Our colleges and universities play a critical role in regional economic development, ensuring that as a nation we continue to lead the world in innovation, maintain our competitive advantage, and maximize our economic prosperity. Because regional economic development takes place in the context of a global knowledge economy, economic development organizations recognize that it is essential to foster innovation, but if we are to succeed, everyone in this room should realize that innovation must be perpetual and ubiquitous and integral to all aspects of our society, beginning with our schools and extending to all sectors of government, business, and industry.

As a nation we are witnessing an unprecedented increase in competition from economies worldwide. Led by its universities, the U.S. has been and continues to be a research powerhouse, churning out new technologies and sharpening the innovative edge. Yet in our national and state-level investments, we sometimes overlook the fact that the success of our universities is increasingly central to both national and regional competitiveness. But at the same time, of course, universities sometimes seem as removed from everyday life as the most remote monasteries, and working with academic communities may sometimes seem like a one-sided conversation with cloistered monks in hooded robes. To avoid any such impasse, I would like to discuss some things every economic development executive should know about universities.

If as a nation we hope to remain competitive, we must be driven by perpetual innovation. It is unfortunate but if we do not embrace perpetual innovation, our standard of living will decline, our way of life will be threatened, and opportunities for the success of future generations will be diminished. And we know that in this context, dramatic change, both positive and negative, lays ahead for all of us. The transition away from petroleum as the dominant source of energy, for example, is certain to be one of the most dramatic changes of the past five hundred years. This shift will be a powerful economic driver in the decades ahead, and hopefully everyone is preparing for both the good and the bad.

Another factor promising change is the emergence of competitive new economies in China, India, Brazil, Russia, and elsewhere around the globe. These economies are not burdened by two hundred years of success as we are. Both innovative and adaptive, they will be heavyweight competitors. They are hungry for the standard of living that we have established in the United States and expect comparable economic opportunity and success. While it is not a zero sum game, it is nevertheless a highly competitive game, and the magnitude of transformation that we should expect as a consequence of that competition cannot be overstated.

It is sometimes easy to overlook the obvious correlation between science and technology and economic
development. Science has increasingly become the driver of knowledge production, and, as a consequence, of technological innovation, which, in turn, drives economic development. But innovation on the scale now required to remain competitive is increasingly less likely to be the product of someone tinkering in his or her garage, however much we may admire that Edisonian paradigm. The new breakthroughs are more likely to be products of organized and collaborative university research. Not only will these innovations drive economic development, they will define our standard of living and quality of life.

INNOVATION ECOLOGIES COALESC IN COMPETITIVE CITY-STATES LED BY UNIVERSITIES

Increasingly universities are important platforms for creating what I term “innovation ecologies.” What do I mean by innovation ecology? We already know that innovation is the central process for understanding both social and economic change. What I am suggesting is that with what we know about science and technology and economic competitiveness, and their role in such broad societal shifts as the transition away from petroleum, a well performing university in your region is a very powerful catalyst.

Yet our universities remain in many ways isolated, self-absorbed, selfish, arrogant, and resistant to change. All these factors together hamper the ability of regional economic development organizations to build productive linkages with academic institutions. Having pointed out that universities are transformational catalysts for regional economic development, however, let me be the first to concede that universities get oversold every day of the week. They are not the be-all and end-all linchpin mechanisms defining the future, but they are nevertheless critical to the creation of innovation ecologies in any region. For our international colleagues that are here, I would suggest that the situation is probably the same at home.

We must realize that in the future competitiveness will largely be driven by the collective innovation of what I term city-states, referring to regions that have coalesced meaningfully, working in a framework and environment in which knowledge production can occur at the fastest and most effective rate, and people have the means to translate that knowledge production into meaningful economic and social change in their region. There will, however, be city-states that are winners and others that are not winners. Those that figure out how to build innovation ecologies will be winners. In the United States right now there are less than twenty-five such city-state innovation ecologies. But to be competitive as a nation, we probably need as many as one hundred. And we can use global competition to our advantage if it spurs us to drive things forward.

In this new knowledge- and science-driven economy, universities are more critical than in the past to these city-states. Universities perform two functions that are absolutely essential to the overall feeding of these regional ecologies for innovation. First and most important is that every single year they produce graduates who are critical thinkers in every field. Not just science and engineering, but in the humanities, the social sciences, the arts, business, and across the entire spectrum. And as these graduates enter the workforce, each has some level of competence critical to our economic competitiveness—scientific or technological or quantitative or artistic literacy—and is able to communicate at the highest possible level. If universities cannot accomplish that, they are not making their most significant contribution, and if in doing that they reach only a fragment of the population, as is typically the case, they are not serving us well at all.

The second critical function of universities, in addition to the creation of the workforce, is creativity. Every single day on our campuses I encounter new ideas, new perspectives, new insights: possibilities that were previously considered impossible, breakthroughs that could not even be conceived, revolutions in science driven by serendipity or anomaly or hard work or a combination of all these factors. Innovation is a product of creativity.

Regional economic development executives should also know that most universities are not operating from positions of strength and all have one overarching goal. Private universities suffer from what I call “Harvard envy.” They all want to be like the mother ship in Cambridge. But the mother ship in Cambridge is an illusion. Harvard is nothing more than a moderate-sized university that has accomplished many great things over the course of its three-hundred-and-fifty year history, but it is what it is, and all other institutions that strive to be Harvard are, in a sense, barking up a tree they should not even be looking at. And among public institutions, universities strive to model themselves on Michigan or Berkeley. But whether public or private, institutions subject to this clonal inclination, this acceptance of replicant status, weaken themselves and fail to advance innovation in the regional ecologies of their respective city-states.

Metropolitan Phoenix is definitively an emerging city-state, but presently driven by what I term social mobility
growth rather than innovation-based growth. Or to put it in somewhat cruder terms, I could say that this region is benefiting from the lackluster performance of other regions. People from Michigan, Ohio, Minnesota, Iowa, and other places say, “It’s awfully cold here, and I think I’d rather move down there,” or “It’s hard to get a job here,” or “There’s things going on here that I really don’t want to stick around for.” So as is the American way, folks move on to places where they think opportunities are more numerous, and that has happened here but it is not economic growth that is sustainable in the long run because it is not based on sufficient levels of innovation, creativity, or “newness.”

Regional economic development not based on innovation is sub-optimal and the societal outcome is destined to be sub-optimal. If you factor out growth in metropolitan Phoenix, for example, the economy here is relatively flat. And this tells us that the regional economy is not yet innovation-driven. Although aggregate income here may be on an uptick, the average per capita income remains relatively flat. This is undoubtedly the case in many of your home regions, and it has the potential to create social disruption and unhappiness. It means that some people are doing very well, but most are not.

THE EMERGENCE OF A NEW KIND OF UNIVERSITY

WHAT IS REQUIRED TO ADVANCE THE ECONOMIC competitiveness of city-states is a new class of university—a new kind of institution that can foster the emergence of regional innovation ecologies. If you do not see the kind of economic returns that you expect in your home regions despite the presence of research universities, quite possibly it is because your research university is virtually indistinguishable from the institution one hundred miles down the road. And what we hope to accomplish in Arizona—because here in Arizona we are still figuring out what we are and what we want to be—is the establishment of a new kind of university. We are putting in place a new design code and although we draw from the past judiciously, we are building an institution that is different. Let me provide a partial list of what that institution might look like.

First and foremost, we have assumed a different mission. It is generally taken for granted that there are two types of universities: those that focus on academic excellence and discovery, and those that focus on access. Those that focus on academic excellence admit only the finest students and all other and expected to attend barebones institutions. The assumption is that maybe the individuals who attend these less competitive institutions will be able to accomplish something and maybe not, but at the end of the day it makes little difference anyway. This is a fatal error.

In order to produce a competitive workforce it is first necessary to engage students at an institution that functions at the highest levels of academic excellence. We have therefore committed ourselves to building an institution that combines the highest levels of academic excellence with access to a broad demographic, and to accomplish this at scale. Of the one hundred leading research universities in the nation, ASU is at once the largest, the newest, and the only one growing at any significant rate.

We have changed the clock speed of the university. Universities are a thousand-year-old institutional form—two thousand four hundred years if you look back to the progenitors of the medieval university in the hills above Athens—and the clock speed that was then set and still remains is such that the passage of time is imperceptible. Instead of measuring time in semesters, we have decided that we will move at the pace of the competitive global economy, and speed will be one of the most important factors in our design.

We have made commitment to place, meaning that our presence in metropolitan Phoenix and Arizona is the single most important driver determining what we choose to do. The programs we develop, the problems we focus on, the nature of who we produce—all of these are determined by our unique setting. You will have a task ahead of you to convince your local universities to make their location a key driver in their development. And if they were to agree to make it a key driver, it would dramatically affect everything that happens in your region. A corollary to our commitment to place is our focus on social embeddedness. What this means is taking it to the street, making certain what we do has some measurable impact on local social, economic, and cultural outcomes. We have over one thousand community engagement programs throughout the metropolitan region. And we are focused on the individual: in 1995 one hundred Hispanic students advanced from the freshman year to the sophomore year, for example, but last year there were 1200—a twelvefold increase in twelve years.

Intellectual fusion, referring to transdisciplinary teaching and research, is yet another design aspiration. During my twelve years at Columbia I worked to develop new programs, and it took me seven years to create a new department, the first since the end of the Second World War. When I left some former colleagues said to me, “Now that you’re finally out of here we can kill that thing off.” These academics did not want change because they liked the existing organizational structure. And what is sad is that these internal social structures have nothing to do with the problems we face or the opportunities that await us. Traditional academic departments do not correlate to
societal needs and are merely convenient social constructs. Through intellectual fusion we transcend unnecessary social constructs and design new colleges, schools, departments, and centers with the capacity to respond to the problems that confront us in new and differentiated ways. An example is the new $400 million Biodesign Institute, comprised of hundreds of scientists from dozens of disciplines tackling projects such as a vaccine for infantile pneumonia, a field detection system for dirty bomb detonation, and new bacteria engineered to produce new biofuels.

We have also committed the institution to a research enterprise with societal relevance, emphasizing problem-focused or use-inspired scholarship. Give us the problem and we will solve it. An example is the nighttime heat index in Phoenix, which has increased by approximately twelve degrees in the last twenty years. It is twelve degrees warmer at night now than it was twenty years ago and increasing one-half degree per year. In order to address this problem we brought together a group of people from engineering, sociology, planning, architecture, and design, as well as experts from government and the private sector.

**REGIONAL DIFFERENTIATION LED BY DIFFERENTIATED UNIVERSITIES**

The future of the American economy, and in many ways the future of our planetary economy, is dependent on our ability to compete in a global economy of innovation. In order to contribute and succeed every region must leverage its unique capacities. Sameness will not work because when there is sameness there is always a winner and loser. When there is differentiation there are opportunities to build and leverage from each other. So I urge all of you to think about how to build those unique innovation clusters.

There is no question that the success of our regional economies and our communities is intrinsically interrelated with the success of our academic institutions, yet our universities are not always explicitly acknowledged. Nor is there sufficient recognition that not all universities need be cut from the same cloth. Conventional wisdom dictates that all great universities must function both as centers for humanist scholarship and world-class science, engineering, and medical research. But each institution cannot hope to accomplish all of these objectives, and should instead adapt to be of the greatest value to its constituents. At ASU we think that our new design code may produce a differentiated enterprise that gives us some chance of accelerating the emergence of a knowledge-driven city-state here in metropolitan Phoenix.