

Re-Imagining Undergraduate Education: AASCU's Red Balloon Project

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The recent terror attempt in the skies over Detroit, as a Nigerian passenger tried to blow up the plane with an explosive device, brought back memories of other terrorist attacks – Richard Reid, the unsuccessful shoe bomber; the attack on the USS Cole; and of course looming over everything else, the 9/11 attacks. After the horrific events in New York, Pennsylvania, and Washington, D.C., a bipartisan commission was set up to determine what failures prevented us from stopping that attack. The 9/11 Commission concluded that the greatest failure was our failure of imagination. Leaders at many different levels simply could not imagine the size, scope and focus of these attacks.

I wonder if we in public higher education are approaching our own crisis of imagination moment. We confront rapid changes in the circumstances and context in which public higher education operates. Yet we seem unable to respond with the creative and innovative solutions that will ensure our success.

For public higher education's future, three forces seem particularly important.

- First, at least for public higher education, I believe that the current economic crisis is here to stay. States will be challenged fiscally for years to come because of structural deficits and the competing demands of healthcare, prisons, and K-12 schools. As a result, state-appropriated funding won't come back in any appreciable way for higher education in the near future. At the same time, higher education cannot continue to rely on raising tuitions each year.
- Second, we are being asked to do more and more. The most obvious rising expectation is for college completion. President Obama has set a new ambitious goal for the United States, to once again be first in the world in educational attainment. The Lumina Foundation and the Gates Foundation are elaborating parallel goals. Raising college completion goals, of course, challenges other current practices, such as the 50% failure rate of students who attend our colleges, and the large number of high school students who never enter our institutions. Coupled with that pressure is the growing insistence of the accountability movement that we measure what students actually learn, not simply measure the number of degrees we award. These two pressures - lack of funding and rising expectations - are by themselves profoundly challenging. In fact, these pressures reveal a stark fact: our current model for funding and delivering public higher education is not sustainable.
- But there's a third pressure that also threatens the way we in higher education operate. I see signs that suggest that the technology revolution - the rise of the Internet, search capacities like Google, and our ability to find, aggregate, and use information in new, networked, more powerful ways - represents a profound challenge to the university as we know it. But the transformative power of technology not only threatens to challenge our core functions; it also represents a substantial opportunity to help us "re-imagine" our work.

It may be, as many worry, that given these forces, public higher education will slowly be starved to death. Yet beyond my own obvious self-interest, I believe that higher education is a public good that provides collective benefits. Individuals who graduate from our nation's colleges are more likely to vote; more likely to donate time and money; volunteer and become involved in community issues; and be more knowledgeable about local and national affairs. It is in every American's economic, political, and security interest to ensure that we educate as many citizens as possible. AASCU institutions have the unique responsibility to reach out to the least advantaged Americans, offering a pathway to greater success as individuals and greater success collectively as a nation by providing a cost-effective college education.

The issue of an educated citizenry takes on new urgency when thinking about American higher education in a global context. One of the reasons the Obama Administration is urging greater levels of education is the growing realization that the global economy of the 21st century is truly an information economy, and that the best educated nations are likely to be the most successful. Other countries have figured that out, and we are now locked in an educational arms race of sorts, with many countries working feverishly to update and expand their higher education systems. It's not simply the attainment issue that has been so publicized, through that is critical. We are now 10th in educational attainment in the 24-35 age cohort among OECD countries. But beyond simple attainment lurk even more profound challenges for American higher education in a global economy. We must do a better job of assessing learning. If others create effective mechanisms for assessing learning and we don't, then we lose. If the cost of higher education in other countries can be reduced, thereby producing more educated people at lower cost, then we lose. And if we don't continue to attract talented international students, some of whom stay to become innovators and creators, then again we lose. So this need for profound change in the structure and processes of public higher education is more than simply a strategy for institutional survival; it is also a national imperative.

As the academic leaders of our public institutions, we need to do something, working among ourselves and collaboratively with other groups, to respond to the current circumstances we confront. As the famous philosopher Jerry Garcia once said: "Someone has to do something, and it's just incredibly pathetic that it has to be us."

As campus provosts and senior academic leaders, we need to take a role of leadership, in part, because, as Garcia suggests, there really isn't anyone else who can respond as effectively. While there are always pockets of innovation on any campus, we seem unable as institutions to develop the adaptive responses that acknowledge the rapid and dramatic changes all around us. Instead, too many institutions seem to simply hunker down, cutting around the margins, reducing services or serving fewer, but not fundamentally re-thinking the enterprise.

It's not that there's not change happening in higher education. There is change everywhere, all the time. But much of the change is focused, not surprisingly, on outcomes. It is my conviction that "how" we educate students (the subject of this paper and proposed initiative) can probably not be divorced from "what" we teach. My

concern has been that we have had a lot of discussion about what to teach, and even how individual faculty might teach, but substantially less discussion about how institutions have to be organized to achieve these results. In particular, AAC&U's LEAP Project (Liberal Education and America's Promise) is one of the best single formulations of what we need to be teaching (<http://www.aacu.org/leap/>).

The LEAP goals are echoed by employer surveys that call for more skills and broad knowledge and capabilities than in the past. The recent Hart survey among employers (conducted for AAC&U) is the latest to express concern about the skills and capacities that students gain while in college. Only about a quarter of those asked in this survey think that colleges are doing a good job of preparing future employees for the challenges of the 21st century (http://www.aacu.org/leap/documents/2009_EmployerSurvey.pdf). Last year, the Minnesota State Colleges and Universities published a report that yielded similar findings (http://www.mnscu.edu/media/publications/pdf/2009_business_leadership.pdf).

The LEAP work is notable for its focus on outcomes, an area of rising concern among parents, policy makers, and the general public. What is less often talked about is how we transform our institutions to achieve those outcomes. There are, to be sure, isolated pockets of experimentation and innovation; one can find examples on any college campus. But whose job is it to talk about the fundamental design and structure of our institutions? I would argue that provosts are in the perfect position, between presidents who are being forced to attend increasingly to external issues, and faculty, whose views are often the narrow focus on courses and perhaps their own department. Provosts are the key institutional leaders who can provide a strategy for consideration of substantive institutional changes. Jerry Garcia was right...it may be pathetic, but we are the ones who have to do something. As Dorothy Cotton said in her famous civic rights song, "we are the ones we've been waiting for." And for the work that we must undertake, imagination must be a critical component.

Malcolm Gladwell, a perceptive commentator, described another situation in which imagination and adaptation were missing. Writing in *The New Yorker*, Gladwell describes an early 20th century failure. "In 'Military Misfortunes,' the historians Eliot Cohen and John Gooch offer, as a textbook example of this kind of failure, the British-led invasion of Gallipoli, in 1915. Cohen and Gooch ascribe the disaster at Gallipoli to a failure to adapt—a failure to take into account how reality did not conform to their expectations. And behind that failure to adapt was a deeply psychological problem: the British simply couldn't wrap their heads around the fact that they might *have* to adapt." http://www.newyorker.com/reporting/2009/07/27/090727fa_fact_gladwell

I suspect one source of comfort for those in public colleges and universities is that most of them have seen a large growth in enrollment, so there may not be a sense of urgency about creating new models for the future. Yet new models are going to appear, and sooner instead of later. Various kinds of partnerships are now appearing. The most obvious pairs public colleges and universities with for-profit providers. The New York Times is now offering courses with college credit, partnering with a variety of colleges

and universities. The new company StraighterLine offers an array of the lower division general education courses for \$ 99 a month, transferable into most universities. And recently, Kaplan Learning announced that it was working with the community colleges of California to make Kaplan courses available to facilitate graduation and transfer. These companies are taking advantage of student “swirling,” enrolling students in courses instead of institutions but using the phenomenon of swirling and widespread credit transfer practices to add a new dimension to the practice of students going to multiple higher education providers.

An extension of the individual course model is entire degrees offered in a public-private partnership. Perhaps the most notable current example is Higher Education Holdings, a Dallas-based company that has partnered with a Texas university (Lamar University) to offer master’s degrees at a sharply reduced rate, less than half the cost of public university master’s degrees. The courses, offered online, are delivered in five week units.

Another variation of public-private partnerships was announced on January 15, 2010, when Princeton Review announced an historic collaboration to create the largest on-line college in the world...in 5 years. Princeton Review, a recognized name in higher education (both for what it does and the similarity of its name to a prestigious university) acquired Penn Foster, a distance learning college with 223,000 students in 150 countries that offers high school, vocational, and college courses. The expanded company then created a joint venture with National Labor College, a small but accredited institution formerly connected to the AFL-CIO. The resulting entity, called the College for Working Families, will offer associate degrees at first but then move into bachelor’s and master’s degrees, focusing on the educational and training needs of the 11 million members of the AFL-CIO and their families.

What’s notable about this is the increasing popularity of combining for-profit and not-for-profit institutions. As these combinations grow and develop, as the Princeton Review example illustrates, they first will challenge lower level degree providers (associate degrees, etc.) delivering one form of coursework (distance education). However, I believe that as these new entities enter the market and learn how to operate effectively there, they will be able to move out into other areas, particularly with the financial resources they will be have at their disposal.

The other major player in this new era will be the strictly for-profit universities. They’ve grown at a rate of 9% a year for the past 30 years, far out-distancing traditional higher education with a growth rate of 1.5%. The combination of the explosive growth of the for-profit sector, and the recent emergence of the new hybrid public-private institutions, create a substantial challenge, particularly when most of the for-profit institutions are owned by large companies with deep pockets, able to turn on a dime and invest large sums in new models and approaches. I suspect that policy makers and state legislators are watching these developments of the for-profit world of higher education with great interest, particularly if these developments promise the twin advantages of a reduction in state expenditures and an increase in tax revenue.

But ever the optimist, I see opportunity in the circumstances we face. Let me walk you through the evidence I'm seeing of both powerful changes in funding, expectations, and technology, and then conclude with a proposal for how we might work together on this problem.

What finally triggered this impulse to act was what I call my red balloon moment.



I read recently about an experiment conducted by the Defense Advanced Research Projects Agency (DARPA) (the folks who brought us the Internet). To mark the 40th anniversary of the Internet, [DARPA](#) announced the DARPA Network Challenge, a competition that “will explore the roles the Internet and social networking play in the timely communication, wide-area team-building, and urgent mobilization required to solve broad-scope, time-critical problems.”

It was a simple idea. Ten (10) eight foot high bright red weather balloons would be placed at fixed, random locations around the country, tethered and clearly visible to the naked eye. The first person or team to find all 10 balloons would get \$ 40,000. (see *The New York Times* report of the contest at http://www.nytimes.com/2009/12/07/technology/internet/07contest.html?_r=1&emc=eta1)

So what would you do if you were given that challenge? How would you start? What processes, structures and tools would you use?

Oh, and how long do you think it would take to find 10 randomly distributed somewhere in the vastness of the continental United States? It took the winning team (from MIT) eight hours and 52 minutes to locate all 10 balloons. The core team of five people had more than 4,000 people join them. Surprisingly, the leader of the winning team only learned about the experiment four days before it began, and the website and other tools were set up only two days before the experiment was launched.

The strategy for finding the red balloons involved creating a website, using social networking and a variety of other technologies, and offering a reward structure that gave incentives not only to finders (\$ 2,000 to each finder of a red balloon) but incentives to the people who invited the person to join the team (the person who invited the finder to join got \$ 1,000, the person who invited in the person who then invited in the finder got \$ 500, etc....a pyramid but not a Ponzi scheme, for everyone won). (for more information, see <https://networkchallenge.darpa.mil/darpanetworkchallengewinner2009.pdf> or http://www.nytimes.com/2009/12/07/technology/internet/07contest.html?_r=1&scp=3&sq=DARPA%20Red%20balloon&st=cse)

See also the Stephen Colbert interview with Riley Crane, the leader of the successful MIT team:

<http://www.colbertnation.com/the-colbert-report-videos/260725/january-05-2010/riley-crane>

Why is this story so important for academic officers? It's an example of the development of a new kind of networked knowledge, different from expert knowledge that we typically associate with universities. It's a specialized kind of knowledge that technology, the Internet, and social networking facilitate, and it has profound implications for all of us in higher education.

(see also Michael Belfiore, The Department of Mad Scientists: How DARPA is Remaking Our World, from the Internet to Artificial Limbs. New York: Smithsonian Books, 2009)

But before I explore further the issue of technology and its implications for public higher education, let me go back for a moment to the other two issues, lack of funding and increasing expectations.

The thesis is simple: resources are either declining or at least level, with little realistic hope for recovery to levels previously experienced, and yet we are being asked serve more students, and serve them better. I described some of those pressures in a recent posting to the AASCU Chief Academic Officers entitled "The New Normal."

One report from the National Governors Association suggested that states budgets will fiscally stressed until the latter part of the decade (for anyone counting, that means 2018 or so).

<http://www.nga.org/portal/site/nga/menuitem.6c9a8a9ebc6ae07eee28aca9501010a0/?vgnextoid=5c0cba85b83e4210VgnVCM1000005e00100aRCRD&vgnnextchannel=6d4c8aaa2ebbf00VgnVCM1000001a01010aRCRD>

Additionally, pressures from health, criminal justice, and the K-12 schools will consume an increasingly larger share of the state's resources. Yet in this polarized political system, raising taxes won't be popular, and any taxes raised will have to address the national deficit or state structural deficits. The prospect of substantial increases in funds for public higher education is not bright. The strategy of continuing to raise tuition to meet institutional costs is also not likely, given the rapid increases in recent years, and the outcry about tuition costs that is growing louder from students, parents, and policy makers. Other new sources of revenue, while important to develop, will not likely be of more than minimal help to close the gap.

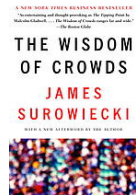
To respond to these circumstances, campuses have cut deeply into all kinds of services and programs. Most of that cutting, however, is done by eliminating or reducing some essential services, both beyond and within academic affairs. We've eliminated a variety of costs beyond academic affairs; joint purchasing, reductions in maintenance, etc. Within academic affairs, we've reduced travel budgets, furloughed faculty, replaced tenure track faculty with lower-cost contingent faculty, and the like. What I have seen

less of is consideration of fundamental restructuring of the academic enterprise, to go from expensive, non-scalable models to something new that is more sustainable. Replacing full time with part time faculty is a case in point. We've seen lots of hiring of part-time faculty...approaching 50% of the four-year faculty nationwide. Yet what I don't see is any fundamentally different use of these faculty members. We're simply replacing more expensive with less expensive faculty, but not changing the model for the delivery of learning. One key dimension of this new initiative will be to encourage new thinking about faculty work and faculty roles.

The second pressure point is the rising expectations for both college-going and college completion. The President, the Lumina Foundation, and the Gates Foundation have all focused on the need for more Americans with college degrees and certificates. Yet few have acknowledged how hard it will be to change the percentage of Americans with college degrees, a figure that has been stuck in the mid-20 percent range for more than 40 years. We currently lose about 50% of the students who enroll in our four-year institutions. Many academics would simply suggest that students who drop out are unprepared. That kind of thinking pervades the academy, found equally in classrooms as well as the larger institution. Students who fail are simply not prepared, not qualified and subtly, not worthy. It's the old idea of college as a sorting machine. Yet I would contend that far too often, it is the institution, not the student, that is failing. As long as our institutions are structured the way they are, we will likely continue to lose large numbers of students. We're encouraged to enroll more students to reach the goal of more Americans with degrees or certificates. The problem with enrolling more students in college is that many of the students who don't currently attend college are not well prepared to succeed in college. They come from lower socio-economic families, among ethnic groups that have historically had very low college participation rates, with poor academic preparation. The institutions we created in a very different era, to serve the elite, will not be the institutions we need to serve a mass audience.

As I noted at the beginning, we are challenged to educate more students, to greater levels of learning outcomes, at lower costs. That will be the enormous challenge that confronts public higher education.

And finally, we come back to the issue of technology. The DARPA red balloon experiment reminds me of the argument by James Surowiecki in his book *The Wisdom of Crowds*. <http://www.amazon.com/Wisdom-Crowds-James-Surowiecki/dp/0385721706>



Surowiecki essentially argues that our collective judgment is invariably better than our individual judgment. Surowiecki suggests that "under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them."

The book opens with a story by a famous British scientist, Francis Galton, about an experience he had at a livestock fair.

“In 1906 Galton visited a livestock fair and stumbled upon an intriguing contest. An ox was on display, and the villagers were invited to guess the animal's weight after it was slaughtered and dressed. Nearly 800 gave it a go and, not surprisingly, not one hit the exact mark: 1,198 pounds. Astonishingly, however, the mean of those 800 guesses came close — very close indeed. It was 1,197 pounds.” (an entry from Wikipedia, http://en.wikipedia.org/wiki/Francis_Galton)

Surowiecki’s argument was recently echoed in a new book by Twyla Tharp, *The Collaborative Habit*. Tharp commented: "...a notion that was once heresy--that the wisdom of a smart group is greater than the brainpower of its smartest member--is increasingly accepted in every discipline and every profession and at every age and stage of life."

And as long as I’m citing Wikipedia as one of my sources for the Surowiecki piece above, I might as well also cite the study in the journal *Nature*, comparing the accuracy of scientific entries of the *Encyclopedia Britannica* to Wikipedia.

The headline in the news story was startling, at least to me:

“Wikipedia is about as good a source of accurate information as *Britannica*, the venerable standard-bearer of facts about the world around us, according to a study published this week in the journal *Nature*.”

http://news.cnet.com/Study-Wikipedia-as-accurate-as-Britannica/2100-1038_3-5997332.html

For its study, *Nature* chose articles from both sites in a wide range of topics and sent them to what it called "relevant" field experts for peer review. The experts then compared the competing articles--one from each site on a given topic--side by side, but were not told which article came from which site. *Nature* got back 42 usable reviews from its field of experts. <http://www.nature.com/nature/journal/v438/n7070/full/438900a.html>

In the end, the journal found just eight serious errors, such as general misunderstandings of vital concepts, in the articles. Of those, four came from each site. They did, however, discover a series of factual errors, omissions or misleading statements. All told, Wikipedia had 162 such problems, while *Britannica* had 123.”

http://news.cnet.com/Study-Wikipedia-as-accurate-as-Britannica/2100-1038_3-5997332.html. That study, as you might imagine, has been hotly contested. I would argue, however, that whatever the merits of this particular study, the core idea remains, a quintessential Surowiecki proposition: Collaborative work will yield greater results than individual work.

And remember, the Encyclopedia Britannica is a 32-volume set, printed at a moment in time (available online but only as an electronic version of the print edition...hardly revolutionary). By contrast, Wikipedia in 2007 was already estimated to be the equivalent of 1250 volumes. Today, Wikipedia has 65 million visitors a month, contains 14 million articles in 260 languages, and is edited and updated every moment.

I think what the red balloon experiment, the *Wisdom of Crowds*, and the study in the journal *Nature* all suggest is that there is fundamental change in the ways of developing knowledge, the ways of aggregating and sharing knowledge, the ways of using collective knowledge. Indeed, the changes we are witnessing raise questions about conceptions of expertise.

A very recent example of the changing idea about expertise – that expertise is collective wisdom facilitated by technology – appears in a new project, Expert Labs, being launched by the American Association for the Advancement of Science (AAAS). The Expert Labs project, headed by Anil Dash, proposes to use “cloud expertise” to link together many different experts. “Expert Labs will help policy-makers harness the wisdom of crowds—particularly the expertise of scientists, technologists, and other citizens with specialized knowledge on key topics.” When asked why AAAS had launched Expert Labs, project director Dash said simply: “All of us together are smarter than any one of us alone.”

http://www.aaas.org/news/releases/2009/1118expert_labs.shtml

Other examples of networked knowledge are beginning to appear. In early February 2010, the Chronicle reported on the construction of the world’s largest digital camera, the Large Synoptic Survey Telescope, at Cerro Pancon in Chile (<http://chronicle.com/article/A-Motion-Picture-of-the-Sky/64003/>). Over 10 years, it will document more than 10 billion stars and galaxies, looking back over 13 billion years in time (looking at stars that are 13 billion light-years away). The data from this project, more than 100 times larger than in any other previous astronomy database, will transform academic astronomy. But the real transformation is not in the size or data-gathering qualities of this new telescope but in the way the resulting data are made available. Any data from the telescope will be made available, for free, to anyone in the world 60 seconds after the data are captured. The Chronicle article reported on the comments of Steven Kahn, the deputy director of the project, who pointed out that “huge amounts of data do not favor lone wolves.” Kahn went to say: “Anything that is really important is going to be a lot of work because there is so much data. It makes sense to do that in teams.”

Another example of networked knowledge comes from a new mapping application, OpenStreetMap (<http://www.openstreetmap.org/>). Many of us have been devout users of Google maps (well, at least since 2005, when Google Maps was launched!), which provides a level of cartographic capacity never before known. Yet Google is now being challenged by a collection of amateurs (albeit a large number of amateurs...more than

200,000) who have taken map-making to a new level. Groups of citizens, armed with GPS devices, have fanned out over the globe to map details never before captured: the location of bike racks, park benches, running paths, and thousands of other objects and locations. Some do it alone, but in many locales, groups organize to do it for fun as a social activity. The result is a customizable, constantly updated open source product available to anyone.

But perhaps the most vivid example comes from the introduction of Apple's iPhone. Though widely anticipated, the innovation built into the machine was only the beginning. Apple also invited others to create applications for the iPhone, and then created the iPhones store to sell the apps. That created an interesting model. Apple created the core instrument, but others created many of the best applications. Of course, each time an app was sold, it not only provided cash for Apple (Apple takes 30% of the revenue); equally important, each app made the iPhone more valuable. Apple not have to think up all of the various applications but from the wisdom of others, they profited in two ways, cash and increased intrinsic value. There are now 150,000 apps for the iPhone, and there have been 3 billion downloads...not bad for a concept that came along a year after the iPhone was introduced!

These examples of knowledge creation and knowledge sharing stand in stark contrast to the university model of knowledge, where the old joke goes that the Ph.D. is a process of learning more and more about less and less, until you know everything about nothing. In the so-called most prestigious research universities, disciplines and the atomization of knowledge have created silos of specialties and sub-specialties, peer-review processes that create ever-smaller circles of experts.

One thoughtful observer of this new age, Tim Clydesdale, asserts that there is a new epistemology at work.

Our students arrive on our campuses with years of experience in observing disputes about what is and is not known, and with well-established ways of handling such things. For example, should they view Thomas Jefferson as the brilliant author of the Declaration of Independence and a "founding father" of the United States, as a political hypocrite who owned slaves and impregnated them, or as a dead president irrelevant to their own lives but important to their history teacher? Similarly, how should they view global warming, illegal immigration, and evolution?

One of my students put it this way: "It is imperative that someone studying this generation realize that we have the world at our fingertips — and the world has been at our fingertips for our entire lives. I think this access to information seriously undermines this generation's view of authority, especially traditional scholastic authority." Today's students know full well that authorities can be found for every position and any knowledge claim, and consequently the students are dubious (privately, that is) about anything we claim to be true or important.

Clydesdale asserts that this new epistemology produces “a rather odd kind of student – one who appears polite and dutiful but cares little about the course work, the larger questions it raises, or the value of living an examined life. And it produces such students in overwhelming abundance” (*Wake Up and Smell the New Epistemology* <http://chronicle.com/article/Wake-UpSmell-the-New/4568>).

It may be that Clydesdale’s assertion of a new epistemology is too strong, that we don’t really have a new epistemology at work (at least in a profound, Cartesian sense) but instead simply a new set of tools for how we create, distribute and use information...and equally important, how we LEARN.

In this new context, at least three questions challenge me:

1. How are our universities using these new approaches to knowledge acquisition and use to change the way we teach and students learn?
2. How are we helping prepare students to be creators, disseminators, and users of this new knowledge in a new, networked environment ?
3. At the most important level, how are we beginning to deal with notions of expertise and authority? Do the new technologies, and the ways of knowing, challenge universities at every level? Do long-held assumptions about teaching, about learning, and about the role of the professor still have resonance in this age of the Internet?

Given these dramatic pressures – loss of funding, rise of expectations, and the power of technology – why aren’t we seeing more change in public higher education? I think there are at least two sets of reasons: organizational and structural issues (like money, time, administrative job-hopping, poor incentive structures, etc.); and psychological reasons (like stress and response to change).

Creating change in higher education organization and structure is enormously complicated. Thinking about systemic change is almost mind-boggling. Take, for example, the deceptively simple idea of the credit hour. Tinker with the credit hour and suddenly your higher education world will collapse like a damaged sand castle. Challenge the credit hour and you raise questions about workload, student time, academic program design, graduation requirements, and indeed, the very idea of the degree.

But psychological issues also contribute to lack of change. One reason for lack of substantive change is the physiological response to stress. For human beings, stress has a significant impact on vision. Stress literally reduces peripheral vision. Metaphorically, stress reduces our ability to see some of the peripheral opportunities. Instead, we start to have tunnel vision

Second, most human beings have a negative response to change. When things start to alter in profound ways, most people begin by simply hunkering down, hoping whatever change agent is at work will soon pass, and things will return to normal.

But there's another force at work to reduce our sense of urgency, the concept of geometric progression. The speed of change in technology innovation stands in stark contrast to the ability of higher education institutions to adapt. Ray Kurzweil, author of *The Singularity is Near*, argues that the speed of innovation in information processing is a geometric curve that provides a deceptively slow start but then rapidly accelerates into a very steep curve. He suggests that we're seeing that process at work as he predicts the capacity of machines to equal the processing power of the human brain by 2029. By the mid 2040's, Kurzweil predicts that we will have available machines with a billion times the power of the human brain (for a fascinating set of video clips by Kurzweil, Joel Garreau [another futurist], and others, see the 7 Revolutions section of the Center for Strategic and International Studies [CSIS]:

http://gsi.csis.org/index.php?option=com_content&task=view&id=365&Itemid=136

I would argue that we are lulled into a false sense of security about the coming age, thinking that things will continue to unfold in a rather slow and measured way, when in fact we, like Kurzweil's example, have been watching the first part of the curve, which is a slow and steady increase in the rate of change. But if the rate of change is geometric, as it is in technology innovation, we may be at the critical inflection point, when suddenly the curve takes a sharp upward turn, disrupting long established models, processes, and indeed institutions.

Given the intersection of these three enormous challenges – declining levels of funding, growing expectations, and changes in epistemology - I believe that it is time to go beyond marginal tinkering or reductions of core functions and services and begin to identify long-term strategies to create scaleable, high quality educational models for the 21st century.

Someone recently said that the core problem is that higher education was designed in the 11th century and operates on a 19th century agrarian calendar, while trying to prepare students for life and work in the 21st century.

Put simply, I believe that the present financial circumstances, the growing expectations, and the technology context challenge us to develop new, more sustainable and more effective educational models. I think these challenges will force change throughout our institutions, but we need a place to start, and I can't think of a better place than the undergraduate experience. I think we have to think in profoundly new ways about how we organize and deliver instruction, structure and sequence the curriculum, and design

learning environments. In short, I think we need to re-imagine the entire undergraduate experience.

If nothing more, it would be useful to talk about, and maybe even gain control over, our future, instead of watching our institutions slowly wither, hearing the constant drumbeat of doom and gloom prophecies, and listening to a rising chorus of complaints and back-biting. At the end of this paper, I'll propose a year-long initiative, using some of the new trends in knowledge development, to address how we might transform our institutions for the 21st century.

Barr and Tagg described part of the shift needed in our thinking if our institutions are truly to become 21st century universities. In their much-quoted article, "From Teaching to Learning: A New Paradigm for Undergraduate Education," (Change magazine, 1995) they described in hopeful terms an important paradigm shift in higher education:

"A paradigm shift is taking hold in American higher education. In its briefest form, the paradigm that has governed our colleges is this: A college is an institution that exists *to* provide instruction. Subtly but profoundly we are shifting to a new paradigm: A college is an institution that exists *to produce learning*. This shift changes everything. It is both needed and wanted." (Robert Barr and John Tagg, *Change Magazine*, 1995)

Unfortunately, 15 years later, that shift is all too often more an aspiration, not yet a reality. But under the weight of the challenges of finances, expectations, and technological transformation, perhaps we are reaching an inflection point. Maybe the Barr and Tagg dream is finally about to come true, particularly in an era of rising expectations about student learning outcomes.

For many years, the typical model in universities was not only a focus on teaching, not learning, but teaching in a special frame of reference. Far too often, teaching was largely about content, and getting content from one person (the expert) to someone else who was not the expert (the student). Today, of course, content is everywhere, available instantaneously, and doubling every 18 months. Millions of clips on YouTube, including the fascinating TED lecture series, where at the click of a mouse you can watch world leaders, scientists, activists, Nobel Prize winners, and other extraordinary human beings describe their research, their ideas, and their dreams...and TED, of course, is only one tiny fraction of the material from one source, YouTube. There's also coursework from MIT, and millions and millions of other sources of content. When I speak to faculty groups, I mention the tyranny of coverage that still haunts so many of our colleagues. You and I have heard the refrain for years: "I can't possibly do (whatever is new or novel); I have to make sure I cover the material." Whenever I address an audience during a campus visit and plead for consideration of a focus on civic engagement, I acknowledge the constraint that coverage of content imposes. But then I mention the fact that content is doubling every 18 months, and ask, with a smile, "so how's that coverage thing working out?" I always get a laugh.

Faculty have traditionally had four primary roles with respect to teaching and learning. They select the content that is most critical, they design the educational experiences that will optimize learning, they deliver instruction, and they assess learning outcomes and assign grades. It seems to me that faculty have spent more time on the delivery of content than on the design of effective educational experiences. In the last five years in our technology conference at the University of Central Florida, I used to be excited by the notion of learning spaces...the transformation of halls, libraries, and other campus locations to encourage out-of-class learning, collaboration, and informal exchange. In planning this year's program, I heard a new phrase, "learning environments," as we transition from a focus only on physical space to a new conception of both physical and virtual space.

To build new educational models that are both scalable and sustainable, I wonder if we need to rethink faculty roles, particularly to de-emphasize the delivery of content, which is so readily available from so many other sources. One possible model would be to disaggregate faculty roles, much as was done by the Open University of the UK, where a huge investment was made in course development and design, a substantial investment was made in an independent unit that assessed the results, but delivery of the course was done in a less expensive way. One of the reasons, I suspect, that we still use a cottage industry model, where the entire operation, from design thru delivery to assessment, gets handled by the same person is because of our notion of expertise. Yet other models exist. Even in traditional institutions, innovation around disaggregation of faculty roles exists at place like Virginia Tech with its Math Emporium. Carol Twigg of the National Center for Academic Transformation has been a notable leader in this process of reconceptualization, yet it has not yet reached as many institutions, or as many parts of the university, as it needs to if we are to radically restructure our institutions. (<http://www.thencat.org/whatwedo.html>)

Rethinking faculty roles, and building a disaggregated model, is one way to think about re-engineering our teaching and learning models, and ultimately the undergraduate experience, but there are countless others.

Given all that I've described, I think we have reached our Jerry Garcia moment: somebody really does need to do something. Faced with the realization that we need to take the lead in thinking about how to respond, what I'd like to propose is that we use the economic crisis and the revolution in knowledge production to design a creative, collaborative process to rethink the teaching and learning process, as the vital core and central element in rethinking the entire idea of the university. I'd like to use the networking capability of the Internet to build a new model of undergraduate education, an initiative that I'm tentatively calling: "Re-Imagining Undergraduate Education."

Here's how it would work. First, given the economic crisis, we would use existing structures and organizations. We don't need to wait until we have a grant, or some

infusion of new money. We already have an association (AASCU), regularly-scheduled national meetings (Academic Affairs meetings), a network of colleagues connected by the Internet, email, and webpages, and on each of your campuses, time and opportunity to meet together to think about how undergraduate education should be designed and delivered in the 21st century.

We will start with the AASCU Academic Affairs Summer Meeting in Chicago in July 2010. The entire meeting will focus on the challenges that we face as public colleges and universities, using plenary sessions, concurrent sessions, and small group discussions. Here are some of the topics that we plan to discuss in Chicago, and that will likely form the areas of investigation during the year-long project that grows out of the Chicago meeting:

Institutional Design

1. New Models for Institutional Organization and Design (Academic Affairs-Student Affairs collaboration, departmental/college structure, etc.)
2. New Models for Enrollment Management (academic advising, tracking, early warning, etc.)
3. New Models for Faculty (faculty employment, the use of faculty, part-time faculty, use of faculty time, etc.)
4. New Models for Curriculum and Course Design (degrees limited to 120 hours, reduced seat time, interdisciplinary, new designs for general education, etc.)
5. New Models for Instructional Design (distance education, new forms of student engagement, use of technology in teaching, etc.)

Institutional Strategies

6. New Funding Models and Financial Strategies, etc.
7. New Approaches to Strategic Planning
8. New Approaches to Assessment of Learning Outcomes
9. New Inter-Institutional Arrangements
10. New Public-Private Partnerships for Instruction

Areas of Specific Focus

11. New Approaches to Teacher Education
12. New Approaches to International Education
13. Open topic (please suggest a presentation on any topic of interest to chief academic officers that is not listed above)

The event in Chicago will produce a rich collection of ideas and suggestions for provosts to consider. For those who simply want to come to the meeting to have the experience and gather those ideas, the Chicago event will be like any other Academic Affairs Summer Meeting.

However, at the conclusion of the Chicago Academic Affairs Meeting, we will devote some time to designing a year-long initiative that any AASCU campus is welcome to

join. There will be no cost to join the initiative (though you may have costs on your own campus, depending on how you organize your local efforts).

The core idea is that each campus that wishes to participate will convene a group or groups on their own campus to discuss ideas and implementation strategies for Re-Imagining Undergraduate Education in their own unique context. Over the 2010-2011 academic year, we will assemble and share ideas, programs suggestions, and proposed strategies and structures that campuses might use to design and develop their own approaches, connecting all of the participating campuses. At the Winter 2011 Academic Affairs meeting in Orlando, we will assess our program, provide more resources, and offer various forms of support. At the Summer 2011 Academic Affairs conference in Portland, we will present our collection of strategies and ideas, review the work, and possibly extend the project into a second year-long phase.

Because reforming higher education is such a complex problem, we will use some of the tools and strategies of the DARPA Red Balloon project to collectively design a 21st century university educational strategy. We will create a special augmented set of network resources (web pages, wikis, and the like) so that faculty could interact with one another across campuses, as well as with their own colleagues. We will host a webinar series on topics that are part of the project, asking campuses working on a particular issue to collaborate to provide webcast content for everyone else. We'll build a project website as a repository for ideas, resources and other materials, organized by categories with key words. We'll use conference calls as a way to keep participants connected. There may be other ways to link together and stay connected as well.

We already have some great collective leadership at work on this project. More than 15 people have read and commented on drafts of this paper. A Working Group of 25 AASCU chief academic officers has been formed who will help guide our efforts. A number of others have offered to be involved and to help as the project unfolds.

Just as we did in the American Democracy Project (ADP), we might find external partners who could add substantially to our deliberations, bringing with them new resources and new perspectives. In ADP, much of what we have accomplished could not have been done without our partners. You may find partners for your institutional work, as well as our national partners.

Can we work together successfully on a project like this? Frankly, I have no idea. But our experience in the American Democracy project, an initiative that has lasted almost seven years without external funding, suggests that it is certainly possible. Can we produce useful outcomes? Again, I don't know. But I do know this. We have incredible talented leaders among the provosts, and lots of incredibly talented people on our campuses. In *The Wisdom of the Crowds*, Surowiecki suggested that a wise crowd needed (1) diversity of opinion; (2) independence of members from one another; (3) decentralization; and (4) a good method for aggregating opinions. We certainly have those conditions. As a result, I think we could be a "wise crowd" while being true

academic leaders on our campuses, as well as colleagues in the quest for a better way of providing a high quality educational experience for the 21st century.

When I think about this project, I think about the analogy to a supercomputer. It turns out that a supercomputer is not a giant computer; it's a lot of small computers, but all working together. With the creation of supercomputers, we have been able to develop hyper-fast levels of computation, allowing us to work on very complex problems. Might we make ourselves into a higher education supercomputer to address the very complex questions of how to re-imagine undergraduate education for the 21st century?

Our goal, put simply, is this:

We need to educate **more students**, **produce greater learning outcomes**, with **less money**. That's a dramatic challenge.

In the end, we may need to re-imagine every aspect of our institutions. However, my fear is that if we make the focus too broad, we'll become too diffuse in our efforts to make any substantive change, and our project will simply become an empty exercise in imagination. I hope that this project will ask large questions while remaining committed to a focus on the undergraduate experience. What are the key problems (are they the three I identified at the beginning? Are there more? Others)? How can we think about the relationship between institutional structures and faculty roles in relationship to the needs of modern students and the vast availability of content?" How do we operationalize the shift from teaching to learning (identify best practices, explore specific mechanisms, etc.)? How do we harness collective expertise in more effective ways (and institutionalize – across universities or across AASCU) the power of that collective expertise in an ongoing and progressive way?

To achieve those outcomes, I would hope that the project we might undertake could achieve the following results:

Design new models, processes, and programs that respond to the three core challenges:

1. Lowering Costs

- Maximize cost-effectiveness (either hold costs constant while increasing the number of students involved, or reduce costs)
- Make programs scalable (increase number of students served while reducing per-student costs)

2. Increasing Participation

- Create more effective student engagement. Engagement is the key to greater learning outcomes
- Produce greater learning outcomes documented by a rich array of instruments and assessment strategies

3. Responding to a New Century and the Challenge of Technology

- Focus on the development of 21st century skills to create 21st century learning and leadership outcomes
- Rethink teaching, learning, faculty roles, concept of course and credit unit

I welcome your comments and reaction to this set of thoughts. If we're going to have a "red balloon" moment, we need lots of people shaping these ideas and proposals, as well as joining together to design an initiative that will make a difference for our institutions and the students we serve.

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