

Higher Education Futures: Learning from Others

An Excerpt from “Redesigning Arizona’s Universities: Assessing Options for Arizona’s Educational Futures” January 2005. An excerpt by Roger L. Caldwell

Full report posted at

<http://cals.arizona.edu/~caldwell/docs/stakeholders%20final%20futures%20report%201-18-05.pdf>

A good deal of discussion has occurred in the higher education community on the types of issues under discussion in our redesign study. Some are independent studies, some from national associations, and some from current or past university presidents. Much of what is said by these varied groups is similar and therefore becomes an important indicator to questions we should be raising.

Viewpoints of Current Presidents of U.S. Universities.

1. Jischke, Martin, President of Purdue University (2000 - current)¹

Jischke recently spoke to a national educational association (our three universities are members) on how universities have evolved from the 1862 Morrill Act land-grant university beginnings and what we face in the future. Excerpts include:

“The land-grant agenda of access, practical and liberal education, basic and applied research, along with outreach, extension and engagement, is now clearly shared with many, many other institutions. As a result, the centrality of our land-grant universities to the vital issues facing contemporary society is less clear and less unique than it was 100, 50 or even 25 years ago.

“These issues include economic development, K-12 education, health care, community renewal, homeland security and the challenge of poverty, especially its impact on children. Virtually every university in the nation today is addressing some or all of these issues and promoting their ability to be a key player in the progress of their state. Morrill’s vision from the 19th century, powerful as it has been, must be adapted, reinvigorated, and reconceptualized for the 21st century. It is an imperative for change, and to me the choices are clear. If we continue business as usual, we will certainly see this continuing slippage in our support and importance

“Change can be seen as a threat or an opportunity. There are those who respond to change in the wind by trying to hunker down, preserve what is and keep from being blown over. They fear change. And there are those who welcome change and see it as the means of opening new possibilities and potentials.

2. Faulkner, Larry, President of University of Texas (1998 – current)²

Falkner spoke in 2003 on “Public universities will survive, [can public higher education?](#) Excerpts include:

¹ Jischke, Martin. 2004. “Adapting Justin Morrill’s Vision to a New Century: The Imperative of Change for Land-Grant Universities. <http://news.uns.purdue.edu/UNS/html3month/2004/041114.SP.Jischke.mrl.html>

² Faulkner, Larry. 2004. “Can Public “Public Universities Weil Survive. Can Higher Education?” http://www.utexas.edu/president/speeches/clair_maple_080403.html

“There are at least five big forces on public higher education today:

- The cost-compounding properties of a labor-intensive activity dependent on rare talent
- A reduced propensity in state capitals to provide strong public subsidies for public higher education
- Resistance among students, parents, and public leaders to increased charges for tuition and fees at public institutions
- Broadened expectations among civic leaders concerning universities as engines for regional economic development
- Intrinsic tensions among missions

“By far the most valuable advance would be to find ways to alter the model for educational delivery in a manner that supports preserved or improved quality, but reduced cost. I realize that this is very much easier said than done in our labor-intensive, talent-focused business, but we really do not have a choice. If the political limit model really does describe our future, we simply must reduce the rate of growth in the cost of education by 1.5% to 2.0% per year. That may not be easy, but it is probably not really out of reach, especially if we keep a focus on the target. We might achieve it without sacrificing quality if we work imaginatively. As we do, we need to look for opportunities concerning both components of the cost of education: salaries and operating costs. Real success will also be applicable to private institutions, and there would consequently be a reduced need for us to worry about the public significance of divergent paths for these two sectors.

Viewpoints of Former Presidents of U.S. Universities

1. *James J. Duderstadt, former President, University of Michigan (1988-1996).*

A University for the 21st Century, by James J. Duderstadt. 2000. The University of Michigan Press. 358 pages.

Dunderstat concludes: “We have entered a period of significant change in higher education as our universities attempt to respond to the challenges, opportunities, and responsibilities before them.’ This time of great change, of shifting paradigms, provides the context in which we must consider the changing nature of the university.

“Much of this change will be driven by market forces-by a limited resource base, changing societal needs, new technologies, and new competitors. But we also must remember that higher education has a public purpose and a public obligation. Those of us in higher education must always keep before us two questions: ‘Whom do we serve’ and ‘How can we serve better?’ And society must work to shape and form the markets that will in turn reshape our institutions with appropriate civic purpose.

“From this perspective, it is important to understand that the most critical challenge facing most institutions will be to develop the capacity for change. As we noted earlier, universities must seek to remove the constraints that prevent them from responding to the needs of a rapidly changing society.

2. *James J. Duderstadt, and Farris Womack. The Future of the Public University in America: Beyond the Crossroads. 2003. The Johns Hopkins University Press. 236 pages.*

Some of their conclusions and lessons learned are:

“Universities need to change in response to the changing needs of society. Among the issues are 1) the cost of a college education, 1) excellence, selectivity and exclusivity, 3) diversity, 4) research, and 5) finding ways to balance the needs of society with other university needs. They further address the

challenge of university leadership in the digital age (technology is changing the way learning occurs and services are provided), the competition potential and the marketing need for colleges and universities, financing constraints (diversifying the resource base, establishing reserves, allocating and managing resources and privatization issues because of reduced state support). The authors build on the concept of the 1862 Morrill Act establishing the land grant university system (a university in each state originally focusing on the agriculture and industrial needs of the nation), and suggests something different for the 21st century (there have been several studies on what a land grant university might be like in the 21st century – or any other large state university). Duderstadt proposes a Learn-Grant university – designed to develop our human resources potential and the infrastructure to support a knowledge-driven society.

Some lessons learned:

Values – reconsider and understand the values held by those in the university – which should be changed? Values are the bottom line – the foundation that everything else is based upon.

Engaging stakeholders – engage internal stakeholders (faculty, staff, students, and administrators) and external stakeholders (who the university was created to serve).

Alliances – Increase the need to build alliances with other institutions to focus on core competences and rely on others to address the broader needs.

Experimentation – The world is changing rapidly and the future is uncertain. Experiment.

3. Frank H.T. Rhodes. *Former President, Cornell University (1977-1996)*

The Creation of the Future: The Role of the American University. 2001. Cornell University Press. 265 pages.

From his conclusions:

“The university must change, and it will, but it must change deliberately and responsibly. The challenge is not to revive a flagging institution but to re-energize a vigorous institution and thus make it even better. Only those institutions that can provide significant value-added to the bare bones of information storage and transmission and research are likely to maintain their financial support. This will require a greater selectivity in research and service ventures and a growing responsibility for meaningful validation and certification. It will require a return to the ancient concept of learning as the education of the whole person and a commitment to the deliberate use of the university community as both the vehicle of the individual learning and as a means of scholarly inquiry. It will require a reaffirmation of teaching as a moral vocation, of research as a public trust, and of service as a societal obligation. But certain things will not change, and the most significant of these is the role of the traditional residential university as the place to create and nurture leaders of each new generation. There will also be more students as nonresident, part-time, older, and distance learners in institutions quite unlike the research university. Rhodes also identified seven factors for a successful university:

- Will maintain institutional autonomy, lively faculty independence, and vigorous academic freedom, but will enjoy strong, impartial, public governance and decisive, engaged presidential leadership.
- Will be increasingly privately supported but increasingly publicly accountable and socially committed.
- Will be campus rooted but internationally oriented.
- Will be academically independent but constructively partnered.
- Will be knowledge based but student centered, research driven but learning focused.

- Will be quality obsessed but procedurally efficient.
- Will be professionally attuned but humanely informed.

4. *Derek Bok, Derek. Former President, Harvard University (1971-1991)*
Universities in the Marketplace: The Commercialization of Higher Education. 2003. Princeton University Press. 234 pages.

From the publisher: "Is everything in a university for sale if the price is right? In this book, one of America's leading educators cautions that the answer is all too often "yes." Taking the first comprehensive look at the growing commercialization of our academic institutions, Derek Bok probes the efforts on campus to profit financially not only from athletics but increasingly, from education and research as well. He shows how such ventures are undermining core academic values and what universities can do to limit the damage.

Commercialization has many causes, but it could never have grown to its present state had it not been for the recent, rapid growth of money-making opportunities in a more technologically complex, knowledge-based economy. A brave new world has now emerged in which university presidents, enterprising professors, and even administrative staff can all find seductive opportunities to turn specialized knowledge into profit.

Bok argues that universities, faced with these temptations, are jeopardizing their fundamental mission in their eagerness to make money by agreeing to more and more compromises with basic academic values. He discusses the dangers posed by increased secrecy in corporate-funded research, for-profit Internet companies funded by venture capitalists, industry-subsidized educational programs for physicians, conflicts of interest in research on human subjects, and other questionable activities.

While entrepreneurial universities may occasionally succeed in the short term, reasons Bok, only those institutions that vigorously uphold academic values, even at the cost of a few lucrative ventures, will win public trust and retain the respect of faculty and students. Candid, evenhanded, and eminently readable, *Universities in the Marketplace* will be widely debated by all those concerned with the future of higher education in America and beyond.

5. *Frank Newman, Former President of the University of Rhode Island (1974-1983), former Director of the Education Commission of the States, and director of the Futures Project (with Lara Couturier and Jamie Scurry).*
The Future of Higher education: Rhetoric, Reality, and the Risks of the Market. Jossey-Bass. 284 pages.

After reviewing chapters with titles like: Higher Education in the Grip of Transforming Change; the New Competition; the Coming of the Market; the Growing Gap Between Public Needs and the Reality of Higher Education; Autonomy, Accountability, and the New Compact; Who is Responsible for Student Learning?; and Expanding Access and Success, he discusses strategies for a new era and a decade of opportunity. The strategies include: Developing a different strategic plan, one that has specificity, mission, public purposes, focus, sharing, diversified funding, collaboration, and reputation. His opportunities for the decade include engaging the public in a serious debate on the future of higher education, and rebuilding the compact between higher education and the public.

Newman identifies 8 public purposes of a university:

- Improve the quality of learning so as to ensure the skills and knowledge that will be required for the workforce.
- Improve the quality of learning so as to reflect the skills, knowledge, and commitment required for active participation in the civic and social life of the community.
- Provide access and academic attainment for a steadily broadening share of the population of all races, ages, ethnicities, and socioeconomic backgrounds, focusing particularly on access and attainment for those currently underserved.
- Serve as an avenue of social mobility for lower-income and minority citizens.
- Serve as the location (virtual or physical) of open debate and discussion of critical, and often controversial, issues of importance to the community, where the emphasis is on evidence and analysis and the opportunity exists for all sides to participate.
- Support development of high-quality elementary and secondary education through improved education of teachers and school leaders, alignment of curriculum and purpose with the schools, assistance with school reform, and improved research about education.
- Undertake research and scholarship in a manner that is trust worthy and open, in a widening array of fields that serve to advance society.
- Bring the benefit of the knowledge and skills accumulated in colleges and universities to the benefit of the community through outreach and service.

See additional comments by Newman under the American Council on Higher Education section (below).

Formal Studies About the Future of Higher Education

American Council on Higher Education/Futures Project

The American Council on Higher Education and the Higher Education Futures Project have addressed a series of issues facing higher education and leading to possible transformations.³ Some areas of significant discussion about the future relate to access, funding, accountability, and the market place. The basic concern is decreased state funding is driving public universities to become more private-like, with resulting issues on the “publicness” of the public university. ACE has called this the “social compact” and is devoting its annual 2005 meeting to this subject. The compact is between government, citizens and institutions to finance public education, and that has been changing beginning in the 1980s. The Futures Project’s Frank Newman wrote a 2004 article in the Chronicle of Higher Education⁴ titled “Higher Education isn’t Meeting the Public’s Needs”, where he notes the changes underway in higher education are raising questions such as: 1) what are the social as well as economic goals for expanding access to higher education?, 2) what restraints on market forces are

³ American Council on Education. 2004. *Rewriting the Rules of the Game: State Funding, Accountability, and Autonomy in Public Higher Education*. 14 pages. Other related ACE publications are listed in references.

http://www.uri.edu/pspd/planserv/2004_rewriting_the_rules.pdf

American Council on Education. 2004. *Diversity, Access, and the Role of the Market Place*. 20 pages.

http://www.acenet.edu/bookstore/pdf/2004_higher_ed_overview.pdf

American Council on Education. 2004. *Shifting Ground: Autonomy, Accountability, and Privatization in Public Higher Education*. 14 pages. http://www.acenet.edu/bookstore/pdf/2004_shifting_ground.pdf

Futures Project. Established in 1999 with two goals: 1) to stimulate an informed debate about the role of higher education in our new global society, and the opportunities and dangers presented by a global market for higher education, and 2) To develop policies that ensure a skilled use of market forces to maximize the opportunities while minimizing the dangers. The website contains a series of policy papers and scenarios. The project resulted in a book: Frank Newman et al, 2004. *The Future of Higher Education*. <http://futuresproject.org/>

⁴ Frank Newman et al. *Chronicle of Higher Education*. October 15, 2004. *Higher Education Isn’t Meeting the Public’s Needs*. <http://chronicle.com/temp/reprint.php?id=okwsjmrk1gqi70mfe31tgz5eswqqzd>

needed to preserve the public's interests?, 3) as boundaries blur, where is the appropriate dividing line between nonprofit and for-profit, between public and private?, 4) how much are the benefits to the student seen as a public good and how much as a private good?, 5) who pays for what?, 6) what skills, knowledge, attitudes, and capacities must graduates have for the work ahead?, 7) how much is a college education about the educated person, the life of the mind, and development of civic skills?, 8) how can the quality of learning be ensured?, 9) how can society ensure the integrity of research? 10) has the institution recognized the centrality of teaching and learning, even if it as research university?, 11) has the institution served the public as a center of open discussion of controversial issues in a way that values evidence and analysis, or has it reneged on that responsibility to avoid offending donors and the community?, and 12) what expertise does it have that can be shared in ways that improve society?

Association of Governing Boards

The AGB on a biennial basis summarizes the top public policy issues facing higher education. The ten issues⁵ for 2003-2004 are:

- Homeland security (higher education must implement costly federal laws to increase homeland security).
- Affirmative action (implications of the Supreme Court affirmative decision).
- Deteriorating economic and fiscal environment (and implications for higher education).
- Surging numbers of diverse students (representing a new generation of students).
- Rapid tuition increases (declining state appropriations forced higher education to significantly increase tuition).
- Reauthorization of the Higher Education Act (affecting student aid and other issues).
- Federal tax policy (policy changes have sharply divided congress and the nation).
- Assessment and accountability (state and federal government want tests and to hold higher ed accountable).
- Scientific research (challenges on available budget, ethics, and bring research results to market).
- Intercollegiate athletics (continuing issues of control, finances, and equity).

The AGB has also addressed “Fulfilling the Promise of Civic Engagement⁶” where the modern movement of an old topic is heading to “integrating the essence of civic engagement into courses, research, and faculty work.” The issues behind this focus are similar to those described above in the section on the American Council on Education on the goals of higher education.

Kellogg Commission on the Future of State and Land Grant Universities

The National Association of State Universities and Land-Grant Colleges (all three Arizona universities are members) in 1996 began the Kellogg Commission on the Future of Universities.⁷ The final report (2000) “Renewing the Covenant: Learning, Discovery, and Engagement in a New Age and Different World”, addresses the relationship between the public and the universities. The address reasons for a need to change, and expresses concerns about the urge to “privatize” public institutions.

⁵ AGB “Ten Public Policy Issues for Higher Education in 2003-2004”.

⁶ AGB “Fulfilling the Promise of Civic Engagement, by Tony Chambers and John Burkhardt. 2004. Published in AGB Priorities, Number 22, Winter 2004.

⁷ Kellogg Commission on the Future of State and Land-Grant Universities. 2000. *Renewing the Covenant: Learning, Discovery, and Engagement in a New Age and Different World*.
http://www.nasulgc.org/publications/Kellogg/Kellogg2000_covenant.pdf

They suggest changes by the institutions and the public to focus on universities for the 21st century. A new kind of public institution would evolve.

<i>Stakeholder</i>	<i>Existing Covenant</i>	<i>New Covenant</i>
Federal	Seed funds from sale of the public's lands to establish public universities. Support for basic research. Support for student aid.	Support to enable public universities to attain the technological infrastructure needed for advanced information technology operations. Support for discoveries and new policy encouraging private investment in university-based research and research parks. Tax policy establishing educational savings accounts, available throughout a student's lifetime.
State	Establish public universities. Provide basic financial support. Commitment to low tuition.	Provide continuing support and create partnerships with public institutions to engage with public needs. Commit to strengthen academic governance through appointment process for boards and presidents. Leadership to maintain affordable access, responds to challenges of globalization.
University	Teaching, Research, and Service. Access for the sons and daughters of low-income and working families. Research and services focused on agriculture and mining challenges of the time.	Learning, Discovery, and Engagement. Access for the full diversity of America and lifelong learning contracts with students. Discovery and engagement focused on pressing educational, social, economic, scientific, and medical challenges of our times.

National Governors Association

The NGA has developed three reports that have special relevance⁸ for Arizona's redesign project. The report on "Influencing the Future of Higher Education" identified four "first principles for the future of higher education". These include: 1) insist that higher education contributes to the state's economic development, 2) confront the challenge of educating a more diverse citizenry, 3) promote a customer orientation (the learner, the employer, and the public who supports educational opportunities), and 4) hold high expectations for postsecondary education providers, and expect results. The NGA will focus on three areas for future reports: 1) increasing student access, learning and degree attainment, 2) creating seamless learning pathways, particularly preK-16 systems, and 3) fostering economic development.

⁸ National Governors Association: Influencing the Future of Higher Education (2004) <http://www.nga.org/cda/files/FUTUREHIGHERED.pdf> and the State of e-Learning in the states (2001) <http://www.nga.org/cda/files/060601ELEARNING.pdf>

The State of e-Learning in the States report made four conclusions: 1) Should duplicative and costly programs be restructured in light of students' growing anytime, anywhere access to high-quality content that may come from out-of-state providers?; 2) What incentives may be needed to stimulate private-sector involvement in e-learning courseware to improve the productivity of low-skill, low wage workers, which otherwise yields lower returns on investment than courseware for higher-paid, already-educated, technologically sophisticated employees?; 3) How can states help integrate the best content and delivery from both the public and private sectors to increase access to state-of-the-art e-learning?; and 4) How can states best pursue their legitimate public interest in consumer protection and quality assurance, while not stifling the rapid evolution of e-learning and the entry of dynamic new providers? The NGA has also identified "State Strategies for the New Economy"⁹, which includes success factors for state governments: flexible and adaptable; consumer-friendly; reinvented with technology; innovative; performance-driven; and accountable.

The report on "Fulfilling the Promise of Civic Engagement (2004) notes that in addition to "preparing undergraduates students for a career", it is also important to "prepare students to be responsible citizens", citing a recent opinion poll that the public rates both functions as high. Civic engagement is more than volunteering in the community, and the report concludes that "few institutions are integrating the essence of civic engagement into courses, research, and faculty work, that that is where the movement is heading."

Selected Individual Authors

1. Clark, Burton C. 2004. *Sustaining Change in Universities: Continuities in Case Studies and Concepts*. Open University Press. 232 pages. (Professor of Higher Education Emeritus)

How are entrepreneurial universities initially formed and how do they sustain themselves? Burton addresses this question in a newsletter article describing the book.¹⁰ The material below is taken from his newsletter.

"I searched for exemplars of entrepreneurial action—and stronger conceptualization. I turned to 14 internationally distributed case studies, including brief narratives on six diverse research universities in the United States (two private, four public), which exemplify aggressive institution building under the spur of intense competition—Stanford and MIT, Michigan and UCLA, North Carolina State University and Georgia Institute of Technology.

"The newly highlighted dynamics of change stress, first, mutually supportive interaction among transforming elements; second, a newly established forward-looking "perpetual momentum"; and, third, behind the scenes, an institutionalized collective will which stimulates and guides a self-sustaining and self-selecting forcefulness in responding to societal demands. In one case after another, we find an "assertive bureaucracy" of change: such professional staff as development officers, grants and contracts officers, and continuing education officers—nonacademic personnel who are much more forward-oriented than the traditional "administrative" staff who served on behalf of the funding public authority and higher regulatory boards and councils. We see the overall sustaining capacity become a virtual steady state of change, a character not dependent on a commanding CEO or a brilliant management team. Change becomes a habit, an institutionalized state of being.

⁹ NGA "State Strategies for the New Economy" 2004.

¹⁰ Center for International Higher Education, Boston University, Newsletter, Winter 2005.
http://www.bc.edu/bc_org/avp/soe/cihe/newsletter/News38/text001.htm

“Without doubt, active complex universities, operating in different complex environments, develop complex differentiated answers. In contradistinction to system-level analysis, institution-level inquiry stays close to those realities. System analysis misses key aspects of university development, particularly the organic nature of university change. It readily loses its way in the swirling fog of national policy statements and the iron cages of categorical state steering. Institutional studies are better grounded.

“Perhaps most enabling of all, we find the entrepreneurial university to be a place that diversifies income to the point where its financial portfolio is not heavily dependent upon the whims of politicians and bureaucrats who occupy the seats of state policy, nor upon business firms and their “commercial” influence, nor even upon student tuition as main support. Funds flow not only from such well-identified sources but also, crucially, from a host of public agencies (other than the core-support ministry or department) and alumni and other private donors who provide moral and political support as well as direct year-to-year funding and accumulation of endowment. Effective stewardship comes to depend not on the state or on “the market,” but on university self-guidance and self-determination. The entrepreneurial university does indeed provide a new basis for achievement.

2. Shires, Michael. 1996. *The Future of Public Undergraduate Education in California*. Rand Corporation.

The report¹¹ indicates: “In 1960, the state of California adopted the language of the California Master Plan for Higher Education as its policy and strategy for higher education. That plan had two major components: (1) it specified the roles and missions of each of the four segments of the state's higher education sector, and (2) it stated that each Californian who could benefit from higher education should have access to it. The Master Plan has successfully served as the model through which the state's higher education sector has grown and thrived. This growth has in turn provided the fuel for the state's economic engine and supplied the seed for the growth of its high technology and aerospace sectors.

“The level of access is expected to decline from today's 89 percent of pre-recessionary levels to 62 percent in 2005-06 and to 56 percent in 2010-11. Even in an optimistic fiscal scenario, the service levels would rise to only 65 and 58 percent for 2005-06 and 2010-11, respectively. This would be a marked decrease in the level of higher education access provided in the state and would eventually *leave more than one million students unserved* in 2010-11.

“Implications for higher education are: Because of the prospects of continued access deficits in California, two actions are proposed. First, the state must commit to its investment in higher education and the sector must find new ways of maximizing the state's return on that investment. Second, the state must restate or readdress the Master Plan in light of current and future realities. It can no longer provide the level of access it envisioned in 1960, and some new guidance has to be given for allocating the precious and scarce units of education that will be available in the future.

“The current Master Plan is arguably a major reason for the state's tremendous success over the past 35 years. A new Master Plan will be the key to the state's next 35 years. The sooner such an effort can be undertaken, the sooner the sector's goals and objectives can be redirected to springboard the state into the next century.

Recent Studies in Arizona About Arizona Education

There are several education-specific studies as well as others that are related, that are specific to Arizona, and developed by Arizona sources that provide guidance for the issues that need to be

¹¹ Rand Corporation. 1996. *The Future of Public Undergraduate Education in California*. <http://www.rand.org/publications/MR/MR561/>

addressed. We need to review and integrate what has been done, then to see new definitions of the problem.

Arizona Town Hall

The Arizona Town Hall organization (Arizona Academy) meets twice a year to address issues identified by the roughly 2000 member organization. They issue reports and recommendations; recent copies are posted on their web site: <http://aztownhall.org>

2004. Pre-K-12 Education: Choices for Arizona's Future (includes sections on teacher education and high schools)

2003. The Realities of Arizona's Fiscal Planning Processes (relevant to potential funding changes)

2002. Arizona Hispanics: The Evolution of Influence (concludes education is the key to moving together for a better Arizona).

2001. Moving All of Arizona into the 21st Century Economy (includes section on Arizona's universities and community college system.

2000. Higher Education in Arizona for the 21st Century (full report devoted to higher education).

Recommendations from the above reports that are particularly germane to the question of university system redesign and selected from the on-line summaries by the two Arizona Town Hall sessions most devoted to higher education are:

From the May 2001 "Moving All of Arizona into the 21st Century Economy:

1. Arizona needs a collective vision for the future and must coordinate existing plans, such as Growing Smarter and the Arizona Partnership for the New Economy, to rapidly implement these existing plans. This unified implementation plan should address education and technology and the needs of our diverse population. The critical importance of these plans and the compelling need for swift implementation must be communicated throughout our public and private sectors.
2. Arizona's existing infrastructure is inadequate to move all of Arizona into the 21st century economy. Improvements need to be made in the areas of social infrastructure (such as health care and education) and technical infrastructure (such as transportation, communications, human and natural resources).

From the May 2000 "Higher Education in Arizona for the 21st Century:

1. In order to ensure the state is competitive in the New Economy, we must encourage and support research, technology transfer, work force development and entrepreneurial activities at higher education institutions.
2. While it is important to prepare students for future employment and to meet the needs of the New Economy, it is equally important to educate well-rounded, thoughtful individuals...it is critical to integrate a liberal arts education with educating students to participate in the evolving technology-based economy.
3. The three-part public governance system (the Arizona State Board of Education, the State Board of Directors for Community Colleges and the Arizona Board of Regents) is adequate, but should be improved. Town Hall strongly recommends that these existing governing bodies, in collaboration with local governing boards, identify a process by which a well articulated master plan integrates the delivery and funding for education in Arizona. With one voice, this plan should be presented to the public and the legislature for debate.

4. Financial support for education in Arizona should be appropriately balanced between the individual student and the public. Out-of-state tuition at Arizona institutions should reflect at least the full costs of attendance. In-state tuition should remain consistent with the Arizona Constitution and permit maximum accessibility to education.
5. In order to meet student needs, particularly in rural Arizona, the existing institutions of higher education should function in new ways. We should encourage our educational institutions to expand what they do well, but also to collaborate and partner with each other and avoid unnecessary redundancy.
6. The Arizona higher education system must have a funding source that keeps pace with the needs of the system. The current basic state funding model for both public universities and community colleges is an obsolete paradigm that is tied to student enrollment and the academic year. It is incumbent upon policy-makers and leaders in the community, business arena and higher education to develop a new funding policy to substantially increase funding and make Arizona not only competitive but excellent.

This May 2000 report also has a section on “strategies for the future” which includes:

Arizona must continue to improve and strengthen effective bridges and linkages between preK-12 schools, community colleges, tribal colleges, public universities and private postsecondary institutions and their local governing bodies. We must create a community of educators that allows the Board of Regents, the State Board of Directors for Community Colleges and the State Board of Education to speak with one strong voice to the Legislature and to the Governor.

Town Hall supports dual enrollment programs, advance placement programs, 2 + 2 programs, public and private sector mentoring programs, the use of best practices (studying and evaluating data on existing efforts), increased linkages with alumni and businesses such as internships and cosponsored initiatives, sharing and exchanging faculty and voluntary community service programs. Town Hall also celebrates the existing transfer articulation agreements and other collaborative efforts that enable a seamless transition from preK-12 to universities, and supports continued improvement of this system. Inner-connections via our libraries and the Internet promote linkage among the components of Arizona’s education system. These collaborative efforts should focus on the shared vision and common goals of the various components of our educational system, and should recognize the broad representation of various groups within our society. These collaborative efforts should be marketed more effectively to the public. Moreover, a coordinated curriculum should be student-centered, addressing the needs of a wide variety of students such as those in alternative degree programs, teacher preparation programs and continuing education units.

The objective of Arizona’s higher education system should be to advance learning through the integration of teaching, research and service, with the incorporation of on-site and distance learning to produce well-rounded individuals capable of critical thinking and analysis who are well-prepared for the work force, for participation in community life, the arts and for leadership in governmental institutions.

Flexibility is the key to effectively responding to the demands of the New Economy. The higher education system needs to be able to respond to change with the same speed that business does, and must allow for more freedom and flexibility. Examples of flexibility include: programs across curricula, experiential education, internships, rotating faculty through business and industry with education faculty rotated through the schools, and greater focus on scholar-practitioners within our faculties. Deeply entrenched bureaucracies and deeply entrenched ways of thinking need to be challenged in order for our higher education system to be able to respond quickly to changing demands.

The combination of research and training is an important element of higher education and funding for research and development should be increased. A focused, substantial and sustained investment in research, technology transfer and innovation related to the New Economy must be undertaken by Arizona and its universities. We must be better prepared to support and sustain the needs of employers so we can attract industry to this state and meet the needs of the industry located here. To achieve this result there needs to be a focused commitment from the higher education system to work with employers to identify strengths in areas in which Arizona's institutions of higher education can take a world-class leadership position.

New innovations in higher education and training should be explored to serve the educational needs of the work force required for the New Economy. If this is not done immediately, high-wage, high-taxpaying businesses will leave Arizona, further reducing the funds available for education, even as we need additional funding.

Battelle Memorial Institute Study for Arizona Board of Regents/Commerce Department

From 2002-2004 Battelle prepared a series of reports for the Arizona Department of Commerce, and the Arizona Board of Regents as part of the Arizona Statewide Economic Study (more information available at <http://www.azcommerce.com/Economic/default.asp> profiles on specific Arizona counties at http://www.azcommerce.com/Communities/community_profiles.asp)

Core Competencies (non-biomedical)

From: Positioning Arizona's Research Universities: Science and Technology Core Competencies Assessment (April 2003)

<http://www.azcommerce.com/doclib/PROP/final%20april%20AZ%20Core%20Competency%20ExecSum.pdf>

Six core competencies are: Ecological Sciences, Agriculture and Plant Sciences, Space Sciences, Computer Modeling & Simulation, Electronics & Optics, and Chemistry & Materials.

Battelle identified three technology platforms for operationalizing these core competencies:

- Bioscience (e.g., genetics, diseases, bioengineering, agbiotechnology, health, neurosciences)
- Advanced Communications and Information Technology (e.g., embedded technologies)
- Sustainable Systems (e.g., water, natural resources, environment, agricultural sciences, health, energy)

When these are combined with the biomedical competencies you get: Information technology and Communications, Sustainable systems, Bioengineering, Neurological sciences, Cancer-therapeutics.

Governor's Office

2001. Arizona Partnership for a New Economy (APNE). Developed by the Governor as a public/private partnership. The final report was in 2001. More information is available at <http://www.azcommerce.com/pdf/apne/finalreport2001.pdf>

2000. Governor's Task Force on Higher Education, Arizona at Risk: An Urgent Call for Action. Includes issues and strategies on increased participation, increased research and business development, increased capacity and productivity, need for investment/accountability/outcomes. It concludes 1) Arizona is at risk if it does not become a leader in the new, global, knowledge-based economy, and 2) Arizona's institutions of higher education are the keys to developing the state's workforce and strengthening its economy. The report identifies three strategies for "The Plan for

Higher Education” – 1) increase participation (raise the level of participation in higher education), 2) increase research and business development (increase the amount of targeted research, technology transfer and business development provided by higher education), and 3) increase capacity and productivity (enhance the human, physical, and technological capacity of institutions of higher education). (No web page available).

2000. Governors Council on Innovation and Technology (GCIT). The GCIT was established by the Governor after the Arizona Board of Regents modified its commercialization policies and Proposition 301 funding became available for the universities to accelerate their commercialization programs. The Council recommended in 2000 a multi-year roadmap that incorporates the universities, private enterprise, and state and local government to foster a diverse technology industry base in Arizona. More information is available at <http://www.gcit.az.gov/>

1990s. Governors Strategic Planning and Economic Development (GSPED). Began in the early 1990s as a private initiative to develop a strategic plan for Arizona, the effort was converted to GSPED in the late 1990s. The clusters continue to operate in Phoenix and Tucson, but much of the statewide effort has been subsumed by the high technology activities currently underway. As of 2004, the clusters and foundations are below.

- Clusters (11): bioindustry, environmental technology, food/fiber/natural products, high technology, minerals and mining, optics, plastics and advanced composite materials, senior industries, software and information, tourism, and transportation/distribution.
- Foundations (7): capital, human resources, information and communications, infrastructure, physical infrastructure, quality of life, tax and regulation, and technology. More information is at http://www.azcommerce.com/gsped/gsped_clusters.asp

Morrison Institute for Public Policy

The Morrison Institute for Public Policy at ASU has developed a series of reports that assess issues of interest in Arizona. Reports are available at: <http://www.asu.edu/copp/morrison/>

2007. Sustainability UPDATE NOTE ADDED

2003. Strategies to Improve Arizona’s Standing in Science and Technology (What would smart, sustained investment in a high tech future look like in Arizona?) The examples of 4 competitor states suggest that Arizona needs:

- Lasting, enthusiastic leadership that recognizes the economic value of science and technology
- The right message and strategy to convey the urgency of this matter
- Investment in the creation and sustenance of first-tier research institutions
- More and better mechanisms to improve the transfer of ideas into the marketplace
- A belief that the state can be a leader in science and technology

2002. The Coming of Age -- *Four Scenarios of Arizona's Future: Aging, Health and the Capacity to Care* (scenarios are: Boomers Bust the Budget, Technology Enhances the Good Life, Who Will be Able to Afford the Future, and Arizona Takes Charge).

2001. Arizona Policy Choices—Five Shoes Waiting to Drop on Arizona's Future (the five shoes are: A Talent Shake Up, Latino Education Dilemma, A Fuzzy Economic Identity, Lost Stewardship, and The Revenue Sieve).

2000. The New Economy: Policy Choices for Arizona. (Invest in New Ideas and Knowledge: Research & Development, Workforce Development: Making the New Economy Work for Everyone,

Come Together: Strategic Alliances for a Competitive Advantage, Work Smarter: Using Technology Wisely, Place Matters: Investing in Quality of Place).

1999. The New Economy: A Guide for Arizona (characteristics are: Technology is a Given, Globalism is Here to Stay, Knowledge Builds Wealth, People Are the Most Important Raw Material, There's No Such Thing as a Smooth Ride, Competition is Relentless, Alliances Are the Way to Get Things Done, Place Still Matters—But for Different Reasons.

Public Opinion About Education

A 2004 survey¹² by the Arizona Educational Policy Initiative (a collaboration of ASU, NAU, and UA) found:

- Arizona parents think the schools their children attend and the teachers who teach their children are doing a good job.
- The biggest challenge facing Arizona schools is lack of money, according to parents. Perhaps that is why they do not favor spending tax dollars to support students attending private schools.
- Parents support providing instruction in both a child's native language and in English. This puts them at odds with current Arizona policy.
- Hispanic and non-Hispanic parents hold very similar views about public education in Arizona.

Public Agenda¹³ lists people's chief concerns about education (the actual surveys are from a variety of sources):

- Majorities say getting a college education is more important today than it was 10 years ago.
- Six in 10 parents of high school students say a college education is absolutely necessary for their child.
- Among parents, Hispanics are the most likely to say a college education is the one thing that can most help young people succeed.
- Slightly more than half of the public says their job does not require a college degree.
- Two-thirds say it's possible to be successful in today's work world without a college education.
- Half of those with children say they are very concerned about being able to save enough money to put a child through college.
- Hispanic parents are far more likely than black and white parents to say they are "very worried" about being able to afford college expenses.
- Most people say students have to borrow too much money to pay for college and majorities agree with the view that the cost of higher education should not prevent qualified students from going to college.
- Most people say if someone really wants to go to college they can find a way to pay for it and almost anyone can get financial aid or loans.
- Americans are divided on the definition of affirmative action.
- Most say less qualified students are "often" or "sometimes" accepted to colleges as a result of affirmative action.
- Only a quarter say the number of minority college students would decline without affirmative action

¹² Merrill, Burce. 2004. Parent Attitudes About Education in Arizona: 2004. Education Policy Studies Laboratory, Arizona State University. 20 pages
<http://www.asu.edu/educ/eps/EPPI/EPPL-0404-101-AEPI.pdf>

¹³ Public Agenda. http://www.publicagenda.org/issues/pcc.cfm?issue_type=higher_education

- Most college professors doubt a high school diploma guarantees "the basics," but majorities of students and teachers say it does.
- Most college professors say freshmen and sophomores lack basic writing, grammar and math skills, but they commend students' computer skills.

Zemsky¹⁴ reviews the history of higher education since WW II with an emphasis on the role it played in pursuing broad societal goals; he concludes that more was done in these earlier years than is done today. Some of the reasons for this change include: 1) faculty and students began focusing on their own preferences (because of the violence and demonstrations in the 1970s), 2) institutions believed economic survival depended on being more responsive to market forces, 3) experiences became more important than ideas, and 4) higher education became more privatized (increased tuition, more financial aid, emphasis on an education earns you more money – all emphasize to students, legislators, administrators, and the public the role money plays in education). These changes caused universities to focus more on their own agenda's rather than the public's (including neglect of helping primary and secondary schools and other societal problems), and to focus on their own customers (students and research funding sources). He ends by saying "we need a reaffirmation of the principles that the American university is an educational asset that can powerfully serve not only private, but public, purposes."

¹⁴ Zemsky, Robert. Chronicle of Higher Education, 2003 (May 30). Have we lost the 'public' in higher education?