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# Higher Education in a GLOBAL, DIGITAL Information Economy

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The lot of higher education in the years ahead will be that of every other social institution in the country. Every single institution will undergo profound change.

Driving this transformation is America's transition from a national, analog industrial economy to a global, digital information economy. Our social institutions—government, media, healthcare, finance, and education—were all created for the former. As a result, they appear to be broken today, working less well now than they once did.

In the years ahead, consumers and stakeholders will demand that all these institutions be updated to meet contemporary needs. This can occur either by repairing the existing institutions or by creating new institutions to replace them.

This is what occurred in American higher education in the past, as the United States made the transition from a local agricultural to a national industrial economy. The classical agrarian college, imported by colonists from 17th-century England along with its curriculum rooted in the ancient triv-

ium and quadrivium, was established in order to educate a learned clergy to govern the colonies. This model held sway through the antebellum period. In the years before the Civil War, however, criticism mounted as the gap between the college and society grew larger.

For the most part, higher education resisted significant change. Indeed, Yale, the college with the largest enrollment in the country, was an articulate and forceful proponent for maintaining the status quo. In 1828, faced with a blistering attack by the Connecticut legislature for its programmatic irrelevance, Yale issued a powerful defense of the classical curriculum, which was embraced by colleges around the country.

At the same time, there were efforts to repair or reform the college, mostly small ones. A typical example: adding to the curriculum instruction in modern language and science. Larger initiatives were generally unsuccessful. Attempts to inaugurate graduate education repeatedly failed, costing more than one president his job. Brown—which in 1842 adopted one of the most visionary programs of the era, transforming its curriculum, programs, and student

body with initiatives 25 years ahead of their time—was nearly bankrupted when there was little public interest. The president who authored the reforms was fired. Union College was an exception that thrived by embracing science and engineering. It created the secret sauce blending the old and new, eventually achieving an enrollment greater than Harvard's and Yale's combined.

During and after the Civil War, rather than incremental reforms, replacement initiatives boomed. New institutions were created. The Massachusetts Institute of Technology was created specifically for the study of science and industrial technology. Cornell University opened its doors proclaiming it would offer “any person, any study.” The first graduate school in America was established in Baltimore—Johns Hopkins. The University of Chicago brought together the major reforms of the era on a grand scale, including coeducation, graduate and professional schools, the PhD degree, research institutes, a summer school, a university press, and much more.

These were new institutions that better met the needs of an industrial-

izing America. An entity called the university, imported from Germany, was established with what would become a mission of teaching, research, and service. It offered instruction in the professions essential to an industrial society, organized knowledge into relevant specialty areas, hired faculty with expertise in those areas, and not only transmitted the knowledge of the past, but advanced the frontiers of knowledge for the future.

At the same time, a number of specialized institutions emerged. Institutions focusing on technology and engineering—epitomized by MIT and modeled on the European polytechnics—were created to promote the science and technology of the industrial era and prepare its leaders. As the evolving economy demanded more education of its citizenry, so the normal school was also introduced to prepare more and better teachers. In the same spirit, the two-year college, originally called a junior college and later a community college, was established initially to offer lower-division undergraduate education in the local community. And the federal government created a bridge between the old and emerging worlds, agrarian and industrial America. The land-grant college, now found in all 50 states, was designed to provide instruction in agriculture and the mechanic arts without excluding classical studies. Colleges were also established for populations largely excluded from traditional higher education; institutions for blacks and women opened their doors. Catholic higher education mushroomed.

A second round of larger repair initiatives followed, many of them modeled on the replacements, but certainly not all. Exemplary of these efforts is the work of Charles Eliot, who carried out 40 years of reforms during his presidency that remade Harvard from a college to a leading university. In the

pantheon of leaders of the industrial transformation, Eliot, who championed and carried out change at the oldest and one of the most esteemed colleges in the nation, was a giant.

By the early decades of the 20th century, American higher education had changed. Graduate studies and advanced degrees were adopted. These became requirements for faculty positions. Research and public service were added to the teaching mission of the college. Professional schools in fields like engineering, business, and education became staples. Continuing education and correspondence courses were added. Elective courses and majors evolved. Disputation, recitation, and memorization, the pedagogies of the agrarian college, gave way to lectures, seminars, and laboratories. Enrollments soared, as 4 percent of the college-aged population attended college.

The colleges persisted, but they were no longer the classical colleges of yore. They adopted many of the changes of the era. With the exception of a tiny number of colleges, programs based in the trivium and quadrivium disappeared.

This outpouring of repairs and replacements over nearly a century coalesced into America's contemporary industrial-era system of higher education. It was codified in the 1960 California Master Plan, establishing three sectors of higher education—elite, mass, and universal access, composed of universities, colleges, and community colleges. Other states similarly restructured their public institutions, while private institutions sustained a wide range of programs and approaches. A for-profit sector has also grown in the years since.

This is the history of higher education in America. Change has occurred by accretion. The new has been added to the old and the old, over time, modernized to meet the needs of the times.

Change has occurred with no grand vision of the system that the future will require. With society's future evolving and still unknowable, what occurs instead is experimentation in higher education to meet the perceived needs of the times. New ideas are tried; some succeed, many fail. By successive approximations what emerges over time is the higher education system necessary to serve the evolved society.

We are witnessing precisely that kind of experimentation today. Massive open online courses, or MOOCs, are a good example. They have captured the attention of higher education and the imagination of the nation. However, we have no idea whether they will or will not persist or be recognizable in the future that unfolds. Next year, they may give way to COOCs or ZOOCs.

Social change is a constant, and so is higher education's adjustment to it. When the change in society is deleterious, as in the McCarthy era, it is the responsibility of higher education to resist it and right the society. This is a natural process, almost like a dance. However, in times of massive social change like the transformation of America to an industrial or information economy, a commensurate transformation on the part of higher education is required.

What does seem likely is this: As in the industrial era, the primary changes in higher education are unlikely to occur from within, although some existing institutions will certainly transform themselves as Harvard did in the decades after the Civil War. Rather, the boldest innovations are more likely to come from outside or from the periphery of existing higher education, where they are unencumbered by the need to slough off current practice. They may be not-for-profits, for-profits, or hybrids. Names like Western Governors University, Coursera, and Udacity leap to mind.

We are likely to see one or more new institutions emerge. Each revolution created new needs for higher education and unique institutions to meet them. The agrarian era was characterized by elite higher education, meaning only a tiny percentage of the population needed to attend and the college was the vehicle for educating them. Industrial America required more education and mass access to college. Two major institutions were established to advance the industrial nation and increase access to college—the university and the community college.

The information economy, which requires a more educated population than ever before in history, will seek universal access to postsecondary education and is likely to create a new institution to provide it. The goal will be to establish access to college for all at low cost. Digital instruction will make this possible. The locus of operation will be global. Industrial economies focus on common processes over fixed times, while information economies emphasize time-variable, common outcomes. The universal access institution will offer instruction that is time-variable, individualized, and mastery-based, rooted in explicit learning outcomes. Degrees and credits are likely to give way to competency certification and badges.

Traditional higher education institutions—universities and colleges—can be expected to continue, though they will evolve as did their colonial predecessors and their numbers will likely decline. At greatest risk will be regional, part-time commuter universities and less selective, low-endowment colleges, particularly in New England, the mid-Atlantic states, and the Midwest, where there are too many institutions and too few future students. The future of the community college and its relationship to the universal ac-

cess university is a question mark. It is possible that those with sprawling campuses will shed real estate in favor of more online programs, more compact learning centers, and closer connections with employers and other higher education units.

So what do we do? There is a greater sense of urgency today than in the industrial-era transformation of higher education; perhaps the criticism of higher education is more consequential now, given the dependency of colleges and universities on government. More importantly, this urgency comes from the pace and scope of socioeconomic change. In industrial America, progress was determined by natural resources and physical labor. In an information economy, the drivers are knowledge and minds. This makes higher education the dynamo that will power the nation's future and determine its capacity to compete in a global economy—one in which the United States appears to be losing ground educationally.

Change in higher education is also more urgent because we can see the consequences of inaction in other industries. The failure of print news media to respond to the digital revolution produced sharp declines in newspaper readership and advertising revenue. It rendered the historic business model obsolete. The inability to repair these organizations gave rise to digital replacements such as the *Huffington Post*. The newspaper business has been decimated. Major metropolitan dailies have closed. Print editions have been curtailed or ceased to be published. Long-respected institutions like the *Washington Post* and the *Boston Globe* were sold for bargain basement prices.

We cannot allow higher education to fail similarly, through inaction or unresponsiveness. At the same time, the stakes are too high to permit the

long, drawn-out, herky-jerky evolution of higher education which occurred during the industrial revolution. Instead, it would be valuable to plan for the future.

At watershed moments in the nation's and higher education's history, national task forces and commissions have been created either to reexamine and strengthen or reimagine and reinvent higher education. In terms of reimagining and reinventing higher education, in the years following World War II, President Truman established a White House Commission on Higher Education. The Truman Commission produced the six-volume report *Higher Education for Democracy*, which successfully created a higher education blueprint for America's post-war industrial economy, including the need for dramatic expansion and targets for accomplishing this; the end of barriers to access and the establishment of a system that guaranteed able young people both the opportunity to attend college and choice among institutions; the creation of a new institution, the community college; a design for financial aid; and much, much more.

In terms of reexamination, Carnegie Corporation in 1967 established the Carnegie Commission on Higher Education, which had the assignment of reviewing the industrial-era system of higher education to make recommendations on how to polish and improve it. Chaired by Clark Kerr, the architect of the University of California and the 1960 California Master Plan, the Commission issued a bookcase of reports on seemingly every aspect of higher education, offering analysis and recommendations targeted to institutions of higher education and their stakeholders with the goal of completing the development of the higher education system America needed for the industrial age. The results were as-

tounding in shaping higher education policy and practice for the nation.

This is once again a time for reimagining and reinventing higher education. A task force combining the best of the Truman and Carnegie Commissions offers a vehicle for doing this. In the manner of the Truman Commission, it should offer the nation and the higher education community a vision of the postsecondary education needed for a global, digital, information age, along with a set of broad policy recommen-

dations for accomplishing this. Like the Carnegie Commission, it should offer a multiplicity of data-based reports on key issues, targeted specifically to the stakeholders who need to enact them. At the very least, such an effort promises a common vocabulary, vision, and set of recommendations to permit shared discourse about the future of higher education. It could provide much more, serving as a catalyst for action and offering a roadmap for concerted engagement.

Precisely because we live in a digital era, conversation about how to change higher education is ubiquitous. From tweets about federal higher education policy to blog posts about local college and university concerns, we have more dialogue than ever, though the relative value of each contribution remains to be seen. Now it is time to form the group of thoughtful, informed, influential stakeholders who will create a specific blueprint for American higher education in a new era. ■