focus on sticker prices and ignore financial aid (though efforts are being made to fix this problem).

21 "The future of universities: the digital degree," online edition, June 26, 2014.

decade of the 1960s was an anomaly.[22] Don Quixote was right when, on his death bed, he warned against "looking for the birds of this year in the nests of yesteryear."[23]

Improving the college readiness of students would surely make a difference, is highly desirable on many counts, and is probably even essential in the longer run—but it is not going to help appreciably in the near term. Improvements in financial aid programs are certainly possible (and highly desirable) but, even if they happen, are unlikely to produce the truly substantial progress that is needed—especially given the heavy use of "merit aid" by institutions. I agree with Brit Kirwan, distinguished chancellor of the University System of Maryland, when he decries the "diversion of such a high fraction of institutional aid to 'buy' high ability students already planning to go to college at the expense of capable low income students who desperately need the aid."[24] This phenomenon is related to the near obsession with rankings based on such metrics as SAT scores and student-teacher ratios. But it is far from clear how the pernicious effects of these rankings can be arrested. Improving the quality of press reporting would also definitely help (simplistic reports that exaggerate "net costs" of college discourage students from enrolling); but, sadly, I see little basis for optimism.

Realism regarding prospects for increased governmental support, combined with the limited ability of families (or, the limited willingness of families) to afford further tuition increases, has an obvious implication: there will be ever-more emphatic calls for improvements in "productivity"—in output per unit of input. Higher education, writ large, simply has to re-engineer its processes, to alter the educational "production function" linking inputs to outputs so as to achieve more cost-effective ways of meeting students' educational needs. Put another way, it is not sufficient to seek ways of improving modestly current methods of instruction or achieving one-time savings in administrative costs (desirable as vigorous efforts of these kinds are). It is fine to postpone washing the windows this year, but what

22 See Hanna Holborn Gray, *Searching for Utopia: Universities and Their Histories* (Berkeley, CA: University of California Press, 2011), pp. 68-69. In this underappreciated and trenchant set of lectures, Gray has called attention to the after-effects of the 1960s. She points out that this decade set expectations that continue. In her words: "Decline in federal support and public favor is seen as a precipitous falling away from what once was and still ought to be the rightful norm in the world of higher education." Gray goes on to observe "the critical fact [is] that available resources could not continue to keep pace with the expansion of knowledge and its technologies and capital requirements or with the accelerating growth in the university's functions and programs… [It is, she concludes,] naturally tempting to take the option of muddling through….But that will scarcely offer long-term health…. Questions raised by current economic circumstances serve to expose and force us to confront longer-existing issues and deeper fault lines that have been building over the past decades." An exception to the tendency to downplay cost issues in the 1960s is Clark Kerr's reference, in his 1963 Godkin lectures, to "problems related to costs, identified particularly by Beardsley Ruml—faculty-student ratios, fuller utilization of the calendar, excessive numbers of courses, mechanization of instruction…" See Clark Kerr, *The Uses of the University: Fifth Edition*, (Harvard University Press, 2001), p. 79.

23 Miguel de Cervantes Saavedra, *Don Quixote of La Mancha*, edited and translated by Walter Starkie (New York: Signet Books, 1974), p.1048.

24 Personal correspondence, August 8, 2014.

about next year, and the year after that?[25] We must approach the fundamental objective in a bold new way that will allow us to deliver improved learning outcomes in cost-effective ways—and to do so on a continuing basis.

Fortunately, advances in technology offer real opportunities to "do more with less"—if they are not over-hyped, and if the appropriate technology is chosen and implemented strategically.[26] In industry after industry, well-conceived investments in technology have, in addition to disrupting processes and product lines, generated economies of scale and reduced cost per unit of output significantly. In higher education, the opportunity to spread the costs of the needed initial investments in technology and the requisite process redesign across a larger enrollment base (including, almost certainly, multiple campuses and probably multiple systems) is likely to be the key to achieving the scale needed to allow real long-term reductions in cost per student.

There are so many flavors of online learning that it is hard to focus on those approaches that have the most promise of really improving educational outcomes and controlling costs.[27] As debate continues to swirl around MOOCs and their usefulness, early indications are that their greatest value is in opening windows to knowledge for individual learners all over the world, and perhaps especially individual learners with post-secondary degrees who have the skills, self-discipline and motivation to take full advantage of the content available on MOOCs. But what about the use of MOOCs or similar educational and content platforms to help instructors teach students pursuing degrees in a traditional institutional environment? Might those technologies be used to improve productivity at mainline institutions? To date, mainline MOOC providers have not assigned a high priority to approaches that would address these institutional—as distinguished from *individual*—needs. For example, an Ithaka S+R-led study of the adaptability of MOOCs to meet the needs of the University System of Maryland (USM), carried out with the full support of both Coursera and the University System of Maryland, produced mixed results, at least in part because the platform used in the study was not designed for the purpose at hand.[28]

25 This is not, of course, to disparage efforts by educational institutions to be more efficient, and to cut administrative and other costs as much as they can, consistent with effective discharges of their missions (including compliance with innumerable regulations). For an example of cost-cutting actions at one university, see Douglas Belkin, "At Purdue, a Case Study in Cost Cuts," *Wall Street Journal*, August 4, 2014. However, such savings are likely to be one-time in nature. Also, as I will emphasize shortly, there is a great reluctance on the part of administrators as well as faculty to confront the need to control instructional costs.

26 Full disclosure: I am a convert to the potential of technology. Earlier, in my Romanes Lecture at Oxford University in 2000, "At a Slight Angle to the Universe: The University in a Digitized, Commercialized Age," I cited evidence available at that time to suggest that online offerings frequently cost more than face-to-face instruction and expressed skepticism that this would change. But there have been major advances in technology since that time, and the need for experimenting with such approaches has become all too evident. (See William G. Bowen, *Higher Education in the Digital Age*, Princeton University Press, 2013, pp. 44-46, for a discussion of the evolution of my thinking; paperback edition due out in December 2014.)

27 For a good discussion of "the contours" of the online learning landscape, see Kelly Lack's Appendix to *Higher Education in the Digital Age* [2013], pp. 72ff.

28 See Rebecca Griffiths, Matthew Chingos, Christine Mulhern and Richard Spies, "Interactive Online Learning on Campus: Testing MOOCs and Other Platforms in Hybrid Formats in the University System of Maryland." Ithaka S+R, July 10, 2014. http://sr.ithaka.org/research-publications/Interactive-Online-Learning-on-Campus.

The USM study provides examples of the potential for online teaching to both reduce costs and improve student outcomes, but it also reminds us that a substantial upfront investment is required to redesign courses to use these tools. We learned how important it is to be able to amortize such investments over large numbers of students and over time. Finally, we learned anew that, with the best will in the world, it is not easy to take systems built for individual users and adapt them to meet the needs of institutions. The appetite of MOOC providers to make heavy investments in efforts to address these institutional issues is bound to depend upon both the costs involved and the revenue streams they are able to project.[29]

What alternatives are there for campuses to improve teaching productivity through technology? The right approach cannot be for each campus to try to develop, *de novo*, the sophisticated base platform(s) required. This task is too challenging for many (most) campuses, and single campuses are unlikely to be able to realize the economies of scale that are essential if such approaches are to be sustainable.[30] In my view, the most appealing (and the most audacious) approach is the development of one or more sophisticated platforms designed specifically for use by multiple campuses. Such platforms will need to incorporate well-designed feedback loops to facilitate machine-guided learning of basic elements of subjects well-suited to this approach, and they will need, too, to be designed to accommodate "hybrid" modes of instruction that include some face-to-face features.[31] They will also need to be flexible enough to allow some degree of customization. "Local" faculty are understandably reluctant to use courses developed entirely elsewhere.[32]

29 The edX initiative sponsored by Harvard and MIT intends, as does Coursera, to have the platform used to deliver its MOOCs available for other campuses to use. But so far there is little evidence of real impact at the institutional level—for many of the same reasons that made it difficult to adapt Coursera offerings to the needs of the University System of Maryland.

30 Note, however, the success achieved by Arizona State University (ASU) in expanding enrollment while controlling costs—in part through the use of relatively simple versions of online learning. More important than the technology has been the entrepreneurial spirit engendered by President Michael Crow. See Kevin Guthrie and Christine Mulhern,"In Pursuit of Excellence and Inclusion: Managing Change at Arizona State University," Ithaka S+R, forthcoming.

31 Both common sense and research tell us that, in most situations, many students, and especially those with limited preparation and little experience with self-guided modes of instruction, need at least limited access to teachers who can keep them on track. See Shanna Smith Jaggars and Thomas Bailey, "Effectiveness of Fully Online Courses for College Students: Response to a Department of Education Meta-Analysis," Community College Research Center, Teachers College, Columbia University, July 2010. There is an important equity aspect to this discussion. As I have argued elsewhere [see William G. Bowen, "Academia Online: Musings (Some Unconventional)," Stafford Little Lecture, Princeton University, October 14, 2013, reprinted as an appendix in the paperback edition of *Higher Education in the Digital Age* (December, 2014)] there is a serious danger that legislators will be tempted to adopt cheap versions of fully online learning courses for use with "the wrong" students—students who have a special need for some face-to-face contact with instructors. Poor students, and disadvantaged students generally, would be likely to suffer from such a short-sighted approach.

32 The controversy surrounding the use of Harvard faculty member Michael Sandel's edX course at San Jose State University illustrates this problem. See "San Jose State University Faculty Pushes Back Against edX," *Inside Higher Ed*, May 3, 2013, http://www.insidehighered.com/quicktakes/2013/05/03/san-jose-state-university-faculty-pushes-back-against-edx#sthash.4tPwgO7h.dpbs.

Our rigorous testing on a number of public university campuses of a Carnegie-Mellon statistics course taught in a hybrid mode (with one face-to-face meeting a week) that used an adaptive learning methodology produced encouraging results; students from all backgrounds (not just those who were especially well-prepared) had learning outcomes that were equivalent to those obtained by similar students who took traditional face-to-face versions of the same course. There is every reason to believe that these are baseline results and that learning outcomes using adaptive learning approaches will improve over time. Additionally, the study reveals that there are potential cost savings to be realized.[33]

I should add that advances in technology, and the possible development of hybrid courses that will facilitate the effective teaching of some materials (especially those needed for gateway courses in basic subjects), offer promising avenues of reducing costs quite apart from changes in staffing configurations. Scheduling of courses and classroom space is of paramount importance, as is sophisticated advising made possible by technology. Anecdotal evidence abounds that limited ability to fit student schedules (especially, but not only, the schedules of commuter students and students with families) into constraints imposed by both existing classroom space and faculty schedules are major factors leading to long time-to-degree and failed efforts to finish programs. The combination of hybrid course offerings (with the attendant reduction in the need for students to be in a particular place at a particular time) and scheduling technologies have the potential to ease such problems dramatically—and to save both institutions and individuals considerable amounts of money. As suggested by our earlier discussion of disparities in outcomes related to SES, low-income students attending mid-level universities should be primary beneficiaries. Colleagues at Ithaka S + R are working now on simulating potential cost savings of this kind.

Barriers to be Overcome

To accomplish ambitious objectives that could yield both improved outcomes and cost savings on multiple campuses will obviously require large amounts of capital to cover start-up costs and to provide incentives for university systems to participate in such efforts. Moreover, this has to be "patient capital" since it would be foolish to expect instant results. It is an open question whether major foundations or wealthy individuals are prepared to make such investments. Localized efforts, of the kind announced regularly, are to be commended— but we have to recognize that they are unlikely to produce the needed new technological infrastructure that can be broadly shared. To be sure, my sense of our requirements may be overly ambitious or just plain wrong. But I suspect strongly that incremental approaches will prove to be inadequate to meet pressing national needs.

33 See William G. Bowen, Matthew M. Chingos, Kelly A. Lack and Thomas I. Nygren, "Interactive Learning Online at Public Universities: Evidence from a Six-Campus Randomized Trial," *Journal of Policy Analysis and Management*, Volume 33, Issue 1, pages 94–111, Winter 2014, for a full description of both the CMU course and the Ithaka S + R study of the effectiveness of this course, when taught in hybrid mode (with one face-to-face session per week); the study avoided selection effects by using randomized control trials.

Financial requirements, however daunting, are by no means the only barrier that has to be overcome. A quite different set of issues involves the need to develop new protocols that can govern both the ownership and the distribution of the intellectual capital developed in the course of work on new teaching methods. It can be tempting for institutions to change as little as possible and, for example, simply assert that whatever "rights" faculty currently enjoy in owning intellectual property that they were largely responsible for creating (albeit almost always with some contribution of university resources) should apply here as well. I am skeptical, however, that such a "business as usual" approach is wise, and not only because needed institutional contributions of resources can be substantial (as can, in some situations, monetary pay-offs to the licensing of content). A narrow vesting of "ownership" of digital content and control over its distribution may not serve larger institutional (or societal) purposes. There are important questions concerning institutional responsibility for the sustainability of technologically-enhanced digital course materials to be addressed. Will a newly developed online course be available in the future, even if the person most responsible for its creation moves to another location or dies? And who will be responsible for upgrading the content and presentation of material over time?[34]

An even more formidable problem is the widespread presence of a mindset that resists confronting directly the trade-offs that must be made in considering alternative teaching methods. In particular, there is, in many settings, a deep-seated aversion to talking about costs and potential cost savings. In the 1995 edition of his Godkin lectures, Clark Kerr offered this provocative observation: "The call for effectiveness in the use of resources will be perceived by many inside the university world as the best current definition of evil."[35] If we are to make progress in addressing the national need to improve educational outcomes without commensurate increases in cost, faculty and administrators alike need to do what for many is a difficult thing: avoid treating educational quality, important as it obviously is, as the *only* crucial variable in making major decisions. There is a deeply embedded sense that talking about costs borders on the sacrilegious. But trade-offs simply have to be made.

Let us consider a sharp-edged example. If teaching method "A" yields results that are not "the best," not quite as good as those obtained in another way—say, the new results are 90 percent as good as those yielded by teaching method "B"—but if "A" costs two-thirds as much as "B," that ratio has to be taken into account in deciding which teaching method to adopt. Resources saved in one corner of the educational enterprise can be used in another, or can be used to reduce the costs

34 The history of JSTOR is replete with lessons applicable to online learning, and one of the most important has to do with sustainability. JSTOR would never have become the success that is today (having just signed up its 9,000th participating institution worldwide) had it not been able to persuade librarians and university administrators that it was sustainable–with the resources and the commitment to maintain and upgrade itself. Librarians, and those responsible for library construction, had to be confident that JSTOR would "be there" in the long run. See Roger C. Schonfeld, *JSTOR: A History*, Princeton University Press, 2003.

35 See Kerr, *The Uses of the University: Fourth Edition*, (The Godkin Lectures on the Essentials of Free Government and the Duties of the Citizen: Cambridge, MA: Harvard University Press, 1995), p. 181.

of attending college. It is responsible, not sacrilegious, to seek to use limited resources in the most productive way.[36]

I am not suggesting that cost considerations are generally absent from decision-making. Hardly. There is too much evidence of the pain of retrenchment to believe that. The serious generic problem is that too often cost considerations drive decisions at hard-pressed institutions *only when there is no other way to go*—when "muddling through" has hit a wall. There is also a polar tendency, at least as dangerous, seen most often in calls by legislators, regents and trustees, for institutions to move aggressively (with or without adequate faculty consultation) to introduce cost-saving technologies. Unfortunately, far too many calls to action are made in the absence of any real concern for quality, or any appreciation that it is less well-prepared and disadvantaged students who are most likely to be harmed by such an approach. My plea is a modest one—to occupy what Isaiah Berlin once called the "ungrateful middle ground," and dealing directly, upfront, and unapologetically, with trade-offs when that can be done thoughtfully and ahead of some make-or-break crisis.

Still another development that can lead to opposition to fundamental changes in teaching methods derives from the explosive growth in the number of non-tenure-track (NTT) faculty. In 1969, tenure and tenure-track faculty accounted for over three-quarters of all faculty (78.3%); in 2009, tenure and tenure-track faculty accounted for just over one-third of all faculty (33.5%). As many people have noted, the ratio simply flipped. It is a mistake, in my view, for tenured faculty to dig in their heels and resist this trend. In light of the staying power of the forces driving the huge increase in NTT faculty—forces such as unremitting cost pressures, the "unbundling" of aspects of courses, and the availability, on the supply side, of well-qualified individuals who are satisfied with being "master teachers"—universities would be well advised to acknowledge, as some already have done, that full-time NTT faculty have been filling essential teaching roles for many years. There is a strong case for moving expeditiously to consider creating "professional teaching staff" structures. Tenure-track faculty should cooperate with such efforts and not simply bemoan reductions in their relative numbers. There is surely a place in academia, and it should be a respected place, for talented individuals who do not aspire to publish the truly distinguished work of scholarship that would make them top candidates for a tenure position at a university with an outstanding

36 A colleague has suggested that the problem is even more serious than our "hard-edged" example suggests. He notes that there is resistance to taking account of cost savings even when it can be demonstrated that using an adaptive learning approach "does no harm" in that learning outcomes are unaffected. An eminent doctor said that exactly the same mindset exists in large parts of the health care system. He said that he is something of an enigma to some of his colleagues because he cares about costs of treatments as well as their results. It isn't, he said, that he is against spending money on health care. It is just that he wants to spend the available resources as wisely as possible. Lawrence Bacow has suggested [in personal correspondence] that it is only in education and health care that accepting a "trade-off" calculus would be regarded as odd or in need of justification.

graduate program or at a wealthy college committed to inculcating scholarly skills among undergraduates.[37]

We should create conditions that will honor the "master teachers" who deserve to find a regularized, respected, decently-paid way of toiling in their chosen teaching vineyards. The shifting demands of the academic marketplace writ large (related in some measure to the growth in online teaching, as well as to reluctance by some institutions to continue to subsidize teaching loads that are deemed necessary to allow faculty to produce original research) tend increasingly to favor the master teacher. Colleges and universities alike should create structures that will provide the right incentives/rewards for full-time NTT academics who prove their worth in the classroom. Of course, the need (and the opportunity) to capitalize on this set of circumstances varies greatly across the higher education landscape—these challenges are less urgent for the wealthiest privates than for the harder-pressed institutions in both the private and public sectors. But the desirability of gaining legitimacy for the concept of a fairly compensated professional teaching staff should resonate broadly and restore a needed measure of mutual respect and equity within the academy.

This entire set of staffing developments, driven in part by changes in technology that are likely to accelerate, is linked to another topic—even more sensitive—that, fortunately for me, I have no time this morning to do more than flag for attention. I refer to the need to think freshly about doctoral education in the U.S., and the number (and scale) of graduate programs needed to produce holders of PhDs trained in traditional ways. Let me not be misunderstood. There will always be a need for new cadres of dedicated scholars, capable of doing cutting-edge research, as well as educating their putative successors. Those of us in the academy should fight vigorously for the support needed to preserve the capacity of our universities to continue to provide leadership worldwide in developing new knowledge and educating those qualified to correct, in the future, the errors we make today. This venerable process creates the life-blood of academia, and sustaining it deserves to be our highest educational priority. But this does not mean that we can overlook (out of fear of being called "elitists") the need to economize on the resources spent nationally on doctoral education. Understandable feelings of pride and concerns for status make this a truly treacherous terrain. But, somehow, we have to marshal the courage, as well as the insight, to navigate it.

37 We link the PhD producing-universities and those institutions, including elite liberal arts colleges, that focus great effort on training undergraduates to do original research, since we believe that faculty at both kinds of institutions need themselves to be active on the research front if they are to be effective in guiding others seeking to learn to do research. For documentation of data presented in this paragraph, and for an extended discussion of this entire subject, see William G. Bowen and Eugene M. Tobin, *Locus of Authority: The Evolution of Faculty Roles in the Governance of Higher Education* (Princeton University Press, Forthcoming in 2015).

Re-thinking "Shared Governance"

Finally (what a friend called the most beautiful word in the English language), I want to comment all-too-briefly on an even larger subject—the crucial need to rethink aspects of "shared governance." This is a main theme of the new book that Gene Tobin and I are producing for the Princeton University Press, titled *Locus of Authority: The Evolution of Faculty Roles in the Governance of Higher Education* (please forgive the blatant advertising).

Odd as it may seem to emphasize governance issues in a technological age, we believe that they are of critical importance. In the many conversations that Gene and I have had with developers of new approaches to online teaching, a common message has been that *the* biggest obstacle to experimentation with new teaching methods is *the time-consuming, costly, and frustrating process of trying to get timely (and binding) decisions made by potential test-bed institutions locked into centuries-old governing structures*. It is in the twin areas of teaching methods and curricular development that decision-making mechanisms are most in need of new thinking (although these are by no means the only areas in which modifications in governing arrangements are needed).[38]

To be absolutely blunt, it is time for individual faculty to give up, cheerfully and not grudgingly, any claim to sole authority over teaching methods of every kind.[39] In the digital age, creation of new course materials is often a collaborative

38 As many commentators have observed (especially critics of the ability of higher education to adapt reasonably quickly to new demands), governance arrangements in American higher education date in many respects back to the emergence of the research university in the late 19th century. New thinking is clearly needed as to what governing arrangements are appropriate today. There are, however, major aspects of the conventions to which we have become accustomed that continue to serve us very well and which should be protected against onslaughts from any quarter. I have in mind especially the dominant role assigned to faculty to evaluate the qualifications of candidates for appointment and advancement. Related, of course, is the commitment of almost all colleges and universities of consequence to the freedom of faculty to speak their minds. "Academic freedom," properly understood, is absolutely essential to both scholarly pursuits and good teaching; it is also joined to responsibilities of scholars to comply with professional norms. For a cogent explanation of what academic freedom means, and does not mean, see Matthew W. Finkin and Robert C. Post, *For the Common Good: Principles of Academic Freedom*, (Yale University Press, 2009). These legal scholars stress that academic freedom is not some God-given right, but a requirement of universities seeking to advance knowledge. It has also been understood from early days that "rights" are joined to professional "responsibilities." Finkin and Post are very clear on this point: "A second conceptual premise [in the development of the case for academic freedom] was that faculty are professional experts in the production of knowledge—they alone can judge the competence of other faculty as scholars. Lay governing boards are competent to judge charges of habitual neglect of assigned duties, on the part of individual teachers, and concerning charges of grave moral delinquency. But in matters of opinion, and of the utterance of opinion, such boards cannot intervene." This is a claim for professional self-regulation. In short: "The traditional ideal of academic freedom [involves] twin commitments to freedom of research and to compliance with professional norms." (*Ibid*, p. 43).

39 In fact, there have always been limitations on faculty control of methods—for example, faculty cannot simply assume that any number of TAs is available to teach sections of courses, and access to space and facilities can also affect how course material is presented.

process, involving both considerable technical support at the local level and quite often inter-organizational collaborations. Departments are traditionally the key decision-making units when it comes to curricular matters, but this vertical (silo-like) mode of decision-making is not workable when it comes to making truly big decisions affecting the development and deployment of new teaching approaches. What is needed is new ways, maybe even radically new ways, of engaging faculty and administrators in discussions of new approaches, and how to seize them, that will often be "horizontal" rather than "vertical"—that is, that will cut across departmental lines and at times across campus and even institutional boundaries. Organizational challenges are, if anything, more daunting than the technological challenges.[40]

I am NOT, let me emphasize, arguing for ignoring faculty views! Faculty expertise and faculty enthusiasm are indispensable to finding cost-effective ways of delivering excellent educational content. Absent significant faculty involvement in designing, customizing, and implementing new approaches, frustration and, yes, failure, are inevitable. I wish that more high-level administrators (especially those working at the system level) and more legislators understood this essential point!

My view is that, in exchange for giving up departmentally-based veto power over course development, faculty should be given an important seat at a bigger table—a table at which collaborative decision-making is needed on four aspects of online learning: (1) decisions concerning investments to be made locally in either designing online platforms that enable faculty to customize their courses or in doing the customization; (2) decisions concerning the uses at "home" of online technologies designed locally or externally; (3) decisions concerning the sharing of online technologies across institutions; and (4) decisions concerning the adoption of a "portfolio" approach to curricular development that involves a blend of courses, some mainly online, some "hybrid," and some face-to-face.[41]

In short, when it comes to teaching methods and curricular structures, we have to get away from compartmentalized decision-making. Simplistic as it may sound, I believe that "shared governance" should be viewed, not so much in terms of who owns what, but as embracing a commitment to a genuine sharing of perspectives—to the avoidance of constituency-based thinking (to the extent this can be achieved in a world of real human beings!). What is most needed on the part of all parties, including both faculty and administrators, is not just a willingness, but an eagerness, to embrace good ideas generated by others. Such mutual openness to good ideas from all sources should be accompanied by recognition that nimble decision-making is required. Nimbleness implies a need for a well-understood locus of authority, with administrators expected to listen carefully to those with

40 As Clark Kerr argued years ago: "The professoriate is not well organized to consider issues of efficient use of resources. Many decisions with heavy cost consequences, including faculty teaching loads and size of classes, are made at levels far removed from direct contact with the necessity to secure resources. Departments usually operate on the basis of consensus and it is difficult to get a consensus to cut costs." Clark Kerr, *The Uses of the University, fifth edition* (Harvard University Press, 2001), p. 180.

41 For an explanation of what I mean by a "portfolio" approach to curricular construction, see William G. Bowen, *Higher Education in the Digital Age*, Princeton University Press, 2013, p. 68.

ideas and expertise to contribute, but then to have the confidence and courage to decide.

Writing in the mid-1990s, Clark Kerr observed:

> *"When change comes it is rarely at the instigation of this group of [faculty] partners as a collective body. The group is more likely to accept or reject or comment, than to devise and propose. The group serves a purpose as a balance wheel—resisting some things that should be resisted, insisting on more thorough discussion of some things that should be more thoroughly discussed, delaying some developments where delay gives time to adjust more gracefully to the inevitable. All this yields a greater sense of order and stability."*[42]

I do not think, however, that the most urgent need today is for "a greater sense of order and stability." It is rather for organizational machinery that can facilitate an all-encompassing set of strategic decisions that allocate human and capital resources effectively and provide a compelling set of incentives for faculty to pursue system-wide goals. Stronger central direction is politically anathema to many, but it could prove necessary to strengthen educational capacities at both pre-college and college levels.[43] Informal "coalitions of the willing" are very hard to create, and even harder to sustain.

We need, now especially, courage and the will to act on the part of presidents—in short, a willingness to take some risks. It is well, once again, to heed words Clark Kerr uttered in looking back in later years on the 1960s, from his vantage point as chairman of the Carnegie Commission on Higher Education and later as a prescient elder statesman. He did not pull his punches:

> *"I would argue for giving leadership a better chance to exert itself. Most successful new policies in higher education have come from the top. We need to reverse the denigration of leadership. . . . It was denigrated by students in the late 1960s and early 1970s. . . . Presidents were used like Kleenex. The institution survived, but their leaders did not. Yet in a time of troubles, as then loomed and now looms again, leaders are more needed but are harder to get to serve and to keep. To the list of presidential attributes I gave in the original [1963 Godkin] lectures, I would now add the ability to withstand the frustrations from all of the checks and balances, and the criticism from all of the more active and vocal participants; that is, the possession of nerves like sewer pipes."*[44]

42 Kerr, 2001, p. 75.

43 In the case of higher education, my intuition is that the best hope for making real progress lies in creating, somehow, a viable partnership between (a) one or more funders willing to make the substantial investment required; (b) an educational "system" (beyond a single campus) eager to serve as a test bed and capable of making prompt and binding decisions; and (c) an institution with real technical capacity and a willingness, as well as the ability, to design the basics of a platform that others could customize. Brokering such a tri-partite partnership would require the leadership of either a well-staffed funder or some respected third-party. Faculty involvement at all levels would be essential but faculty could not expect to have a final voice or veto in decision-making.

44 See Kerr, 2001, p. 137.

It will be far easier to recruit and retain leaders such as Clark Kerr if academia is able, somehow, to establish an attitude of trust that is forgiving of errors (or at least of some errors) as we try out new approaches to teaching and learning.[45] We need to move ahead on the basis of what I think is a widely shared sense of mission. Most faculty, and most presidents and administrators too, would not have chosen the lives they lead if they did not believe in the lofty purposes of higher education, which clearly include progress in addressing the national needs I identified at the start of this talk. I am optimistic that, with the aid of advances in technology and fresh thinking, we can in fact do much better than we are doing now—but, realist that I am, I also know that it will not be easy. Perseverance is a virtue!

Good luck to all of us—as we seek to serve what are indeed lofty purposes.

45 For a current example of why recruiting and retaining able presidents is such a treacherous undertaking, see Eric Kalderman, "Why the U. of Oregon's Presidency Is Such a Difficult Job," *Chronicle of Higher Education*, August 8, 2014. The corrosive effects of big-time college sports cannot be underestimated. There are also other factors contributing to what I sense are growing pressures on presidents; this is a subject deserving of careful study in its own right.