Smart Communities, Universities, and Globalization: Educating the Workforce for Tomorrow's Economy

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Abstract

The global knowledge economy is transforming approaches to the planning and development of successful, smart cities in the 21st Century. This keynote address provides exciting insights into the potential role of metropolitan universities as key participants in new "collaboratory" structures that will ensure the economic, social and cultural well being of cities and their regions.

Universities have always served their communities by providing an educated workforce, contributing to the knowledge base of a community through its consulting work to government and business, and generally by being part of the social fabric of a community. Increasingly, however, like the land grant colleges of an earlier era, universities in urban and metropolitan settings are being looked to for unique leadership, particularly as communities make the transition from a post-industrial economy and society to a new uncertain age in the wake of globalization.

Some universities have already started more actively to engage their communities in meaningful ways by serving on various local boards and commissions, and significantly, creating new research parks and centers involving the business community. Now, however, in the wake of a basic shift in the structure of the world economy, cities across America are looking to their universities to be principal allies and agents of change.

As author and New York Times foreign affairs columnist Thomas Friedman has said, "The world is flat" (Friedman 2005). We are suddenly competing with every community around the world for basic manufacturing requirements and provision of high tech and biotech services. With this flattening taking place everywhere, we must accelerate the change that is taking place within our communities and reinvent our centers of learning — our schools — at every level and at a pace unparalleled in the history of the country.

We can do this best by helping our communities renew and reinvent themselves for this new global age in which the Internet, knowledge creation and innovation are key

and where collaboration and connectivity are the hallmarks of the most successful communities. Importantly, we must help by accelerating change within the university itself,

Cities across the world are now struggling to reinvent themselves for the new, post-industrial economy and society foreshadowed in the 1960s by economists Fritz Malcop and Marc Porat (Porat 1977) and by sociologist Daniel Bell (1977). In their efforts to prepare themselves for the 21st century, many communities focused on updating their data infrastructure to accommodate the needs of an age in which information is the most valuable commodity.

San Diego, for instance, even commissioned a "City of the Future" (Eger 1994) committee in 1993, to make plans to build the first fiber-optic-wired city in the country in the belief that as cities of the past were built along waterways, railroads and interstate highways, cities of the future would be built along "information highways" — wired and wireless information pathways connecting every home, office, school and hospital and, through the World Wide Web, millions of other individuals and institutions around the world.

These new information infrastructures are important. Yet, it must be remembered, the effort to create a 21st century city is not so much about technology as it is about jobs, dollars and quality of life. In short, it is about organizing one's community to reinvent itself for the new, knowledge economy and society; preparing its citizens to take ownership of their community; and educating the next generation of leaders and workers to meet these global challenges.

Today, the demand for creativity and innovation has out-paced our nation's ability to produce enough workers simply to meet the needs of Silicon Valley or the Hollywood entertainment community. Seven years ago, for example, the Alliance of Motion Picture and Television Producers asked the governor of California to declare a state of emergency to help Hollywood find digital artists. There were enough people who were computer literate, they claimed, but they could not draw. In the new economy, they argued, such talents are vital to all industries dependent on the marriage of entertainment to computers and telecommunications (Eger 2003).

Worrying about the lack of qualified workers in this day and age may sound unusual. With the globalization of media and markets in full bloom, America is beginning to see the outlines of yet another out-migration of American jobs, unleashing new concerns about rising unemployment. Many economists are alarmed that the latest round of losses, unlike the earlier shift of manufacturing jobs to Taiwan and less developed East Asian countries, will have a dramatic impact on America's economic wealth and well-being.

Twenty years ago it was fashionable to blame foreign competition and cheap labor markets abroad for the loss of U.S. manufacturing jobs, but the pain of the loss was softened by the emergence of a new services industry. Now that the service sector also

is beginning to automate, banking, insurance, and telecommunications firms are eliminating layers of management and infrastructure as the traditional corporate pyramid disappears and is replaced by highly skilled professional work teams. State-of-the art software and telecommunications technologies now enable any kind of enterprise to maximize efficiency and productivity by employing foreign workers wherever they are located, making the retention of service sector jobs in the U.S. even more precarious (Armour and Kessler 2003).

In 2003, IBM, the world's largest computer maker, acknowledged that "a significant number" (the unions claim several thousand) of software, chip development and engineering jobs were being moved to India and China. In 2004, industry stalwarts like Microsoft, Hewlett-Packard, and Dell Computer announced that they, too, were either "outsourcing" their software development or beefing up their foreign subsidiaries in China, India, the Eastern Bloc, and Russia to do the same.

Marketing research firm Forrester Research, Inc. estimates some 3.3 million service jobs will move out of the United States over the next 10 to 15 years. Others put that number at 15 million and say the results will be devastating for America's economy (Perez 2005).

While CEOs, economists, and politicians are telling us that these are short-term adjustments, it is clear that the pervasive spread of the Internet, digitization, and the availability of white-collar skills abroad mean potentially huge cost savings for global corporations. Consequently, this shift of high-tech service jobs will be a permanent feature of economic life in the 21st century, but this does not necessarily mean the news is all bad. On the positive side, some economists believe that globalization and digitization will improve the profits and efficiency of American corporations and set the stage for the next big growth-generating breakthrough. But what will that be?

A number of think tanks, including Japan's Nomura Research Institute (1988), argue that elements are in place for the advance of the "Creative Age," a period in which America should once again thrive and prosper because of our tolerance for dissent, respect for individual enterprise, freedom of expression, and recognition that innovation, not mass production of low-value goods and services, is the driving force for the U.S. economy. Developing the human mind to its fullest potential and educating people so they are capable of success in the information age requires that we rethink the role of community broadly defined; retool our knowledge factories — starting with our universities — concentrating all our energies on educating the public for the coming knowledge age; and restructure education to incorporate what we now know about enhancing creativity. Unless we do so, we will not develop the skill base we so desperately need in the work force for the new millennium. Richard Florida, author of *The Rise of the Creative Class*, more optimistically argues that the U.S. is already churning out large numbers of "creative workers" (2004).

The Rise of Smart Communities

In less than a decade, the great global network of computer networks called the Internet has blossomed from an arcane tool used by academics and government researchers into a worldwide mass communications medium, now poised to become the leading carrier of all communications and financial transactions affecting life and work in the 21st century. Cities of the past were first created along waterways, then railroads, and eventually interstate highways. Cities of the future will decidedly have 24/7, broadband telecommunications in place, wired and wireless infrastructures connecting, though the Worldwide Web, every home, school and office to every other organization or institution worldwide (Eger 1997a).

Cities the world over are struggling to gain prominence in the wake of a global knowledge economy. In the spring of 2005, tiny Dubai, one of the Arab Emirates, took out full-page ads in *The Wall Street Journal* and *The New York Times* proclaiming its success as the number one Middle Eastern "City of the Future," in part boasting the largest Internet protocol in the world. Closer to home, Philadelphia put in place one part of its global telecommunication strategy: a plan to offer inexpensive wireless Internet as a municipal service to the whole city, a bold move that is the most ambitious yet by a major U.S. city.

Not surprisingly, the Philadelphia plan collided with commercial interests including the local phone company. The Telco and cable interests have now joined hands to make sure no other city in Pennsylvania gets as "creative." As dozens of cities and towns have either begun or announced similar ambitions, these competing interests have intensified a national campaign to quash municipal wireless initiatives like Philadelphia's (ZDNET 2004).

New York City, too, is looking at ways to provide broadband access to all their citizens. In a briefing paper released before they began public hearings, the city through its experts made it unequivocally clear that "broadband is a necessity for every resident," and second that having it "improves the quality of life of everyone who has access" (Eger 2005).

Other cites across the country are developing plans to be so-called "connected communities," or as California called them almost a decade ago, "smart communities" (Eger 1997b). In the wake of globalization and with yet another out-migration of American jobs, there is a new urgency.

Those communities placing a premium on cultural and ethnic diversity, developing their own aggressive broadband strategies, and reinventing their educational systems for the creative age, will likely burst with innovation and entrepreneurial fervor. These are the ingredients so essential to developing and attracting the type of bright and creative people that generate new patents and inventions, innovative world-class products and services and the finance and marketing plans to support them. Nothing

less will ensure America's dominant economic, social and political position in the 21st century.

New "Collaboratories" Shape the Smart Community

What must we do to develop the "smart community?" We must organize ourselves to create a vision, a plan and a collaboratory — a new decision-making mechanism for the digital age. At the heart of the collaboratory is recognition of the importance of cooperation, collaboration and consensus decision-making.

Alexis de Tocqueville, a wealthy French author and historian, first visited a very young America at the turn of the 18th Century and published his treatise "Democracy In America" in 1835. While not particularly well known in popular culture, it has become a bible for almost every American politician, for de Tocqueville helped explain America to the Old World of European aristocracy in decline. In the process, he helped America understand itself. What fascinated de Toqueville was the absence of a class system. He wrote about a "general sense of equality" among people, and a freedom to think and act and speak as if "sovereignty," that elusive concept often attributed to nation-states, indeed belonged not to the state, but to the people.

In *The Jihad vs. McWorld* (1995), author Benjamin Barber describes the Jihad as "the bloody search for bloodlines" and McWorld as "the bloodless search for markets." What is missing, Barber argues, is the call for "the commonweal" - the public good, the common goal at the heart of every free democratic society. "Our world and our lives," he said, "are caught between what William Butler Yeats called 'two eternities of race and soul, that of race reflecting our tribal past, that of soul anticipating the cosmopolitan future.'"

As we go about the business of reinventing our communities for the creative age, we must do so fully cognizant that one of the basic and unique things about our system is that it is our freedoms, expressly provided by the Constitution, which enable us to enjoy such a robust information economy. It is also our tolerance for dissent and respect for the individual rights of the minority that have spawned generations of entrepreneurs and, collectively, provided the creative force that produces more books, movies, music and software of every kind and quality now permeating the 21st Century global economy.

In addition, we must recognize, as author and researcher Daniel Yankelovich has written, that a business-driven society like ours that relies on the free market approach to problem-solving and that fails to embrace the values of its civil society "without showing respect for its employees or customers, without inspiring people to give their creative best to their jobs, without employees and management understanding each other and without employees' buying into management's vision of the future (will) inevitably slip into mediocrity or worse" (Yankelovich 1999).

Yet who among us today understands the basic framework of our constitutional system; that special thing that makes America unique? How many Americans know what the First Amendment is or that it is our First Amendment freedoms of speech, press and assembly in the first place that have enabled us to produce a knowledge-based economy that is the envy of the world? How have we as a society taught our business leaders the "social responsibility" of business?

If we are to ensure the next century is as prosperous as the last we need to do much more to reawaken that American spirit de Tocqueville first described. We must take certain steps to preserve and protect our most cherished fundamental rights of freedom; and make sure our business schools are teaching the deep and underlying connections between freedom and free enterprise. In this century moreover, it is in our economic interest-as well as political-to do so, for never before in the history of America has the concept of freedom and free enterprise been so closely linked. Never before have our political and economic freedoms so intertwined. This is a challenge our urban and metropolitan universities can meet.

A New Agenda for Action

The agenda to renew our cities is huge. As discussed, many cities are already developing plans to provide the wired and wireless infrastructure of this new age. Working either in partnership with the existing cable or Telco providers or through some alternative strategy, they are aggressively looking for ways to provide the wireless "hot spots" often found in downtowns, coffee shops and other public gathering places. In the belief that having broadband is as necessary as water, electricity and a telephone and indeed, that such broadband Internet service may be the missing link to reinventing and renewing our cities, they are developing plans for comprehensive, wired, 24/7, broadband infrastructure.

As mentioned earlier, with the "outsourcing" of several million high-tech jobs in the last few years, this is now a matter of some urgency. While Forrester Research predicted we would lose 3.3 million such jobs over the next 10 to 15 years, the University of California at Berkeley said we would more likely see the loss of 10 percent of all white-collar jobs over a similar period. They see it not so much as a result of "outsourcing" per se, but rather as a "fact of life" in a global economy (Maclay 2003).

Cisco Systems, a leader in the telecom field has said: "Broadband infrastructure is criticalS" to survival in the wake of a basic shift taking pace in the structure of the world's economy. "Its deployment is a key measure of success in the information economy and is crucial to the future growth of productivity" (2005).

The question of who has responsibility for a regional, not just the city's, infrastructure, however, is complex. As columnist and author Kenichii Ohmae and others have observed: "There are no national economies anymore; only a global economy and regional economies with strong cities at the core" (Ohmae 1999). Thus, what happens within the cities must permeate the entire city and its region.

The City of San Diego, for example, is really part of the greater San Diego region involving 17 other municipalities and, one might argue, includes Tijuana and the greater Baja California part of Mexico. A regional strategy therefore that includes all public agencies and governments in a region may be well served by the joint effort of several entities. Such a strategy usually does not include the needs of the larger business community, which can look out for itself, but rather, and more importantly, the citizenry at large because access to such broadband facilities as New York argues, is a necessity for every citizen of the region.

But again, having such broadband infrastructures in place is only a first step. As discussed earlier, the effort to create a 21st century city is about economic development and quality of life, not technology per se. In short, it is about organizing one's community to reinvent itself for the new, knowledge economy and society. Cities must prepare their citizens to take ownership of their communities and educate the next generation of leaders and workers to meet the new global challenges of what has now been termed the Creative Economy (Eger 2003).

How best to use computers and telecommunications to transform every sector of our communities across America? Our universities are uniquely suited to help answer this question. They have the expertise, but perhaps more importantly they are the most trusted agents of change within their communities. The university interests are clearly learning and linkages, not power or financial gain. Equally important, the university operates on a principle of shared governance. If ever there was a time for this concept to have community-wide applicability it is now.

Importantly, the process of reinvention and renewal of an entire community involves all its citizens and its institutions. Government, industry, academe and the citizenry each must assume responsibility for the future of the region and must share in the governing process to prepare the community for the challenges of the global digital age. The university can provide the umbrella and can help educate all these diverse constituencies (2001).

But, it must first make the commitment to lead by dedicating itself and the university's resources to educating and engaging the community to meet these challenges. Clearly a new model for civic engagement and civic participation is needed-locally and globally. Now is the time to begin thinking about such engagement, about civic entrepreneurship, and about rethinking democracy in America in the age of the Internet.

Through its various institutes and centers, or perhaps a department or even a college, the university is already engaged with the community in this process. But like so much of business and government, the university operates through so many "silos" that it often does not speak with the common voice or vision that's necessary to move forward as an institution. If it chooses to play a leadership role, it must organize itself internally as a condition to playing this larger leadership part. This requires commitment from the top and the appointment of someone close to the president to ensure day-to-day operation.

It must be the focal point for the debate, discussion and dialogue within the community about how the community can transform itself. This process requires identifying all the stakeholders in the community and bringing them together one by one to form a new decision-making mechanism-a collaboratory that becomes not just a think tank but also command central for the process of transformation.

The second mission the university accepts when it makes a commitment to transform itself as well as the community for the new economy is not new, but the emphasis and urgency are. Of paramount importance is the process of transforming the curriculum, the faculty and the students to meet the challenges of our new age.

An example of such an institution committing itself to preparing its students for these challenges is The University of California, San Diego, which recently opened the Sixth College. The new college's themes are art, culture and technology. Students will study the progress of the human species and its cultures and will explore watershed events in history where art, culture and technology converged. According to Provost Gabrielle Weinhausen for example, the rediscovery of perspective during the Renaissance enabled architects and artists to collaborate on the creation of maps. The key to studying events like this, says Wienhausen, is learning how to ask the questions that illustrate relationships and patterns.

San Diego State University, after consultation with Qualcomm, and many other leading-edge high technology and biotech companies in the region, developed a list of workforce skills these companies wanted in their future employees. In many ways most universities are already meeting the challenge of providing students with a worldview to better enable them to play a meaningful role in the world economy. Having such business and industry collaborations helps the university greatly in focusing on providing those skills that lead to services not easily outsourced and that put American students at the top of the global food chain.

Importantly, the major employers within the community are eager to help the university help itself change the curriculum. Just two years ago, Qualcomm funded an honors program in information and communications technology in the belief that such skills are important for every employee whatever their job in the Qualcomm organization. Subsequently, they helped found the Innovation Institute, and in the process, helped develop a larger effort to change undergraduate education in general to give all students the benefit of these learning experiences (2004).

Universities must develop similar programs through industry, government and academic partnerships to ensure that students who graduate have the skills to succeed. By providing the central thread and a plan for revitalization of the community, building a framework for civic engagement, and even engaging the media to help in this process, the universities, fully engaged and playing the leadership role, can help their communities make the transition they so desperately need to make.

Conclusion

The message is becoming clear: rather than economic stimulus tools such as subsidies for footloose corporations and taxpayer-underwritten industrial parks, the successful cities and metro areas of the 21st century will be stimulated by their attractiveness to young, talented people. The traditional economic development push to lure big corporations and build large factories was characteristic of the 20th century economy. The prize of the future will be the ability to attract, nurture and retain the type of bright and creative people who generate new inventions, world-class products and the finance and marketing plans to support them.

For the last 10 years, the California Institute for Smart Communities has looked at hundreds of smart communities in the making worldwide. Each community's approach is different, as each community itself has its own unique characteristics and demographics. But, there are three overarching conclusions or observations that the Institute believes make the critical difference between success and survival in the Information Age.

First, the effort to remake our cities as we shift from an agrarian and industrial economy to a knowledge economy should not be seen simply as an effort to deploy technology. Rather, it is an attempt to understand how people use technology; and then, importantly, how to deploy technology as a catalyst to transform every sector of the community's economy and society.
Second, an outgrowth of this new understanding is the recognition of the importance of collaboration. While competition surely existed between industry and government, and clearly in the telecommunications field between different industries — cable vs. telephone, wired vs. wireless communications firms, and so forth — in this new environment, cooperation is essential among and between governments and between governments and industry. Indeed, it is clear that the City of the Future cannot be built without the active participation and cooperation of all of its stakeholders. Many people believe that as the world has become more competitive, a competitive strategy that is not based on a spirit of cooperation will not be competitive very long.

Last, but importantly, is the lesson about empowerment or shared governance. Under this principle all stakeholders, including individual citizens, have a voice in the dialogue and discussion about their city and region and indeed even in establishing a governance structure that allows them to participate in the decisions that are made. This effort at shared governance is fundamental to success and survival in this new age. It is exactly what universities do so well.

The time we live in demands not just new thinking, but new leadership. No one has yet risen to the challenge, but the University can, and importantly it has all the tools, to do it comprehensively. As Walter Lippman, author and historian, once observed:

> We are living through the closing chapters of the established and traditional way of life. We are in the early beginnings of a struggle that will probably last for generations to remake our civilization. It is not a good time for

politicians or bureaucrats. It is a time for prophets and leaders and explorers and inventors and pioneers and for those willing to plant trees for their children to sit under (Lippman 1989).

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