CHAPTER 12

Facilitating Lifelong Learning in a Research University Context

Mary L. Walshok

INTRODUCTION

The paradox of the modern research university is that it is not changing fast enough and it is changing too fast. Where it is changing is in the speed, the quality, the diversity and the expanding potential value to society of the knowledge it is creating. Where it is not changing is in how it organizes, disseminates and integrates the rapidly changing substance and forms of knowledge within the society it ostensibly serves. The greatness of the modern research university resides in its extraordinary knowledge development capabilities and in the preparation and certification of young adults' mastery of that core knowledge. The weakness of the modern research university lies in its failure to integrate into its core culture and practices lifelong knowledge dissemination and integration capabilities equal to its knowledge creation activities.

Such capabilities are essential today because of the increasingly significant role academic knowledge plays in economic, organizational and civic spheres and because of the increasingly significant value that access to these spheres represents for knowledge development activities within research universities themselves. These dissemination and integration capabilities are also essential because professionals, practitioners and citizens from all walks of life can no longer be effective when the half-life of basic knowledge in increasing numbers of arenas is five years or less. They need access to learning opportunities lifelong so that they can continuously acquire and integrate "new" concepts, principles and practices as well as shed no longer valid "old" concepts, principles and practices. Finally, the need for a culture and organizational capacity as attune to knowledge integration lifelong as it is to knowl-

edge creation has a political and resource dimension. As the challenges of living, working and assuring prosperity become ever more complex and multi-dimensional, the growing disconnect between the highly specialized disciplines within the university and it's attendant inability to constructively engage very real societal needs for information, analysis and interpretation could erode public and leadership confidence in the research–knowledge development process.

It is the premise of this chapter that the modern research university has a unique and essential role to play in lifelong learning activities, which enable continuous interaction between the academy and the society in support of a number of individual, organizational and civic needs. This role is one which is grounded in the key differentiating features of research universities. These include habits, as well as rules, of discourse, analysis and documentation of scholarship and systematic research, which in turn inform generalization, interpretation and, ultimately, action. At its core, the research university represents a set of values and disciplined practices with regard to gathering information, organizing principles and knowledge development. These are the essential "tools" or "skills" of the academy and they are, in turn, those required for lifelong learning, particularly in advanced, rapidly-changing conditions.

The disconnect between the central knowledge activities of the university and the needs of society arises, because the culture and organization of knowledge work within the university is based on increasing levels of specialization, whereas the integration of knowledge—whether it be in a product, a social problem, an organizational practice or a cultural trend—requires interdisciplinary and cross professional knowledge. The central lifelong learning challenge confronting research universities today is how to "bridge the gap" between cultural values and organizational practices that reinforce specialization and the fragmentation of knowledge within the academy and the growing need for the integration of multiple knowledge resources throughout society.

The lifelong learning challenge facing the modern research university is not about abandoning a commitment to "free" inquiry in favor of currently "useful" knowledge. Nor is the challenge one of abandoning "useless" theory in the service of more "applied" objectives. The challenge to research universities is also about more than the need for increased "public service" or responsiveness to "new markets." The challenge is fundamentally about the changing role of knowledge in society and the need for integrative and bridging mechanisms suitable to the modern requirements for knowledge in light of its diverse and rapidly changing forms. This chapter therefore addresses that challenge by focusing on three spheres of activity for which research university knowledge is continuously essential: economic growth and trans-

formation; professional and workplace competencies; and civic capacity. It also suggests a variety of ways in which universities can and are creating mechanisms that "bridge" the work of the academy and the knowledge needs of society in cross-disciplinary and integrative ways, thereby addressing life-long learning needs simultaneous with retaining research excellence.

THE CHALLENGE

In a collection of essays entitled *A Digital Gift to the Nation* (2001), the distinguished co-editors Newton Minnow and Larry Grossman remind the reader of a series of "farsighted investments" in higher education made by the United States over three centuries without which the country would not have achieved it's greatness in both economic and civic affairs. They cite in particular three public investments that assured an educated citizenry and productive economy: the 1787 Northwest Ordinance setting aside public land to support public schools in every state, thereby building literacy throughout a new nation; the 1862 Morrill Act which led to the establishment of one hundred and five land-grant colleges, which today represent the backbone of America's global preeminence in research and higher education; and the 1944 GI Bill, which provided access to higher education (previously primarily available to elites) to over twenty million everyday American citizens, men and women who fought in World War II.

Minnow and Grossman are advocating a fourth such 21st century investment, which would "open the door to a knowledge based future" for all Americans. They are recommending the creation of a multi-billion dollar Digital Opportunity Investment Trust to be derived from revenues the United States federal government will earn from it's auctions to telecommunications providers of "the publicly owned electro-magnetic spectrum, the twenty first century equivalent of the nation's public lands of an earlier time." In their introduction to the collection Minnow and Grossman open with a powerful assertion: "In the age of information, the nation's prosperity, its democracy, its culture and its future will depend as never before on the training, skills, ideas and abilities of its citizens. The people's access to knowledge and learning across a lifetime in the sciences and humanities must become a national imperative in the emerging knowledge-based economy".

I begin this essay on lifelong learning and the future of the research university with this reference to underscore how central this issue has become to leadership in the U.S. and to suggest how broadly we need to think about the challenge as we more thoughtfully and systematically conceptualize and implement comprehensive lifelong learning strategies within the great public research universities of Europe and America.

Without a guiding conceptual framework which addresses: a) the role of knowledge across the full range of human activity; b) the various types and forms of knowledge to which citizens need lifelong access; as well as c) the unique capabilities of research universities to relate to a) and to b), we cannot arrive at a thoughtful and comprehensive strategy. There are growing numbers of "apologists" for specific forms of continuing education and existing programs of "outreach", "service" and "extension." What is lacking, however, is a framework for thinking about these activities, one which integrates lifelong learning into the central mission of research universities in light of the national "imperative" articulated by leaders such as Minnow and Grossman in the United States.

The challenge is conceptual and practical. It requires thinking about three distinct issues:

- Better Understanding the New Imperatives for Lifelong Learning.
- Developing Concepts and Metaphors Useful to Thinking About Lifelong Learning in a New Age
- Building Institutional Capacity for Lifelong Learning Within Research Universities.

BETTER UNDERSTANDING THE NEW IMPERATIVES FOR LIFELONG LEARNING

Our post-modern world is characterized by perpetual change and uncertainty. Individuals, organizations and communities must continually adapt, shed old practices and structures, integrate new information, skills and systems for accomplishing desired ends at home, at work and in the community. That is why we live in a knowledge age. We have come to recognize that learning throughout life is the only way to manage or adapt to change.

This continuous change is driven by many factors, but it can be broadly understood in terms of three macro-phenomena which touch all communities: the speed of technological change; massive demographic shifts; and globalization.

The forces of technology are everywhere, not just in the putative "new economy" of dot coms, biosciences, composite materials and bioinformatics. Advances in science and technology result not only in new products and industries, they transform traditional ones: agricultural food processing becomes as important as food production; computer design and cutting equipment changes clothing and furniture manufacturing; super-computer simulated earthquakes, drug testing, prosthetic device assessments change how we research complex questions previously requiring natural settings.

And so, regardless of our level of educational attainment, the content of our lives and work is continuously shifting and we must learn new things.

The forces of demographic change go far beyond the usual indicators of population concentration in urban centers throughout Europe and America, or the growing numbers of elderly as a particular percentage of our population. The challenging implications lie in facts such as that 11 % of the 2 million population of the City of San Diego is Filipino and 6 % is African American; or, that, today, in the United States, there are more Muslims than Jews and more Buddhists than Episcopalians. Also, more Americans work for companies owned by women than Fortune 500 companies. Ninety-five percent of the new jobs in the United States (33 % of jobs available are new, while another 33 % are becoming obsolete) are being created by small entrepreneurial companies. These demographic trends speak volumes about what one has to "know"—sometimes unlearn, always relearn—in order to effectively develop management and leadership skills; design, manufacture and sell products; teach children; treat patients; run successful cinemas, bookstores or arts and cultural organizations.

Finally, globalization—the fact that ideas, investment capital, manufacturing and distribution centers, suppliers and markets are no longer concentrated exclusively in a few major cities but are present, accessible and mobile across the globe—means that local communities, regional suppliers and producers, consumers everywhere are as affected by developments in London or Hong Kong as they are by Washington or Sacramento. It also means that universal human questions, such as environmental sustainability, health and disease, war and peace are affected by many more places and at much faster rates, so that global intelligence becomes as vital a requirement of citizenship in Des Moines, Iowa or in Bergen, Norway as it is in New York, Paris or Berlin.

The force of these factors—technology, demography and globalization—also gives rise to a paradox of modern times which it is essential to grasp when thinking about lifelong learning and research universities. Everything local is affected by macro trends, often driven by developments outside one's region, and yet the only way to understand, harness, shape and integrate these forces into our civic and work lives is through local and regional initiatives. These initiatives must support continuous learning and facilitate the integration of new knowledge and skills into the daily activities of individuals, organizations and communities in their regions. That is why citizens, industry leaders, politicians and "do gooders" everywhere are calling upon universities to become more engaged. Today, university engagement means not just producing the research and scholarship that is shaping the macro drivers of economies or the initial credentialing of the intellectual and human capital contributing to the economy and society. A new form of

engagement is essential. This form of engagement acknowledges that increasingly the key users of knowledge are regionally based. Thus, it requires a distinctively regional approach to meeting the lifelong learning needs of communities, organizations and individuals in the university's locale.

This regional focus does not conflict with traditional research and teaching roles serving global knowledge development. Rather, it can add a new dimension to the work of the modern research university, a dimension with which, however, the university's current culture, organization and leadership are ill-equipped to deal. What is required is added capacity, rather than a transformation of mission. Research, scholarship, residential degree programs are all respected and valued hallmarks of the modern university. However, in this new age of regionalism, the university must also embrace a commitment to local engagement, knowledge integration and the need for lifelong learning, if it is to sustain its social value and political support as well as its intellectual integrity.

DEVELOPING CONCEPTS AND METAPHORS USEFUL TO THINKING ABOUT LIFELONG LEARNING IN A NEW AGE

The lifelong knowledge needs that must be addressed regionally are of at least three distinct types, based on the sort of forces that continuously challenge and shift the contours of regional economies, critical social institutions such as schools, health care systems and local government, and the competencies of the regional professional and managerial workforce. Research universities are the logical centers of new knowledge for these challenges. This is because of 1) the potential contributions of science and technology research to the development of high wage jobs through the growth of new globally competitive technology based industries drawing on the unique intellectual capital in and around the university; 2) their cutting-edge degree programs, which prepare and credential a cadre of potential workers and professionals, as well as their capacity to organize and authenticate emergent and cross disciplinary knowledge essential to advanced forms of continuing education and practitioner credentialing and 3) their long traditions of scholarship and discourse in the arts, humanities and social sciences, which link them to global conversations and perspectives representing valuable resources to community problem-solving and citizen education. Universities need to think about their connections to community learning needs in ways that address all three roles.

Universities rarely think this comprehensively however. They tend instead to point to individual initiatives, which often arise out of self referential needs and interests—an industrial affiliates program in engineering; high fee professional and management part-time degree programs; associates and

friends of this gallery or that theater program. Rarely do the research universities in the United States develop comprehensive lifelong learning strategies that serve the many corners of their communities who want to learn and grow. Too often, they focus only on those sectors with the wherewithal to fund the more specialized interests of the faculty or particular learning constituencies.

To build capacity for genuine engagement with the region requires a corporate sense of mission vis-à-vis the region, one that addresses at least three types of distinct but over-lapping knowledge needs:

- The need for innovation through science and technology, which supports regional economic renewal through globally competitive industrial applications of technology as well as entrepreneurial enterprises.
- The need for education and credentialing programs, which not only launch people into careers and professions but address their lifelong needs for retooling, up-grading, inter-disciplinary and cross professional education and training.
- The need among citizens and vital social institutions to understand the forces shaping their effectiveness, as well as forums and settings which develop and integrate regionally relevant knowledge to help them adapt and change in ways that assure continued well being in a democratic community.

In other words, the university leadership—faculty, administrators and trustees—has to be thoughtful and strategic about where it can add the most regional value vis-à-vis:

- Economic renewal and development
- Workforce training and continuing professional education
- Community problem solving and citizen education.

A broader conceptual framework for thinking about lifelong learning will result in different kinds of activities and collaborations campus-by-campus depending on regional differences. However, in any context, the knowledge resources of research universities can be responsively and appropriately mobilized around these three imperatives.

In addition to a broader framework for defining the mission and purposes of lifelong learning, universities need to become a) listeners not just teachers; and b) present themselves as "hubs" of knowledge rather than the exclusive sources of knowledge. To be regionally effective and professionally relevant requires a commitment to listening and learning about and from diverse regional constituencies as well as high levels of expertise in a field. Listening is essential to assessing what aspects of the university's knowledge

capabilities are most relevant and can be most useful to the community, as well as what parts of the university's intellectual work can be positively enhanced by the knowledge and concerns residing in the region. To achieve this requires genuine dialogue and collaboration between the higher education institution and the community. The traditional knowledge work of the academy—basic research, scholarship, and degree granting—is shaped primarily by national and international communities of discourse, evaluation and authentication. Today, university knowledge also needs to be informed by the peculiarities of local factors and concrete experience in order to be regionally relevant. Thus, the lifelong learning agenda needs to be informed and validated by a regional constituency, as well as by principles and expertise anchored in more national systems. The idea of "shared agenda setting" is the critical concept here.

A third concept for thinking about developing an institution-wide lifelong learning capacity is the notion of the university as a "hub" of knowledge rather than as the exclusive source of knowledge. The mandarin culture of too many research universities presumes scientific and academic forms of knowledge and discourse are superior to less well developed forms of knowledge evolving out of lived experience and the practical uses and applications of information. However, the methodological rigor of much scientific and scholarly work requires "screening out" contaminating variables, developing a precise and often esoteric language, separating facts from values and timeframes that rarely include a sense of "urgency" about coming to closure or solving a problem. The successful application of knowledge requires integrating these "messier" forms of knowledge with "purer" forms of academic knowledge. Successful lifelong learning initiatives—be they focused on economic development, continuing education, community problems or civic education—cannot succeed without the university seeing itself as a convener, a broker, an integrator, an authenticator and interpreter of knowledge across many communities—lay and academic—and across many disciplines. If the university persists in asserting that its specific forms of knowledge are more valid and that its forms of expertise are superior, it cannot build the sorts of robust lifelong learning connections that will enrich the work of both the academy and the community.

Thus, three key ideas need to conceptually frame strategic thinking about lifelong learning in a research university context.

- Lifelong learning needs to be an institutional mission and broadly understood in terms of its form and content. At a minimum, it should include initiatives that can support a) the continuous renewal and development of regional economies; b) the continuous learning needs of regional labor pools, executive and professionals across a

variety of fields and institutions; c) community and organizational learning and problem solving in times of continuous change; and d) civic education and enrichment relevant to understanding the forces shaping the quality of life and democratic processes in the region.

- Because most lifelong learning initiatives are regionally anchored, regional knowledge, experience and voices need to be integrated with the global academic knowledge base and resources the university represents. This means collaboration and shared agenda setting must shape most lifelong learning initiatives.
- The university's position at a regional level cannot be that of an intellectually superior source of indisputable expertise. Rather, it is a "hub" of knowledge resources, equally adept at harvesting and integrating community and academic knowledge. It needs to be an "honest broker" in arenas typically fraught with special interests, incomplete facts and an absence of trans-regional perspectives. The university's knowledge gathering, authenticating and interpretive capacity is as important regionally as the distinctive areas of expertise within the faculty.

BUILDING THE CAPACITY FOR LIFELONG LEARNING WITHIN RESEARCH UNIVERSITIES

If these three broad conceptual frames are correct, then the institutional capacity to play convening, listening, agenda setting, authenticating, interpretative and translational roles needs to be an integral part of the university's culture and organization. It requires academic professionals who are good facilitators and interlocutors. This means offices, which can organize, document and record community input and conversations. It requires specialized staff and facilities to implement events, roundtables, forums, courses and seminars based on consultative meetings and wide inputs. This means resources—line items in campus budgets, grants and underwriting, fees for services—to support the delivery of programs and learning, as well as to give incentives to new forms of faculty engagement and new approaches to gathering and developing regionally-relevant knowledge. Finally, it requires credible, strong leadership in the highest administrative and academic councils of the university in order to assure its integration with traditional research and teaching activities.

The most critical organizational issues may not be such things as new tenure policies, new rewards for individual faculty or for activities, which are primarily led and defined by faculty experts. More critical may be the integra-

tion of faculty professionals and community expertise through a collaborative process which assures programs and educational initiatives which draw upon the intellectual standards, expertise, and knowledge resources of the university and the community. The challenge is an institutional one, not a problem of individual faculty on their own, without proper support, getting involved in individual public service. Universities need to have an academic and administrative infrastructure in place that allows them to serve lifelong learning needs in a highly interactive way. Campuses need offices and professional staff who can work with faculty to develop academic programs that build vital social and economic partnerships with their communities. This new infrastructure of support should also provide places for meetings, dialogues, instruction regional research capabilities and a complement of skilled professional and ongoing programs essential to building continuing relationships with community constituencies.

All of this requires professionals and processes that contribute to the capacity of the campus and its constituencies to engage in problem solving. This could be through such things as continuing professional education; technical assistance to schools, hospitals and companies in transition; or the commercialization of research that can be used in enterprise development or job creation. There need to be institutional mechanisms that facilitate ongoing community dialogues, which engage the full range of campus disciplines and the diverse needs of changing communities. This requires a new kind of knowledge professional, who can work with faculty and the community to develop intellectually enriching activities as well as programs of community value.

The research university's lifelong learning agenda goes well beyond the provision in specific schools of support staff to implement existing degrees on a part-time basis or instructionally focused continuing education programs in classrooms for professional credit taught by practitioners. These are essential, but not enough. If the agenda includes assistance in regional economic development, learning partnerships around organizational and community renewal and change, civic education and community knowledge, as well as regionally focused research and technical assistance programs, then universities will need to develop institutional mechanisms and academic teams with distinctive characteristics. This includes intellectual bridging skills, convening capabilities, local knowledge development capabilities and academic program delivery capabilities (Ehrlich, 2000).

The University as Convener

It is imperative that campuses invest in offices and people with the authority, skill, time and resources to organize conversations across academic fields and special interest communities. This is not an easy task. To be a convener

requires a number of characteristics that many campuses do not possess among existing faculty, staff, or administrators. Community links through which issues and concerns can be fed into the campus are essential; this means people on campus committed to and charged with listening. To know to whom the campus needs to listen and what constituencies should be convened also requires an accurate map of the social and economic world in which the campus is located. Who is responsible for developing and updating these maps and what competencies do they need to do this?

Convening requires a network of active relationships both on campus and in the community to mobilize appropriate expertise and leadership to address the varied dimensions of the civic agenda. Research universities, in particular, are typically not good at this, because of the highly specialized and self-referential character of so many academic fields and the narrowly defined missions of offices charged with community outreach and public service. Nonetheless, there are knowledge professionals or public intellectuals in many cases who, if integrated into the academy, could be catalytic agents in brokering the highly specialized programs and departments within the academy that are potentially relevant to a knowledge problem in the larger society. For example, assuring a responsive community healthcare system requires knowledge not only of up-to-date medical practices, but of culture, religion and gender in communities with new immigrants; of citizen attitudes and public policy if systems need changing; of local history and religious values in the face of changing social dynamics and new ethical dilemmas. Engaging diverse forms of knowledge in sensitive and integrative ways is something research universities could do exceptionally well if they have proper people to play these "knowledge bridging" roles.

New Kinds of Knowledge Professionals

Coalescing academic expertise, community know-how and research and development resources to fill regional knowledge gaps, organize information and elucidate issues is a formidable challenge. This is because, at least in the United States, higher education since World War II has been focused on developing deeper (and narrower) academic disciplines and increasingly specialized expertise. The ability to operate simultaneously in the world of the esoteric academy and that of the everyday layperson is a capacity fewer and fewer people have. Thoughtful journalists, specialty magazine writers and editors, research librarians, documentary filmmakers, art and culture curators and community and extension educators typically are very good at this. They represent professionals who have chosen to be interlocutors and interpreters of ideas, values, and cultural forms to selected publics. As such, they represent bridges between specialists and generalists and, most importantly, they

are able to translate the central concerns and ideas of each community to the other.

It is this sort of quality of mind and communication skill that is essential to developing shared agendas and harvesting the diverse knowledge resources needed to address complex lifelong learning needs. Universities need to draw people with these qualities into partnerships with faculty and community representatives to build knowledge and understanding. These partnerships can yield research projects, educational initiatives of value to the region, as well as traditional students and community forums of regional significance.

Program Delivery Capabilities

The prior two capabilities relate to forms of interaction, styles of agenda setting, and qualities of people essential to building partnerships that can simultaneously serve academic and community knowledge needs. Program delivery relates to the nuts and bolts of turning a well-developed academic community plan into activities such as a community forum, an applied research project, a publication for a community readership, or a professional development seminar. There is a significant component of management, marketing, and financial expertise that goes into effectively implementing these hybrid programs. As such, they represent significant investments. However, if properly designed and administered, they can also attract private funders, qualify for grants and contracts, secure corporate sponsorships and underwriting, and charge tuition or fees.

There is much to be said for some sort of centralized coordination function to handle such a full range of lifelong learning programs and services. The capacity to support such a wide range of lifelong learning activities is at a minimum linked to six essential organizational characteristics:

- Support from Senior Administration and key academic leadership at the university, especially the Chancellor and Provost. The leader of the life-long learning unit needs to be a member of the Leadership Councils, participate in senior Deans meetings and interact regularly with the Provost and Faculty Senate.
- Highly qualified professionals leading all of the lifelong learning initiatives. There have to be competent and credible people, who articulate and advocate the mission as well as facilitate partnerships and program development. Such persons need to be full-time, academically qualified, and intellectually engaged as well as community focused. They are the champions, the visionaries, and the catalytic agents in the academic/civic partnership. Typically these professionals are PhD's, MBA's and attorneys, and similarly prepared individuals.

- Space and Support Staff. There need to be places where people can meet, converse, learn, research, create and, even, park. There need to be people who answer phones warmly, who schedule events, set up meetings, keep notes and records, follow up on promises made, supervise students, attend events, and are involved in the community.
- Communications. There need to be mechanisms and staffing to facilitate regular communication about opportunities, aspirations, needs, achievements, and findings. These include newsletters; occasional papers; reports; journals; issue and research briefings for the media, decision makers, and elected officials; information-rich radio, television, and internet series. They also include marketing and PR expertise. These skills are not typically located in university public information offices.
- Business Functions. Managing budgets, developing contract and grant proposals, acknowledging donors, and forming strategic partnerships on and off campus require administrative, legal, and financial expertise. Once again, student enrollment and grants administration systems in research universities are not well suited to lifelong learning financial and administrative services.
- Diverse Sources of Funding and Political Support. Finally, comprehensive lifelong learning strategies require cash and political support.

Lifelong learning cannot be the pet project of a single department, function, or dean. It cannot be exclusively financed by a short-lived foundation grant or special legislative allocation. It cannot be wholly dependent on fees for services or market needs that often overshadow an intellectual agenda. It must represent many stakeholders, many advocates and many sources of financial support just like other campus programs in research universities. Even if implemented through a single centralized campus unit, lifelong learning must reflect diverse campus and community interests.

CONCLUSION

In conclusion, it may be useful to share the experiences of one of the more dynamic, young research universities in the United States, the University of California, San Diego. Our experience is interesting because we have been able to develop a campus culture and an approach to academic program initiatives which is highly innovative, in part because the campus has not had to deal with decades, much less centuries of traditions and established interests. The campus has therefore developed a number of interdisciplinary research programs and pioneered a variety of academic fields such as cognitive psychology in a manner that has brought significant national and inter-

national attention to the faculty. Currently UCSD is ranked number seven in the United States in annual research funding. Nineteen of its graduate programs are ranked in the top ten nationally. In addition, a disproportionate number of faculty (based on size) are members of the national academies of science, engineering and medicine. This is true as well for awards such as Nobel Prizes, Macarthur Fellowships and Guggenheims.

In the context of a young prestigious university, UCSD, the development of a robust lifelong learning activity has honored many of the principles described throughout this article. Over a twenty-year period, with significant support from the office of the Chancellor and senior academic officers, the university's linkages to the San Diego region have grown in complex and meaningful ways. For example, an important emphasis has been placed on helping assure that the presence of a research university and related research institutions in San Diego benefit the regional economy. To this end, the university developed an Executive Program for Scientists and Engineers emphasizing the sorts of leadership and management skills required in science based companies. It has been operating very successfully for more than seventeen years. Over the last fifteen years, the university has also been home to UCSD CONNECT, a program focused on networking the competencies needed to start and grow science based companies, which create high wage jobs and new forms of regional wealth. The CONNECT program, through more than eighty events annually, has helped develop a community of entrepreneurship that is unparalleled. Scientists and engineers interact on a regular basis with attorneys, accountants, management consultants and venture capitalists, in a manner which enhances the science knowledge in the business service and management communities as it builds entrepreneurial "know how" and business development skills among leaders of promising science based companies.

With regard to relating to the ever-changing needs of a regional professional and managerial workforce, the university has developed over the last twenty years an imaginative array of continuing education and executive education programs focused on key technology sectors such as IT, life sciences, environmental sciences and software. More than forty thousand adults, eighty percent of whom are college graduates, participate in these evening and weekend programs, which enhance their workplace skills or prepare them for new opportunities and requirements emerging in science based companies. More than eighty certificate programs (four to eight course sequences designed to ensure workplace competency) are offered through the university's Extension division. They include such things as CDMA technology, teaching English as a second language, clinical trials management, biotechnology manufacturing or the design and construction of research facilities. In addition, the division offers a number of advanced institutes and seminars on topics especially pertinent to professionals in the regional

economy such as medicinal chemistry, math and science education in the public schools or doing business in a cross border environment.

With regard to public policy issues and community change, the university has also supported the development of a variety of programs that are designed to fill regional knowledge gaps through research on topics of regional significance, newsletters, forums and roundtables which bring academic and community expertise together. The San Diego Dialogue is a cross-border, regional, public policy initiative, which focuses on issues of community value and plays a interlocutory role between the expertise in the academy and the needs of the community. It gathers data, sponsors public forums and seminars countywide, as well as publishing a newsletter and occasional reports. Fully funded by foundations, memberships and corporate underwriting, the Dialogue has a distinctly regional focus, but benefits from the intellectual resources of a great research university. A new initiative funded by the PEW Charitable Trusts at UCSD is the UCSD Civic Collaborative. It is a program that provides professional support as well as financial resources to link faculty interested in research and teaching on topics of regional significance. Particular emphasis has been placed on such things as local history, recent demographic trends and cultural shifts, The Collaborative is helping to build a significant regional knowledge base that has both academic and public value.

Finally, with regard to civic knowledge, the university has initiated a broadcast television station, which is unique in its focus. The purpose of UCSD-TV is neither to provide distance learning courses nor to be a conduit through which programming produced by networks such as the Public Broadcasting Service are delivered to the San Diego region. Rather, the mission of UCSD-TV is to capture for broadcast and web casting important cultural, political and scientific events and programs of community value. The university's commitment to growing civic knowledge is further supported by a variety of endowed public lectures and distinguished visitor programs, which have been set-up for the explicit purpose of bringing intellectual resources from around the country and around the globe to the San Diego region for public programs. Many universities have endowed lecture programs that focus primarily on faculty interests or undergraduate students. UCSD has been fortunate to secure endowments which support programs that benefit both the academy and the community simultaneously.

The purpose of sharing these examples from the University of California, San Diego is not to suggest that the campus is a model for what ought to be done. Rather, it is to demonstrate that it is possible to develop a very rich multifaceted approach to lifelong learning initiatives in a research university context. A common theme in all of the initiatives at UCSD is a focus on spheres of activity and forms of knowledge that articulate well with a charac-

ter of a research university. This means focusing on support for science and technology based companies (as opposed to local retail or tourism) as a way to assist the regional economy. It means emphasizing continuing professional and executive education for post-baccalaureate adults working in enterprises and professional fields that reflect the character of the UCSD campus such as research and development, high school and college teaching, medicine and healthcare management. It means approaching community forums and civic education in a manner that also takes advantage of the unique characteristics of a research university. By having national and global links for example, the campus is uniquely positioned to bring expertise from other communities and other regions to San Diego in a way that can inform local discourse about important issues, be they transportation planning, strategies for sustaining the natural environment, or innovative approaches to serving the needs of low-income children in urban school districts. In all of these cases, the fact that UCSD is a research university is an essential reason for the success of the programs.

These programs are supported by fees, grants and contracts. They are highly valued in the region, because they make a unique contribution that is not replicated by other colleges and universities, much less other lifelong learning programs. Attracting more than $30 million dollars annually in fees and support, and employing more than 200 of the sorts of new knowledge "professionals" described in the earlier section of this chapter, UCSD's initiatives in public programs and through University Extension reflect many of the principles suggested in this paper.

Research universities across the United States and Europe have a distinctive regional role to play in the provision of lifelong learning initiatives that address an increasing number of professional groups, community issues and regional economic challenges. They are uniquely positioned to be a resource and it is essential that leadership in higher education institutions of this character begin a more serious dialogue about the role they have to play in lifelong learning. Out of that dialogue, an institution-wide strategy needs to emerge, in which campus leadership, faculty leadership and community stakeholders are invested equally. Such a shared investment will make it possible to build the financial and political support needed for a comprehensive institutional strategy, which includes a variety of highly interactive programs, a highly skilled professional academic staff and the needed support for program implementation. The research university intellectually is one of the most dynamic institutions in society today. It needs to be similarly dynamic in its approaches to organizing, disseminating and integrating knowledge in society.

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