Selected Futures Studies: Case Histories and Scenarios

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Contents

Introduction

This is a 19 page summary of selected scenarios of higher education; several are Arizona-specific. Additional scenarios are included from business and government or comparisons. Some scenarios are a little over a page, and some are a line or two. Most scenarios are a short paragraph. References are given for scenario sources.

Case Histories of Arizona and Other Universities/Systems

Three serve as good models for future thinking and resulting action: ASU (New American University) – serves as a blueprint for decisions, Michigan (The University of Michigan planning document completed in 1999 – not clear how much was implemented but it is a great study, University of California – UC 2025 completed in 2006 – a very good study. The ABOR studies are given for reference but they are not good models.

ABOR studies – relevant studies

1. Changing Directions Policy (2002) – provides increased authority for campuses
2. 2020 Study (2008) – university system response to forecasted degree needs by 2020
3. Redesign Study (2005) – addressing student demand and research emphasis by campus
4. Faculty Stakeholders report to Redesign Study (2005) – comments on final draft study report raising issues of concern
5. Task Force on Excellence, Efficiency and Competitiveness (1988) –

ASU - Developing a plan for "A New American University". From 1990 to now, about 10 years

1. Leverage Our Place (embrace cultural/economic/physical setting)
2. Transform Society (catalyze social change by being connected to social needs)
3. Value Entrepreneurship (use knowledge to encourage innovation)
4. Conduct Use-Inspired Research (research has purpose and impact)
5. Enable Student Success (committed to the success of each unique student)
6. Fuse Intellectual Disciplines (create knowledge by transcending academic disciplines)
7. Be Socially Embedded (connect with communities through mutually beneficial partnerships)
8. Engage Globally (engage with peoples and issues locally, nationally, and internationally)

California Master Plan (1960) and its updates

Proposed in 2002 to be the Master Plan for Education: Pre-School through University

1. Defined missions and functions among public postsecondary institutions
2. Principle of universal access and choice and admissions differentiation
3. Principle of tuition-free education to residents and provisions for student aid
4. Establish governance structure (universities, state colleges, community colleges)
5. Establish a higher ed coordinating council (CA Postsecondary Education Commission)

California -- UC 2025: The Power and Promise of Ten (2006)

This is a Long range guidance document for system and 10 campus, a two year project to answer the question: How must the University of California change to better serve the needs of the people of California 20 years from now? See specific scenarios under "Scenarios for Higher Education"

1. Addressing Challenges
2. Demography
3. Financial
4. Maintaining and Extending the Research Enterprise
5. Preparing California's workforce
6. Addressing the Crisis in Public Education

Defining possible initiatives toward meeting California's needs in 11 areas:

1. K-12 education
2. Health care
3. Science and technology innovation
4. Graduate education
5. Undergraduate education
6. Affordable higher education
7. Research
8. Sustainable resources
9. Global reach

10. Efficient system wide business practices for UC
11. Arts and culture

In addition, in May 2004 Governor Schwarzenegger entered in a new Compact with the UC and CSU systems for the six-year period 2005-06 through 2010-11. The funding agreement is a comprehensive statement of the *minimum* resources needed for the University to accommodate enrollment growth and sustain the institution to which students seek admission. The agreement is also a statement of the State's expectations of UC in terms of accountability and performance.

Michigan – The University of Michigan 1999 to now[1] (part of the millennium project)

Several models as examples of the extremes existing today – noting none are applicable to the 21st century:

1. The University of the Common Man
   Goal: UM = the University of the Common Man (broad admission policies, minimum cost)
2. The University of the "State of Michigan"
   Goal: Maximize service to State of Michigan (educational opportunities and service)
3. The Harvard of the West
   Goal: Academic excellence seeking only the best students, faculty, and programs
4. The Stanford of the East
   Goal: Strong entrepreneurial, change-oriented, risk taking, people-oriented culture
5. The University of America
   Goal: Both quality and breadth, responsive to national priorities
6. A National Leader
   Goal: National leadership in public and private higher education

Michigan went on to give examples of possible future universities, with these examples:

1. The World University (a global culture is forming)
2. The Diverse University (changing nature of students)
3. The Creative University (shift from preservation of knowledge to creating knowledge)
4. The Divisionless University (minimal number of departments that are less specialized and more integrated through a web of structures – virtual and physical)
5. The Cyberspace University (more active learning, more information technology in and out of classrooms)
6. The University College (research universities need to commit to quality undergraduate education)
7. The Lifelong University (education becomes lifelong and takes many forms)
8. The Privately Supported , Publicly Committed University (addressing declining state support)

Scenarios About Higher Education

Three ABOR Scenarios Developed in 2001 and focusing on 2010 (3 of 6 original scenarios).

Developed by Roger Caldwell with aid of all of ABOR staff at a scenario planning session.

Scenario 1: Harvard Opens Branch Campus in Scottsdale Arizona

Universities have had a long history of developing consortia or partnerships with other institutions where such activities were mutually beneficial. However, the changing higher education landscape in the mid-1990s, caused by the explosion in e-learning capabilities, a shift to learner-centered education and a changing student landscape, created a number of new approaches to higher education. One of the changes began in 2005 -- the official opening of Harvard University's Scottsdale campus. This still took people by surprise, even thought it had been in the development phase for 12 years.

Harvard accomplished what seemed impossible back when we began the 21st century, a short 10 years ago. By adroitly anticipating the new educational changes that were becoming clear by the mid 1990s, Harvard began

[1] Duderstadt, James. 2000. A Choice for Transformation of the 21st Century American University. http://milproj.ummu.umich.edu/publications/choice/index.html

developing partnerships with other institutions but continued its focus on quality high-level education, research, and public service programs. As we now understand it, Harvard knew that the Maricopa County Community College District (MCCCD) had partnered with the United States Open University (then a subsidiary of the Open University of the United Kingdom) in the late 1990s and that the University of Phoenix (UoP) had established a then-new approach to learning, focused on older working students and requiring team participation as well as individual learning situations. By partnering with MCCCD and UoP, Harvard was able to establish quickly a western presence, focus on upper division and graduate work, have students (and particularly alumni) participate in life-long learning experiences, and use to advantage e-learning as well as face-to-face learning (traditional semesters using classrooms, of course, had largely disappeared by 2010).

Harvard was able to work with private industry, governments worldwide and partner with other educational systems in a manner that allowed them to focus on an integrated approach to learning. For example, they have in place a mini-sabbatical system where faculty can float among business, government, and non-governmental organizations to broaden their perspectives and knowledge (and spread the word about Harvard). While remaining an elite and respected institution, they took special pains not to become elitist in attitude toward their students and research partners. They have also retained a diversified student and faculty population through scholarships and competitive salaries.

Harvard was able to accomplish this stunning opening of the Scottsdale campus mostly by defining what they wanted to do and sticking with that vision. Of course it greatly helped that Harvard had the largest endowment of any American university ($14 billion in 1999). By investing less than 10% (about $1 billion) of that endowment annually over 10 years and partnering with other institutions, they had sufficient capital (internally and through partnerships) to take on a rapid building program. But they did more. They built consortia so that different institutions took on different subject focal areas and the students and researchers could then electronically share in the results, no matter where they were located. Of course, Harvard had the advantage of starting a new institution without the entire old infrastructure (physical buildings and administrative and faculty mindset) and took full advantage of how to best combine the physical and electronic learning world we now find ourselves in. Harvard had also learned in the 1990s that digital libraries were the wave of the future, eliminating the need for each physical site to duplicate everything from another site. During the campus opening ceremonies, some of the students expressed their amazement that educational institutions in the 1990s could not understand the importance of virtual learning environments and how one could develop a student oriented community through a virtual presence and by using the "new" ways of having meetings with people around the world and even those long deceased (via holograms combined with context sensitive databases of early writings).

There were expected and unexpected results at the campus opening but it is too early to see just what may happen to the Arizona universities. So far, the early fears seem to be borne out – the better students and faculty flocked to Harvard (greatly wounding the three Arizona universities that existed back in 1999), even though the Arizona universities stepped up their marketing efforts. Harvard also retained some of its old traditions at the new campus – crew races on the Salt River, Maine lobster in the Student Union.

Scenario 2: Fighting for Control of Arizona Higher Education
Arizona has been in a decade long fight on how to reorganize its higher education management, and the final vote goes before the public in November 2012 (a presidential election year) as a constitutional amendment. The first report on the pros/cons of the various approaches was published this year (2010) and all sides are lining up with their favorite choice. Unfortunately, only 43% of the registered voters are expected to vote and polls show that half of that number has no interest in this particular item.

The report identifies four basic options and is rich with examples of what other states have done and the changes that would have to be made in financing, management, and state-wide coordination:

- *Status Quo* -- state Board of Regents for universities, State Community College Board and individual county-based boards for each community college system

- *Regionalized Boards* – each university and each community college has own board and there is a small coordinating commission at the state level that provides summary information in one place but has no policy control
- *Super Board* – a single board for all of higher education, with sections dealing with universities and community colleges, but no local boards
- *Coordinating Board* – a combination of #1 and #3 – where the coordinating board has some policy and financial role with the status quo boards

There are many features of higher education that are common to all the alternatives: e-learning is concentrated at the higher levels (with over 90% of college seniors involved), community colleges account for 75% of the lower division students, and education is a big part of the commerce and political power within every county. In addition, it is widely assumed that no matter which proposal wins, the current funding of higher education would be redistributed, as the historic funding patterns no longer address the future educational needs of the state.

Other features vary widely among the four proposals. Regionalizing the boards is expected to open the way for community colleges to offer 4-year degrees but also to cost the state and county more through inefficiencies and duplication of services and programs (although retaining control locally may be worth the cost to some). The super board would improve transfer from community colleges to universities, increase the graduation rate by universities, and ease the development of a state education master plan. However concerns have been expressed that too much power would be vested in too few and the rural areas of the state would become less able to maintain influence over their own community college curricula. The status quo model has been obsolete for over 5 years and has resulted in each board (universities and community colleges) doing their own thing but without much consideration for needs of the student. Most people polled believe that the primary reason this reorganization question is on the ballot is because the current model is dysfunctional, but the polls show about an even split on the other three options.

Studies by other states provide the usual range of viewpoints, and you can make almost any case you want by selectively using the facts from studies done under conditions that cannot be duplicated in Arizona. The issues seem to have become a simple contrast of local control vs central control. Seemingly lost in the discussion is what Arizona needs in the way of an educated populace and how the higher educational system can be effectively and efficiently organized to deliver it.

How are you going to vote in 2012? Do we yet know enough about the different alternatives to take the risk of change or we will again retain the status quo?

Scenario 3: Universities Transformed: Can it be done?
Although there have been studies and reports about the "transformation" of higher education for years, they were read more seriously in the late 1990s. By the early 2000s, there was a critical mass of people who realized that indeed there was to be a transformation and the early warning signals were not only clear, but they also provided some idea of what we might expect.

It took about 5 years of both frivolous and serious debate among faculty, administrators, students and governing board members (and all the relevant constituencies of each group) for Arizona to make some serious choices. Since the primary changes were put into place in 2005, we now have 5 years of experience and have made remarkable progress beyond what we were doing at the Arizona universities back in 2000.

The basic driving forces that finally got our attention were two – an obsolete budgeting and incentives structure that rewarded the wrong things, and a student population who decided they would not take our courses unless we changed our ways.

The fundamental changes that allowed everything else to occur can be summarized as a) a budgeting system that is not tied to enrollment, b) a recognition that a course is a course, regardless of how it is taught (on- or off-

campus, by us or by others, for a semester or some other time period, and taken by individuals or as teams), c) that we cannot do it alone and we must form alliances with other institutions (educational and outside education), and d) finally figuring out that a strategic plan needs to be small enough to fit on a 3x5 card rather than one that fills a book, to provide flexibility to address the new uncertainties and unanticipated consequences of our new actions.

We now have a relatively unique approach to our strategic partners and how we work together as the state's four universities. No other group includes the whole state university and community college systems and a few strategically placed partners. In our case, we could do it because Arizona was strategically located in a place where we were large enough to have problems and small enough to do something about them, building on a pretty good (but underfunded) post-secondary educational system. Our strategic partners include two private universities, two non-governmental organizations, and the State of Arizona. In addition we have strategic alliances with 25 business/industries, allowing mini-sabbatical leaves for both faculty and staff from the university, along with staff from the industries. We also have a new version of the historic student internship programs. The State of Arizona's involvement was facilitated by the Research Applied to National and State Needs Program (RANSN) of the National Science Foundation (a slightly revised version of the NSF sponsored Research Applied to National Needs program that was in place from 1969 to1977).

But, it is how we used this strategic partnership that allowed us to leverage our resources and target specific disciplines and their interactions that turned out to be highly relevant today. That leveraging, coupled with our "new" approach to student learning is what saved our ass. Of course, we partly took advantage of the highly sophisticated electronic course modules (that began in simplistic version in the mid-1990s) and the credit banking agencies. These credit banking agencies, a subsidiary of the national accrediting agencies, allow all courses at accredited higher education institutions to be transferred freely among the globe's educational community. Some of us never thought we could pull that off, as everyone has historically considered their own courses as superior to everyone else's.

The solution to that problem is fun to talk about, now that the transition has been made. By about 2007, there were so many electronic courses that students self-determined (rather than the university) which courses were the good ones (the rest died from lack of interest). That also explains how the accrediting agencies were able to work out the credit banks: the actual number of courses that addressed the same subject was small, so the problem became manageable. With this improvement in offerings and use of electronic courses, the classroom of the past became a place for small group discussions between students and faculty, and students and students.

In the end, the university reaction to student competition, and the legislative flexibility to change our budgeting processes, allowed us to greatly strengthen our universities, thereby increasing our efficiencies, improving our student learning, and helping the state fix its problems.

One Scenario of Arizona Universities Transformed (developed in 2005 for 2020)

Note: this scenario is written from the perspective of 2020 and is an example; it is not necessarily representative of the large variety of possible futures - to do that would require 4-5 scenarios or more. The basics of this scenario were originally developed in 2001 (for 2010) from a discussion of possible changes in the Arizona universities as identified by the ABOR staff. It has been updated and modified for this report. It was developed by the Faculty Stakeholders group of the Arizona Universities Redesign Study[2]

Although there have been studies and reports about the "transformation" of higher education for years, they began to be taken more seriously in the late 1990s. By the early 2000s, there was a critical mass of people who realized that indeed there was to be a transformation and the early warning signals were not only clear, but they also provided some ideas of what we might expect.

[2] Arizona Universities Redesign Study. 2005. *A Study on Future Arizona Educational Options by the Faculty Stakeholder Group*. http://www.abor.asu.edu/special_editions/redesign/Faculty_Futures%20report.pdf

It took about 5 years of both frivolous and serious debate among faculty, administrators, students, and governing board members plus special studies for Arizona to prepare to make some serious choices. Since the primary changes were put into place in 2006, we now have 14 years of experience and have made remarkable progress. Our choices in the system redesign effort of 2005 and the additional changes made in 2010 were good ones. The farsighted nature of those changes was confirmed during the recession/mini-depression of 2009-2011, resulting from the large national debt, high negative trade balance, and delayed revisions in Medicaid financing. The Arizona universities were able to withstand the impacts due to the safeguards and contingency plans in place.

There were three major changes that set us on this new path: 1) revising an obsolete budgeting and incentives structure that rewarded the wrong things, 2) adoption of a system-wide strategic vision for 2020 based on the a learner-centered environment (which fits on the back of a business card so everyone remembers it), 3) restructuring system policies that provided more cooperation among the state universities and built alliances with other institutions, 4) a growth plan for addressing increasing enrollment by expanding the 2+2 community college/university program, and 5) the increased e-learning opportunities tied with the recognition that a course is a course, regardless of how it is taught (on- or off-campus, by us or by others, for a semester or some other time period, and taken by individuals or as teams). The way of life in the state was changing too, with the American Indian's now controlling a majority of the state's water rights and the increased growth rate of the Hispanic population (which grew 53% from 2000 to 2015 compared to only 20% for Arizona's overall population, causing all Arizona universities to become Hispanic Serving Institutions in 2011).

We now have a relatively unique approach to strategic partners for the Arizona University System and how we work together as the state's four universities. These partners include the state university system, the community college and preK-12 systems, two Mexican universities, two private universities, two non-governmental organizations, and the State of Arizona. In addition we have strategic alliances with 25 businesses/industries, allowing mini-sabbatical leaves for both faculty and staff from the university and allowing staff from the industries to be at the university. We also have a modernized version of the historic student internship and study abroad programs. The State of Arizona's involvement was facilitated by the 2008 Research Applied to National and State Needs Program (RANSN) of the National Science Foundation (a slightly revised version of the NSF sponsored Research Applied to National Needs program that was in place from 1969 to1977). We could build this arrangement because Arizona was large enough to have problems and small enough to do something about them, building on a pretty good (but underfunded) postsecondary educational system. Few other states could match that combination of factors.

But, it is how we used this strategic partnership that allowed us to leverage our resources and target specific disciplines and their interactions that turned out to be highly relevant today. That leveraging, coupled with our learner-centered approach to management has allowed the state to keep two major research universities and also have other research universities. Of course, we partly took advantage of the highly sophisticated electronic course modules (that began in simplistic version in the mid-1990s) and the credit banking agency. The credit banking agency, a subsidiary of the International Consortium of Accrediting Commissions, allows all courses at accredited higher education institutions to be transferred freely among the globe's educational community, with full credits and grades, at no additional cost to the student (each university can decide which courses are relevant for transfer). Some of us never thought we could pull that off, as each university has historically considered their own courses as superior to everyone else's.

Four Scenarios and Wild Card Events from EEC Report of 1988[3]

From Arizona Board of Regents Task Force on Excellence, Effectiveness, and Competitiveness (1988).

Four scenarios for Arizona Higher Education

[3] Arizona Board of Regents. 1988. Task Force on Excellence, Effectiveness, and Competitiveness. http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED306824&ERICExtSearch_SearchType_0=no&accno=ED306824

From the Task Force Final Report Chapter on "Future Changes: Implications for Arizona's Universities" (Volume Two, Part I: Summary and Recommendations, Page 951).

Scenario A: Business as Usual
The economy and political attitudes follow the course of recent years, remaining generally conservative. The economic growth. Continues with only minor and infrequent exceptions and the debt and international trade balances tend toward zero by slowing spending rather than increasing taxes. The service sector increases as a percentage of the labor force; limited competition is seen for educational services from non-education institutions. Economic growth is in the range of 2.5% annually.

Scenario B: Strong Economic Growth
The economy grows more rapidly than recent in the past, fueled by increased exports and increases in productivity in both the manufacturing and service sectors. Disposable income increases moderately and major breakthroughs occur in specialized technologies. These changes, which allow major increases in productivity in the service and manufacturing sectors, also reduce the need for trade, as products can be made efficiently and flexibly in the U.S. Rapid changes to manufacturing functions can meet demand that is either close to a manufacturing plant or distant. Growth rate of the economy is in the range of 3.0% annually.

Scenario C: Strong Economic Downturn
Significant changes occur as a result of prolonged and significant economic downturn, causing serious reductions in federal and state spending; social unrest increases because of an increased size of the lower class and further breakup of family structures. An increase in the aging population along with a decrease in numbers of young workers causes more "retirement" age workers to remain in the workforce, but in lower -- paying jobs.

Productivity does not grow and new technologies are either not economically developed or are unable to penetrate the economy in any significant amount.

Scenario D. Mild Economic Downturn
The economy slows with a recession by the early 1990s, consumer spending slows, taxes increase, and government spending shifts from defense to societal programs. Cooperative efforts increase among education, government, and industry to permit increased competition with other nations.

The government increases regulatory activities, student activism increases, and businesses focus more on minority interests. The labor force remains constant as older workers retire later to offset losses in the number of younger workers. Employees become a greater part of the organization, with a "sense of family" due to greater flexibility of benefit options and better communication of future directions of the institution.

Technological changes result in increased life expectancy and lead to the development of new drugs. Miniaturized and powerful computers increase productivity in the service sector, but computer crime increases and ethical questions are raised about organ transplants and life extension proposals. Economic growth and long-term basis is about 1.5% annually.

Nine Unlikely But Possible High Impact Events
(In the Task Force Report, each event is briefly described)
1. Biotechnology Breakthrough.
2. California Migration Changes (more AZ)
3. Economic Depression
4. Instability in Mexico
5. Major U.S. Nuclear Energy Accident
6. Middle East Instability
7. Space Manufacturing
8. Early Responses to Greenhouse Effect
9. Terrorism Striking the United States

Four Scenarios from -- UC 2025: The Power and Promise of Ten, November 2006

"Beyond the Tipping Point." In a worst-case scenario, support for UC comes too late. Budget and demographic pressures take such a toll that talent flees, prestige declines, and sharply reduced research funding makes it difficult to attract and retain new talent. UC looks very different than it does today: many more undergraduates, many fewer graduate and professional schools and students; reduced face-to-face apprenticeships in laboratories and seminars; and less cutting-edge research and service to community health care.

"Virtuous Circle." In the best case, California's economy roars back to new levels of sustained prosperity, fueled in no small part by UC economic innovations. Encouraged by industry, the state decides to re-invest in public research universities. With new investments in UC come new benefits for the state and society – energy self-sufficiency, improved transportation systems, breakthroughs in health care. Its international reach is extended ever further into Asia and Central and South America. With all this comes an even more enhanced reputation: UC becomes the institution of choice for the world's leading research, faculty, and students, creating the need for three new campuses.

"UC Polytechnic." More money for K-12 education decreases the performance gaps across California, preparing many more high school graduates for college. The flood of UC-eligible undergraduate students overwhelms the system, forcing cuts in graduate education and research. As a result, federal funding agencies and large corporations tip their coffers away from California and toward other more promising research universities; UC's best undergraduates go elsewhere for graduate and professional degrees. Other universities, both private and public
from around the world, rush to fill the research gap, even tapping into UC's vast but now underutilized research infrastructure. Economic prosperity continues, but mostly thanks to researchers abroad.

"Complementary Campuses." State funding continues to decline, but the University is able to sustain and even intensify its teaching and research by adopting strategies like those of other globally competitive institutions: UC campuses specialize in what they do best rather than trying to be all things to all people. UC optimizes its resources by establishing each campus as homes to unique "centers of excellence" while reducing commitments in disciplines where there are system redundancies. One campus, for example, agrees to build a new medical school because its
fast-growing region desperately needs a regional academic health center but in exchange gives up its aspirations to develop a program in urban design. Though every campus in the UC system boasts at least one center of excellence in research, all continue to seek excellence as institutions of undergraduate education.

Scenario Implications

- There is a clear need for a renewed social contract with the State of California. That renewed contract is necessary to justify increased levels of funding from the legislature. Increased public support will secure the continued excellence of the UC system, which will in turn assure the competitiveness of California in the new global economy.

- Campuses must be encouraged to develop unique profiles of complementary strength, in order to more efficiently support the continuing excellence of one great research university.

- UC must increase the graduate enrollment balance to maintain UC's research-intensive nature.

- UC must demonstrate, vividly and credibly, the extent of its impact on California and society to legislators, the public, potential donors, and alumni.

Four Education Scenarios from OECD – 2006

For more information on futures methodology and the futures projects of the OECD Centre for Educational Research and Innovation (CERI): www.oecd.org/edu/universityfutures

Scenario 1 Open Networking

In this scenario, higher education is very internationalised and involves intensive networking among institutions, scholars, students and with other actors such as industry. It is a model based more on collaboration than on competition. The increased networking of institutions and the gradual harmonisation of systems allow students to choose their courses from the global post-secondary education network, and to design their own curricula and degrees. Within some restrictions, as set out by the academic profession in international conventions, students have a great deal of autonomy. They often study abroad and take courses offered exclusively online, which can be completed anywhere.

New technologies have brought about changes in approaches to teaching, especially at undergraduate level, with standardised courses often delivered online, and different use of classroom time with more small seminars and interactive discussions, and more time spent with students on their individual projects. This modularisation of studies is both enabled by and reinforces the development of English as the lingua-franca in education. Many courses are indeed delivered in English even in non-Anglophone countries. Advanced vocational education institutions have created similar international networks and have become more like general higher education institutions.

International collaborative research has been strengthened by the dense networking between and among institutions, driven by the availability of free and open knowledge. There is still a strong hierarchy among higher education institutions: some institutions or research departments attract more funding and have better working conditions and higher prestige. Institutions do still tend to partner and network primarily with institutions of similar prestige. At the same time, technology-driven networking allows those institutions not focused on research (including institutions in developing countries) to benefit from advances in knowledge. Academics and students in higher education institutions with fewer resources have remote access to research and research tools previously only available in well-resourced institutions. Research data are available on the Internet in real time; new data sets can be re-used by academics and students for new research; simulation, computing and visualisation tools are accessible to all.

Key drivers of change

The "Open Networking" scenario could be driven by voluntary co-operation between and among countries and institutions leading to the gradual harmonisation of higher education systems. Increased co-operation creates more trust and understanding among higher education institutions over time, and leads to the easy recognition of foreign educational offerings.

International networks are facilitated by lower costs of communication and transportation and by information and communication technology. They could also be strengthened by the ideal of open knowledge, an ideal that civil society and academics have increasingly imposed on the grounds that academic research is largely supported by taxpayers and should thus be freely available.

Related developments

- The Bologna process in Europe has induced some harmonisation of study paths, and has influenced similar developments in other regions of the world.
- International academic partnerships and consortia have developed quickly in the past decades, as well as study abroad periods.
- Rapidly increasing computing power combined with fast and cheap communication allowed by the Internet is opening new avenues for education and research.
- A culture of openness challenging traditional ways to manage intellectual property rights is gaining ground.

Questions

- Would this model be sustainable economically in a knowledge economy?
- What forces could drive differentiation (rather than convergence) in such a system?
- What are the incentives to ensure that the networks do not serve the interests of their members only and do not reproduce the national hierarchies at the global level?
- In what geo-strategic context could such a model thrive?

Scenario 2 Serving Local Communities

In this scenario, higher education institutions are focused (or refocused) on national and local missions. They are embedded in their local and regional communities, and are dedicated to addressing local economic and community needs in their teaching and research.

As is currently the case, higher education is mainly publicly funded and administered. Academics are treated as trusted professionals and have control over the education and research processes. A small number of "elite" higher education institutions and research departments are linked to international networks (although there are now some barriers to internationalisation), and maintain their position in top national ranks. The average higher education institution, however, focuses teaching and research on the needs of the local community and region.

With reduced international and research ambitions, funding has become less of an issue. Local authorities and businesses are keen to support local institutions; recreational courses also generate some revenue. Universities and polytechnics are on more or less the same footing, as universities have a less intensive role in research than they used to. Both types of institutions respond to their communities by working more closely with industry to design relevant initial and lifelong training. They also offer more recreational education for elderly people. In regions with ageing and shrinking populations, higher education institutions have not disappeared as was once predicted.

The scope of academic research has diminished somewhat (while research has regained ground in the government sector). Research in "strategic" areas such as physics or engineering is relocated in the government sector, and international collaborative research continues with a more limited number of "friendly" countries. University-based academic research is focused on humanities and social sciences, two fields valued for maintaining national culture. Academics continue to conduct research, but teaching is their primary objective, and research, a welcome by-product.

Key drivers of change

The "Serving Local Communities" scenario could be driven by a backlash against globalisation. Governments place a strong emphasis on the national missions of higher education. There is growing scepticism in regard to internationalisation in the general population for a variety of reasons including recent terror attacks and wars, concerns about the growth in immigration, frustration about outsourcing and the feeling that national identity is threatened by globalisation and foreign influence. For geo-strategic reasons, governments launch ambitious new military research programmes and give security classification to an increasing number of research topics in natural sciences, life sciences and engineering.

Related developments

- Migration is at the centre of heated political debate in many OECD countries and not always well accepted by populations.
- There is a growing anti-globalisation movement based on cultural and economic grounds, and geo-strategic concerns have come back to the fore in the last decade.
- The regional and national missions of higher education are increasingly highlighted in the policy discourse and higher education is increasingly asked to play a more important role in fostering social cohesion.

Questions

- Would this lead to greater inequalities within countries (with rich regions only being able to afford rich universities)?

- What would this disconnection from international networks imply for the progress of scientific research?
- What would this refocus imply for the most internationalised countries, especially when they face a demographic decline?

Scenario 3: New Public Responsibility

In this scenario, higher education is primarily publicly funded, as is currently the case, but there is a greater focus on the use of "new public management" tools, including market forces and financial incentives.

Higher education institutions are autonomous (or legally private). They still depend on the public purse for a significant share of their budget. However, institutions have taken advantage of foreign education markets, the deregulation of tuition fees, the patenting of their academic research and their growing financial links with industry to diversify their funding sources.

The boundaries between public and private higher education institutions have blurred, as most resources of university are private, coming from student tuition, and support from business and private foundations. Students and their families pay a significant share of the cost of their studies, with the possibility of financing some or all of their education through income contingent loans.

Institutions are more accountable to the state as well as to other funders. They are also more attentive to the learning needs of students of all ages and with a wide range of learning needs. While reputation in academic research is still institutions' prime competitive advantage to attract the best students and set their level of tuition fees, other factors such as quality of teaching and employability are increasingly taken into account by students and their families.

The division of labour between (or within) institutions is more marked, most of them specialising in different missions in teaching and research – a differentiation that does not necessarily prevent all of them from continuing to carry out both research and teaching. Most higher education institutions continue to allocate some research funding internally on their own funds.

But the bulk of the allocation of public funds for academic research is generally from external sources, financing specific research projects and awarded according to competitive peer-reviewed processes. As a result, there is more national competition for research funding among a smaller number of higher education institutions. Only a small amount of research funding crosses national borders, except within the European Union where the recently created European Research Council funds an increasing share of European academic research.

Key drivers of change

In the "New Public Responsibility" scenario, the shift in public governance could be based on mounting budget pressures created by the ageing society. First implemented with success by a few countries, this doctrine of public management calls for institutions operating at arm's length from national government, with a mix of public and private resources.

Accountability, transparency, efficiency and effectiveness, responsiveness and forward vision are the golden standards of good public governance. Rising public debt has shifted a significant part of the cost of higher education from government to other education stakeholders, especially students and their families. In ageing societies, the costs of health and pensions are now the primary government spending priorities.

Related developments

- Cost-sharing is under debate in many OECD countries and some countries have recently introduced or raised tuition fees to increase the financial resources of institutions.
- Higher education institutions have been given more autonomy from national governments and in some cases have been legally privatised (while still highly dependent on governments for their funding).

- . Higher education institutions are increasingly being encouraged to be more entrepreneurial in research and education.
- . Research funding is increasingly allocated to specific projects through competitive processes rather than as block grants to higher education and research institutions.

- Questions
- . Is there a tipping point after which real markets would replace quasi-markets, and governments lose some or most of their control over the system?
- . At what point should the concentration of research capacity in a few higher education institutions be encouraged?
- . Could this model allow the systems to become more responsive to the diversity of individual, social and economic needs (research, initial education, lifelong learning, elite and special needs education, etc.)?

Scenario 4: Higher Education Inc
In the scenario, higher education institutions compete globally to provide education services and research services on a commercial basis.

Research and teaching are increasingly disconnected, as they have always been in the General Agreement on Trade in Services (GATS). Higher education institutions concentrate on what they consider to be their core business – either teaching or research. Research universities thus hardly teach (if they teach at all), whereas most vocational and general institutions concentrate almost exclusively on teaching.

Most segments of the market are now demand-driven, with business-like methods (responsiveness to customer needs, attention to effective management and administration of the institution, etc.), while the most prestigious institutions continue to be more supply-driven and managed through peer assessment. Governments still encourage and subsidise research and teaching in areas where there is little commercial interest, such as archaeology and Sanskrit. But following the principles of free trade, these subsidies should not distort trade in commercial research and education. Vocational education has a significant share of the global market for education.

There is fierce competition for students. Many universities are opening new institutions or branch campuses abroad, franchising educational programmes, etc. Individual institutions and even whole higher education systems specialise according to their competitive advantage. An international division of labour is emerging, with some countries earning reputations for high-quality undergraduate education, while others are competitive in training postgraduate students and conducting research.

Formerly "emerging countries" are developing competitive advantages in selected/specific research fields (for example, technology in India, agronomics in China, etc.) and outsourcing research has become common practice. India and Singapore are large exporters of education services in the developing world.

In the research segment of the market, there is fierce international competition for super-star academic researchers. Basic research projects are still funded by governments, but following a tender to which all research centres in the world can – and increasingly do – apply. The research sector is rapidly becoming concentrated. International rankings play an important role in informing students of the comparative quality of different educational offerings.

Finally, English has become the language of research and postgraduate studies, while local languages are still used in vocational and undergraduate teaching. Most cross-border higher education institutions and programmes operate almost exclusively with local staff of the receiving country.

Key drivers of change
The "Higher Education Incorporated" scenario could be driven by some form of trade liberalisation in education. Originally pioneered by a few countries, trade in higher education has gained ground and become

more pervasive. An increasing number of governments have decided to liberalise the higher education sector and even commit themselves through the GATS negotiations at the World Trade Organisation or bilateral free trade agreements.

An international marketplace for higher education and academic research services thus emerges on a commercial basis. Such a change is facilitated by low transportation and communication costs and the increasing migration of people. It is also facilitated by the rise of private funding and provision of higher education, which has led to the growing recognition that higher education services were not very different from other types of services. At one point, stakeholders felt that there was no longer any reason not to open these services to worldwide competition, as has happened for other formerly public services.

Related developments

- Education services and research services are already included in the GATS negotiations.
- Countries such as Australia, Malaysia, New Zealand, Singapore, and the United Kingdom have turned or are trying to turn their higher education sector into an export industry. Cross-border higher education now represents an economic stake: student mobility alone was estimated at around 40 billion US dollars of export revenues.
- Programme and institution mobility under commercial arrangements has grown significantly in the past decade and full tuition fees for mobile students are put in place in an increasing number of countries.
- The competition to attract foreign students has grown over the past decade.
- Cross-border funding of research and private research activities has increased in the past decades.

Questions

- Are all systems equally equipped to compete globally in education and research?
- Will all countries be able to retain some national educational and research capacity?
- What would happen to areas of human knowledge that are not commercially viable?
- How would national cultures and languages be kept alive?

OVERALL QUESTIONS TO START A DISCUSSION

- From your perspective, which scenario is the most desirable? Which is the most probable?
- What would it take to get closer to the most desirable scenario?
- What are the pros and cons of the different scenarios in terms of quality, access, equity and innovation?
- In which ways do the systems diversify in the different scenarios (e.g. public/private, research/teaching, types of students, fields, etc.)?
- What level of funding would they require and how would the cost of higher education be shared between stakeholders?
- How is the control of the system shared between all stakeholders (government, academics, students, business, etc.) in the different scenarios?
- To what incentives, interests and demands would the institutions be responsive?

Six OECD Scenarios for a Learning Society - The Future of the Tertiary Education Sector:
Organization of Economic Cooperation and Development (2003)

Tertiary education is defined as community college and university. Full report at:
http://www.simul-conf.com/oecd_japan/documents/Future_of_universities.pdf

The OECD was formed in 1960 and now has 30 member countries (including the U.S.) that share a commitment to democratic government and the market economy. With active relationships with some 70 other countries, NGOs and civil society , it has a global reach. Best known for its publications and its statistics, its work covers economic and social issues from macroeconomics, to trade, education, development and science and innovation.

Scenarios about Higher Education (using Europe as the source) to stimulate thinking about the future of American Higher Education. These are the specific scenarios. The full report is 31 pages and has driving forces and background material leading up to the scenarios.

The six variables selected for constructing the six scenarios are: 1) the type of population covered by tertiary education, as well as correlated variables; 2) the nature of funding (predominantly public, mixed, predominantly private); 3) the integration of missions offered; 4) the international dimension of the system, 5) the homogeneity of status of faculty and institutions, and 6) the degree of take-up of e-learning. A matrix of issues vs scenario is in the full report.

The six scenarios are:

Scenario 1: Tradition

Universities are mostly like today, catering to a relatively small share of the youth population for the purposes of job selection credentials. Universities pursue both teaching and research, as now, without excessive dependence or involvement with the private sector. Governments continue, in most OECD countries, to play a prominent role in funding, regulating and managing universities. Within a public accountability and equity framework there is little scope for profit-generating initiatives and the international dimension of the university "market" is modest. Lifelong and e-learning both develop largely outside of the university sphere.

Scenario 2: Entrepreneurial universities

Selective institutions cater largely to young people in their initial preparation for life. The key difference with the previous scenario is the strength of market forces in the sense that universities (public or private) can respond with greater autonomy to a variety of funding sources. There is a more mixed public-private funding model, with university resources coming from a wide variety of sources. Along with the returns to the intellectual property rights that it secures, research is seen as very important and lucrative activity. However, in this scenario universities take a market-oriented approach to operations without losing basic academic values. Given the prestige and income accorded to research the teaching side remains quite elitist. As for lifelong learning it occurs within a university setting but in teaching only institutions with lower status. The three missions of the university – teaching, research and community service – are well balanced, although there is greater differentiation across institutions due to enhanced autonomy and greater responsiveness. Commercial approaches to international markets and e-learning are important. University resources as well as wages and prestige of academic staff improve. Links to the local economy are strong.

Scenario 3: Free market

Market forces are the main drivers of this scenario with a private tertiary sector regulated by private companies as far as quality assurance and accreditation are concerned and mostly funded through market mechanisms. Market forces give rise to institutions that become specialised by function (teaching, research), field (business, humanities, etc.), audience (young students, part-time students, distance education, adult education, lifelong learning) while business firms grant degrees to their employees for their corporate training. Hierarchy between those very diverse institutions becomes very strong, with the apparition of a global super-elite, and more polarisation in the status of faculty. With the widening of student choice there is greater competition for students and tuition revenue comes to represent a more important share of overall income. Technology is widely used in teaching methods. The international dimension of the market becomes important. And, since the majority of students and their parents are not interested in research, refusing to bear the costs, research moves out to public research centres and corporate R&D divisions. What research remains in universities becomes even more elitist while teaching to mass markets leads to greater standardisation and the patenting of curricula and teaching methods. Research becomes more demand-driven, specialised and secures important returns through intellectual property rights.

Scenario 4: Lifelong learning and open education
Universities are marked by universal access for all ages and much less research. The knowledge economy has flourished and higher education becomes a source for recurrent professional development financed by companies, individuals seeking recognised skill upgrading, and states. In an ageing society, more elderly people enrol for nonprofessional reasons. Universities become more learner- and demand-oriented, more teaching oriented, with short courses, more distance learning, and more e-learning. Governments or independent accrediting bodies are responsible for quality assurance and accreditation. Most research is done outside of the higher education system, with the best researchers moving to private companies, specialised institutes or the few remaining elite universities. Corporations and corporate universities have a large influence. Integration with the applied side of learning might go so far that all university education would follow the professional school model. Responsiveness to market forces is high in this scenario and there is considerable business oriented investment in e-learning.

Scenario 5: Global network of institutions
Post-secondary studies become demand- and mostly market-driven. The two main innovations are 1) that learners define their own course of study from across all available courses throughout the global post-secondary education network and design themselves their degrees; 2) that higher education institutions partner increasingly, including with industry. E-learning develops strongly in this scenario, as well as other means of education. The training content becomes more standardised and possibly embedded in technology and media (e.g. modular learning objects or edutainment through partnerships with game industry). The provision of and market for lifelong learning becomes very large, especially as education takes a multiplicity of new forms. Most research is carried out outside the higher education system, and faculty in mostly teaching institutions becomes less qualified than today but use more sophisticated teaching techniques. There is a strong polarisation in the status of academic, with academic superstars and developers of "learning tools" getting high status whereas the average teaching staff becomes less qualified and gets lower status. Programmes and courses matter more than institutions. Intellectual property rights for substance as well as for teaching methods give high returns to their owners.

Scenario 6: Diversity of recognised learning
In this scenario, the formal tertiary education sector disappears. People learn throughout their life, at work, at home, for personal and professional motivations, more and more by themselves and by sharing their expertise with other people interested in the same field. Professional education requiring hands-on practice, like surgery, etc., is transmitted within businesses through an apprenticeship system or thanks to new sophisticated electronic devices. Technology is an enabler for the diffusion of information. People learn as much and possibly more than today but in a different way: learning takes the model of "open source" education, mostly free and non commercial, involving a lot of partnerships between individuals and institutions of all sorts. Global networking is thus important and goes beyond institutions. Knowledge and experience acquired in all life situations are acknowledged through formal assessments of credentials carried out by specialised assessment bodies. But given its pervasiveness, knowledge is less of a determinant for a career or in the stratification of society. While research becomes less specialised in fields requiring little money, like humanities or mathematics, a large share of research requiring high investments takes place in public research centres and in corporate R&D divisions.

Scenarios from Business and Government

Two Scenarios to 2050 from Shell Oil.

SCRAMBLE
Scramble reflects a focus on national energy security. Immediate pressures drive decision-makers, especially the need to secure energy supply in the near future for themselves and their allies. National government

attention naturally falls on the supply-side levers readily to hand, including the negotiation of bilateral agreements and incentives for local resource development. Growth in coal and biofuels becomes particularly significant.

Despite increasing rhetoric, action to address climate change and encourage energy efficiency is pushed into the future, leading to largely sequential attention to supply, demand and climate stresses. Demand-side policy is not pursued meaningfully until supply limitations are acute. Likewise, environmental policy is not seriously addressed until major climate events stimulate political responses. Events drive late, but severe, responses to emerging pressures that result in energy price spikes and volatility. This leads to a temporary slowdown within an overall story of strong economic growth.

Although the rate of growth of atmospheric CO2 has been moderated by the end of the period, the concentration is on a path to a long-term level well above 550 ppm. An increasing fraction of economic activity and innovation is ultimately directed towards preparing for the impact of climate change.

BLUEPRINTS
Blueprints describes the dynamics behind new coalitions of interests. These do not necessarily reflect uniform objectives, but build on a combination of supply concerns, environmental interests, and associated entrepreneurial opportunities. It is a world where broader fears about life style and economic prospects forge new alliances that promote action in both developed and developing nations. This leads to the emergence of a critical mass of parallel responses to supply, demand, and climate stresses, and hence the relative promptness of some of those responses.

This is not driven by global altruism. Initiatives first take root locally as individual cities or regions take the lead. These become progressively linked as national governments are forced to harmonise resulting patchworks of measures and take advantage of the opportunities afforded by these emerging political initiatives. Indeed, even the prospect of a patchwork of different policies drives businesses to lobby for regulatory clarity.

As a result, effective market-driven demand-side efficiency measures emerge more quickly, and market-driven CO2 management practices spread. Carbon trading markets become more efficient, and CO2 prices strengthen early. Energy efficiency improvements and the emergence of mass-market electric vehicles are accelerated. The rate of growth of atmospheric CO2 is constrained leading to a more sustainable environmental pathway.

Four Scenarios from Global Business Network on Small Business and Health Care Futures[4]

Scenario 1. Where's the traction?
Despite growing evidence that the health care system is under severe pressure, there is no major incentive for any of the 'insider' players to reform the system in significant ways. The power of inertia is profound, and leads to a continued erosion of benefits and functioning of the system.

Scenario 2. Don't just stand there — do something!
In a tricky and volatile economic environment, the pressure on the health care landscape results in a politically irresistible drive that forces the federal government to intervene and guarantee a minimum level of health care for all Americans.

Scenario 3. No news ... good news?
In a relatively stable economic climate, the risks of health care are shifted even more to the individual — which causes many difficulties — but also leads to proliferation of market-based phenomena (transparency, low-cost innovations, alternative therapies) that helps many end-users

[4] Global Business Network. July 2008. See full 34 page article (Including more detail on these four scenarios) is at http://www.gbn.com/GBNDocumentDisplayServlet.srv?aid=50162&url=%2FUploadDocumentDisplayServlet.srv%3Fid%3D44942

bypass a complicated health care system.

Scenario 4. New powers, new systems.
In a difficult economic environment, individuals, businesses and others find themselves forced to think (and act) radically about health care delivery and financing, as the established players are unable or unwilling to step in and create change.

Four Futures for China[5]

Scenario 1: Emperor of Business: China grows peacefully and plays by the rules.
WHAT IT MEANS FOR YOUR BUSINESS: Investment in China is duly rewarded. Though the United States's relative cultural influence wanes, a massively affluent Chinese middle class is spending more than ever.

Scenario 2: Emperor's New Clothes: China's growth rate is short-lived; it becomes a bigger Brazil.
WHAT IT MEANS FOR YOUR BUSINESS: As has happened with Brazil, China could still pay off nicely for foreign investors, regardless of its internal strife. But it will take a lot of local knowledge to get the payout. Long-term investments may sour, especially if the Communist Party cedes economic and political control.

Scenario 3: Emperor of Asia: China grows, but only as fast as its neighbors
WHAT IT MEANS FOR YOUR BUSINESS: You'll need to hedge your bets on supply chains and watch events closely, as one Asian trade partner may not look kindly upon another. U.S. companies will find themselves aligning more with Latin America and Canada as the globe becomes ever more factional and regionalized.

Scenario 4: Emperor of the World: China's speedy growth tips all the scales in its favor
WHAT IT MEANS FOR YOUR BUSINESS: Companies that play by China's rules may find themselves conflicted in their interests globally. Growing hostility toward China in the United States could have a deleterious effect on investments. Large businesses may start moving their headquarters to Beijing.

Four Scenarios for Meeting the Challenges of China's Growing Cities[6]

Two scenarios (explained in more detail and with implications in a variety of areas for each scenario). These scenarios are:

Scenario 1: Supercities (a very few very large cities – over 10 million)
Scenario 2: Hub and Spoke (clusters of small/midsize cities around the larger ones (small is 500K to 1.5 million, midsize is 1.5 million to 5 million).

Scenario 3: Distributed growth (large number of midsize cities)
Scenario 4: Towns proliferate (large number of small cities)

The implications of urbanization
The change wrought by urbanization on this scale will be spectacular. China will have to build 900 to 1,100 gigawatts of power production capacity by 2025 to meet the energy demand of its cities. During this period, it will also have to pave five billion square meters of road, lay 28,000 kilometers of commuter rail, and erect 20,000 to 50,000 skyscrapers (for about 40 billion square meters of new floor space). These are just a few of

[5] Business 2.0. August 2006. http://www.gbn.com/ArticleDisplayServlet.srv?aid=38062

[6] McKinsey Quarterly. July 2008.
http://www.mckinseyquarterly.com/China/Meeting_the_challenges_of_Chinas_growing_cities_2152

the visible manifestations of continued urbanization. There are other challenges as well, similar to those that other countries have confronted as their people migrated from farms.

Four Scenarios from Global Trends 2025: A Transformed World[7]

From the National Intelligence Council (November 2008)

Scenario 1: A World Without the West.
In this world, described in a fictional letter from a future head of the Shanghai Cooperation Organization (SCO), new powers supplant the West as the leaders on the world stage. The US feels overburdened and withdraws from Central Asia, including Afghanistan; Europe will not step up to the plate and take the lead. Russia, China, and others are forced to deal with the potential for spillover and instability in Central Asia. The SCO gains ascendance while NATO's status declines. Anti-China antagonism in the US and Europe reaches a crescendo; protectionist trade barriers are put in place. Russia and China enter a marriage of convenience; other countries—India and Iran—rally around them. The lack of any stable bloc—whether in the West or the non-Western world—adds to growing instability and disorder, potentially threatening globalization.

Scenario 2: October Surprise.
In this world, depicted in a diary entry of a future US President, many countries have been preoccupied with achieving economic growth at the expense of safeguarding the environment. The scientific community has not been able to issue specific warnings, but worries increase that a tipping point has been reached in which climate change has accelerated and possible impacts will be very destructive. New York City is hit by a major hurricane linked to global climate change; the NY Stock Exchange is severely damaged and, in the face of such destruction, world leaders must begin to think about taking drastic measures, such as relocating parts of coastal cities.

Scenario 3: BRICs' Bust-Up.
In this world, conflict breaks out between China and India over access to vital resources. Outside powers intervene before the conflict escalates and expands into a global conflagration. The clash is triggered by Chinese suspicion of efforts by others to threaten Beijing's energy supplies. Misperceptions and miscalculations lead to the clash. The scenario highlights the importance of energy and other resources to continued growth and development as a great power. It shows the extent to which conflict in a multipolar world is just as likely to occur between rising states as between older and newer powers.

Scenario 4: Politics is Not Always Local.
In this world, outlined in an article by a fictional *Financial Times* reporter, various nonstate networks— NGOs, religious groups, business leaders, and local activists—combine to set the international agenda on the environment and use their clout to elect the UN Secretary General. The global political coalition of nonstate actors plays a crucial role in securing a new worldwide climate change agreement. In this new connected world of digital communications, growing middle classes, and transnational interest groups, politics is no longer local and domestic and international agendas become increasingly interchangeable.

[7] National Intelligence Council. November 2008.
http://www.dni.gov/nic/PDF_2025/2025_Global_Trends_Final_Report.pdf