Vision Statement and Program Proposals
Graduate Programs, Professional Schools and Research Themes
Subcommittee 2, Strategic Academic Planning Committee
May 16, 2008

Subcommittee 2 is charged with providing a vision of the types of graduate and professional programs that UC Merced should aspire to build in the next two decades. This report presents a high-level view of that vision, based on two faculty forums, an extensive faculty survey and follow-up deliberations by members of the subcommittee. It is grounded in the strong belief that UC Merced should "think big" and assume resources will be found for programs with true merit.

The report is divided into two parts:

1. Vision statement – a view from 20 years out, describing the contributions, influence and public perceptions of UC Merced resulting from the successful implementation of its innovative research foci and graduate and professional programs.

2. Program recommendations – a set of specific proposals for interdisciplinary and/or multidisciplinary research themes, institutes, centers and professional schools that UC Merced should develop during the planning timeframe to achieve the vision.

1. Vision

Innovative research takes place in many contexts, from teams of specialists collaborating across disciplines (multidisciplinarity), to individuals working at the intersections of traditional disciplines (interdisciplinarity), to specialists working at the core of traditional disciplines (disciplinarity), to reinterpretations of the disciplines themselves. The UC Merced faculty is committed to nurturing institutions and an academic culture that foster interdisciplinary and multidisciplinary research and education. This commitment recognizes that some of the greatest challenges confronting our civilization, as well as some of the greatest intellectual opportunities of our time, require interdisciplinary or multidisciplinary approaches.

There is a set of core areas and methods of academic inquiry that are common to all current major research universities. Faculty members believe that UC Merced should be strong in these core areas and methods, which form the foundation of undergraduate education in the arts and humanities, natural sciences, and social sciences. They also support research and graduate education in all fields, including engineering and interdisciplinary fields, and provide the technical and conceptual "tool box" that can be

adapted readily to *societal* needs and *research* themes that we cannot foresee now. Strength in these basic disciplines is essential if UC Merced is to fulfill its mission as an excellent, comprehensive research university.

A hallmark of the University of California system is the richness, variety and strength of its graduate and professional programs. As the newest member of the system, UC Merced will build on that heritage of excellence with a set of well-considered interdisciplinary, multidisciplinary and disciplinary programs that take advantage of its newness and location, leverage the expertise of its talented faculty and address important societal needs.

The relevance, timeliness, originality and inclusiveness of UC Merced's graduate and professional programs will attract top-quality students and faculty, increasing the percentage of graduate and professional students at UC Merced to approximately 20 percent of the student body. The cutting-edge work of these scholarly teams will lead to important new discoveries and earn widespread public and peer recognition, bringing prestige to the university and the UC system and generating strong community and donor support.

The university's professional schools will begin to make significant contributions to the quality of life in a region long recognized as the most underserved in the state. Many graduates will set up successful practices in the region, and surveys will show steady gains in the quality and quantity of professional services available to its people. UC Merced will be widely perceived as the catalyst for these changes, demonstrating to all the beneficial effects of a world-class research university on the region's general welfare.

The rapidly growing university will become a highly respected and much sought-after partner in collaborative projects within higher education and with business, industrial and community organizations. Employers will hire UC Merced students for their technical knowledge and skills, their ability to think deeply and broadly about issues, and their ability to work effectively in diverse, multicultural environments. These highly capable young men and women will excel in a wide variety of fields, providing a new and much-needed wave of talent, energy and leadership to the region, state and world.

Government agencies, politicians, news organizations, community leaders and others will look to UC Merced for insights and guidance on emerging issues, knowing the university has focused its attention and resources on the toughest challenges of the 21st century. The university's influence will be felt as a fresh and effective voice on the national and global stage as well as a catalyst for positive change in the Valley and state.

As its reputation grows, the university will emerge as a leadership institution within the UC system. Its breadth and depth of contribution will mark it as the most promising new public research university in the world.

2. Program recommendations

To realize the university's vision for graduate and professional education over the next 20 years, programs must be defined today that clearly reflect current and projected societal needs and include a strong rationale for UC Merced's involvement. The research themes, institutes, centers and professional schools proposed below represent the best possibilities at a very early stage in the university's development.

Resource constraints and other practical considerations will undoubtedly limit the number of programs that can be developed in the near term. Competition for funds, faculty, facilities and support will be intense. Nonetheless, the following proposals hold great promise and are presented with the strong belief that, if developed, they will contribute important benefits to the region and state, consistent with UC Merced's mission as a state-funded research university, and bring visibility and distinction to the institution, its faculty and its students.

A. Research themes

To provide context and focus for its research initiatives and to establish the foundation upon which its institutes, centers and professional schools can be built, UC Merced must identify a small number of broad, integrative research themes for which it can become widely known. Principal criteria for identifying major themes are as follows:

o widespread support among faculty members
o interdisciplinary or multidisciplinary character
o relevance to the state of California and the world
o faculty expertise
o breadth of theme
o links to centers, institutes, schools or other programs
o freshness and potential – not already "owned" by others

Based on these criteria, five broad, integrative research themes have emerged as strong candidates for development. The themes and their key research components are:

1. *Sustainability*, including ecological systems, energy, water and other natural resources, climate change and security threats associated with global change;

2. *Human health*, including medicine, public health, psychology, bioengineering and other biology;

3. *Cognitive and information sciences*, including computation, communication, complexity and commerce;

4. *World heritage*, including representation and communication, interpretation and evaluation, meaning and memory, stewardship, and variation and transformation;

5. *Inequality*, including economic, social, educational, political and cultural.

The rationale for recommending each of these themes is provided below.

1. Sustainability

The world's insatiable appetite for energy, food, water and other essentials is profoundly altering the natural environment, depleting natural resources and creating social, economic and political problems that demand long-term, multi-faceted solutions. Among the most promising organizing principles is sustainability – the practice of providing for the needs of today without undermining the ability of future generations to provide for their own needs. The field of sustainability focuses attention not only on fundamental interactions between nature and society but also on society's capacity to guide those interactions along more sustainable trajectories. Thus, as a research theme, sustainability is an exceptionally fertile field, providing a context and focus for dozens of disciplines in natural sciences, social sciences, management, engineering and humanities. Investigation of sustainable solutions to society's most pressing environmental challenges, including ecological systems, energy, water and other natural resources, climate change and security threats associated with global change, would serve societal needs for generations to come. UC Merced's location – in a region where the need to achieve sustainability is paramount, and in a state that represents perhaps the world's best hope for innovation – makes it ideally suited to pursue this theme with vigor and imagination.

2. Human health

California's Central Valley is notoriously underserved in the healthcare field. Residents suffer from chronic illnesses, such as asthma and diabetes, at disproportionately high rates, yet medical services are available for their treatment at disproportionately low rates. Programs to improve the availability of quality healthcare in the region (a School of Medicine and perhaps a School of Public Health) are greatly needed, and are proposed elsewhere in these recommendations. A major research initiative on human health would complement those programs in important ways and would engage many different core disciplines, including two of the university's most popular undergraduate majors (psychology and biology). Further, it would provide some of the best undergraduate research experience a university could hope to offer. Basic research in human health could also be expected to have far-reaching applications around the globe.

3. Cognitive and information sciences

The interdisciplinary study of cognition as information processing is emerging as a coherent and unifying theme for research, spanning the natural sciences, social sciences, engineering and even the humanities and arts. Cognitive processes appear at diverse scales, from small circuits of brain cells to complex networked systems of interacting humans and software agents. Researchers are increasingly producing insights that reach across these scales, leading to whole new fields of inquiry, such as "computational linguistics," "service science," "neuroeconomics" and "cognitive engineering." There is also expanding interest in industry, ranging from the design of computer systems to the design of corporate practices. UC Merced is particularly well-positioned to become an international leader in this domain. The university's youth provides a unique opportunity to establish support for this broad research theme before disciplinary barriers appear, as they have at established universities. Early success in recruiting outstanding faculty members in this area has produced a program that already enjoys substantial momentum. UC Merced also has engineering faculty, particularly within electrical engineering and computer science, with focal research specializations covered by this theme, and cross-campus collaborations already have been established. Merced's proximity to Silicon Valley and the San Francisco Bay Area would facilitate the establishment of strong industrial relationships, producing further avenues for research support and opportunities for technology transfer.

4. World heritage

As the peoples and civilizations of the world are drawn ever more tightly together by exploding populations and borderless communication, the need to understand, explain and protect the diversity of cultural values and expressions is becoming increasingly important to human co-existence. The emerging field of world heritage uses both interdisciplinary and cross-disciplinary approaches to interpret, protect and communicate about tangible heritage (natural or cultural places and things) and intangible heritage (cultural practices). Key research themes – representation and communication, interpretation and evaluation, meaning and memory, stewardship, and variation and transformation – bring together a wide range of disciplines in the humanities, social sciences, policy and management to develop advanced forms of research, learning and communication. UC Merced is well-positioned to contribute to this emerging area of international scholarship, given its commitment to interdisciplinary research, proximity to and institutional links to UNESCO World Heritage sites such as Yosemite National Park, and faculty interests in digital technologies such as GIS, virtual reality and virtual community environments. In addition, this field offers a range of research and funding possibilities to faculty throughout the humanities, an area in which financial sustainability is often challenging.

5. Inequality

Most of the world's problems throughout history can be traced to various forms of inequality among its people – economic, social, educational, political and cultural. While progressive societies have attempted to ameliorate this condition with guarantees of equal rights, opportunity, access, protection and more, fundamental inequality remains a persistent and intractable problem well into the 21st century. Its manifestations – poverty, unemployment, chronic illness, low educational attainment, poor nutrition and health care, environmental degradation, lack of civic participation, social unrest and other issues – threaten to destabilize a world already under stress from rapid development and increased competition for shrinking resources. These issues stem from a multitude of dimensions ripe for academic exploration and research across numerous disciplines, approaches and methodologies. With the disparities of the Central Valley as a reference point and gauge, and with many of its students and faculty intimately familiar with the ravages of inequality, UC Merced is well-situated to bring new energy, perspective, rigor and focus to a vitally important issue of regional, national and global significance.

B. Institutes and centers

Research institutes and centers are important scholarly components of a major research university. While they cannot award academic degrees as envisioned at UC Merced, they provide a home for focused research and scholarship for leading faculty and give students invaluable, hands-on experience in the disciplined process of knowledge creation. They also bring visibility and distinction to the university and its faculty, who are widely recognized as content experts and are often sought-out for media interviews and other forms of public comment.

Principal criteria for identifying institutes and centers for possible development at UC Merced are as follows:

o widespread support among faculty members
o already in operation or proposed
o interdisciplinary or multidisciplinary character
o potential to make needed contribution on important problems
o potential to attract extramural funding
o faculty strength and interests
o strong internal champion

In addition to the above criteria, it is especially important that prospects for strong synergistic links exist between the major research themes recommended above and the institutes and centers that can help develop those themes.

Based on these criteria, four research institutes are recommended for near-term support.

Brief descriptions of each, as well as their links to proposed research themes, are as follows:

o *Sierra Nevada Research Institute (SNRI).* Focused on the discovery and dissemination of new knowledge that contributes to sustaining the environment and ecosystems of California, and related regions worldwide, through integrated research in natural sciences, social science and engineering, SNRI has a strong tie to the research theme on sustainability.

o *Merced Energy Research Institute (MERI).* Conducting research that leads to new and improved renewable and sustainable alternative energy technologies, educates the energy industry and the next generation of energy scholars and practitioners, and examines domestic and global energy policy, MERI would also have strong links to the sustainability research theme.

o *Biomedical Sciences Research Institute (BSRI).* Supporting research programs that use advanced analytical methods and modeling to answer questions in both fundamental biology and biomedicine, BSRI would have a strong and direct link to the human health research theme.

o *Cognitive and Information Sciences Research Institute (CISRI).* Conducting research into the many and varied aspects of cognitive and information sciences, described above, CISRI would be directly linked to the research theme of the same name.

Several other promising ideas for institutes or centers should be mentioned as future possibilities. They include quantitative social sciences, humanities research and inequality. Lack of broad-based faculty support and a strong internal champion at present relegate them to the "other" list for now.

C. Professional Schools

Perhaps the most visible, prestigious and lucrative institutions a university can establish are its professional schools. The underserved region in which UC Merced is situated has many unmet needs that could be ameliorated over time through the development of one or more top-level professional schools. Though they are expensive to develop and often take years to establish, a strong consensus has emerged that UC Merced should move forward with planning of at least two and possibly as many as four professional schools.

Key criteria for choosing which schools to develop include:

o unmet need in the Valley and/or California more generally
o broad faculty support
o potential to raise extramural funds

o support within UCOP and the UC Board of Regents
o political and community support
o ability to attract top faculty and administrators
o realistic assessment of cost

As with the research institutes, it is also important that synergistic links exist between the proposed professional schools and the recommended research themes.

Based on the above criteria, two professional schools are strongly recommended for development, while two others are recommended for further exploration. Two others are noted as possibilities. The schools are:

Recommended for development:

o School of Medicine
o School of Management

Recommended for further exploration:

o School of Education
o School of Public Health

Future possibilities:

o School of Law
o School of Arts

The rationale for recommending each of these schools for development or further consideration is shown below.

School of Medicine

California is expected to face a shortage of 17,000 physicians by 2015. The San Joaquin Valley has less than half the state average for local access to physicians. With the highest population growth rate in the state, more physicians are needed to begin to address the high prevalence of chronic and preventive disease in this region. The University of California is the public higher-education institution in the state with the authority to graduate medical doctorates. The University of California Office of the President has recommended development of medical education programs in the Central Valley.

A UC Merced School of Medicine (SOM) would provide 21st century medical education, leverage resources in the region, increase research opportunities in direct support of the human health research theme, and elevate the prestige of the campus, helping it to

become a comprehensive research university. The SOM would embrace interdisciplinary medical education. A signature research program of the SOM would be population health, which together with basic and applied sciences, would bring a highly interdisciplinary research portfolio that integrates across schools.

School of Management

Ever-quickening advances in science, technology and medicine are dramatically impacting economic competitiveness. Forward-looking management and leadership are critical in taking these discoveries to market and creating the next great industry. Management and leadership are the keys to defining economic success. Indeed, a community's growth and quality of life often are determined by great entrepreneurs and business leaders. In this respect, a School of Management would strongly support the proposed research theme on inequality. Research programs on natural-resource management, health-care management, information-systems management and decision sciences would also create strong links to research themes on sustainability, human health, and cognitive and information sciences.

A UC Merced School of Management would develop a unique entrepreneurial and interdisciplinary approach to management development, positioning the programs at the leading edge of management research and dynamic business performance.

The school would fill unmet market needs and student demands. It would start from science-based programs. At the same time, it would be entrepreneurial, bringing researchers from the sciences and engineering together with management faculty and students, venture capital, and the commercial market place. The management programs would attract students expecting to combine studies in the sciences or engineering with management.

School of Education

The need to improve education at the secondary and university levels has become one of the most crucial issues both at the national and state levels. The problem is particularly acute in Central California, where the population has a lower educational achievement, higher unemployment rate and higher poverty rate than in the rest of the state. An integrated solution is needed, one that promotes interdisciplinary research on effective learning in and out of the classroom, including the role of technology in learning, development of programs that adequately prepare teachers for challenges such as a high percentage of multiracial and multilingual groups, vertical integration of K-16 education and other interventions. A School of Education at UC Merced could serve as an incubator, hub and advocate of such projects and would play a central role in UC Merced's mission of raising the level of education in the Central Valley. Clear linkage to the research theme on inequality, which includes educational inequality, would be

established. Research conducted by UC Merced faculty in cognitive and information sciences would underpin programs in this school, providing an interdisciplinary and rigorously scientific foundation for educational theory and practice. Studies in concept learning, skill acquisition, problem solving and deliberative reasoning, as well as in cognitive abilities traditionally shaped by educational practice (such as language proficiency and acquisition), would provide insights into the healthy functioning (or dysfunction) of learning mechanisms in student populations.

School of Public Health

Public health, which deals with the prevention rather than treatment of disease, is a solution to a major problem for the San Joaquin Valley in the form of epidemics of asthma and diabetes as well as major health disparities because of poverty and illiteracy. A School of Public Health (SPH) or Program in Public Health (PPH) could be established in association with or independent of a School of Medicine. There are five basic disciplines that are usually set up as departments in an SPH: Environmental Health Sciences, Epidemiology, Biostatistics, Health Behavior and Health Policy and Economics. A PPH could develop Environmental Health Sciences, Health Behavior and Health Policy and Economics from UC Merced's current programs in its three existing schools. All of the work of an SPH or PPH would tie directly to the research theme on human health.

School of Law

Law schools are one of the hallmark professional schools of top research universities. A supermajority of research universities in Carnegie's "Very High Research Activity" category has a school of law. In California and on the West Coast more generally, there would almost certainly be substantial student demand for an additional UC-caliber law school. Perhaps more important is the potential research payoff for creating a truly modern law school at UC Merced. Many of the best law schools are moving towards a greater emphasis on research and interdisciplinarity. For example, the "Empirical Legal Studies" movement fomenting in many top law schools calls for scholars to take a much more rigorous approach to law-related research with the tools and skills being developed by economists, cognitive scientists, sociologists, and political scientists. While established law schools may be slow in responding to this shift, a newly formed law school situated in a particularly interdisciplinary research university could quickly become a leader in the field of legal research. Links to research themes on cognitive and information sciences would distinguish this school's research and education, and foci on inequality, human health and the governance aspects of sustainability would give it a central role in addressing the leading challenges to our global civilization and regional economy.

School of Arts

A School of Arts makes strategic sense for UC Merced on a number of fronts. As an integrative vehicle blending creative and applied arts training with rapidly developing digital technologies, it would bridge the gap between arts and sciences and demonstrate the lasting, pragmatic value of a well-rounded, cross-disciplinary education in a rapidly changing world. As a center for cultural research and innovation, it would stimulate artistic expression and create new art forms that help establish UC Merced as a cutting-edge institution. As a home for the study, expression and celebration of the Central Valley's rich cultural heritage, it would forge vital connections to the Valley community and serve as an inviting, highly visible public face for the campus. And as a 21st century institution with global perspective, it would showcase artistic and cultural expression from around the world, demonstrating the growing interconnectedness of the planet and promoting understanding and respect for cultural differences. In this regard, strong links to the research theme on world heritage would be forged. Graduates of the UCM School of Arts would be well prepared for leadership opportunities in a wide variety of fields, such as architecture and urban planning, where cultural awareness and technical knowledge go hand-in-hand. They would also emerge as the cultural leaders of tomorrow, helping to create a future based on cooperation and collaboration among the world's cultures while remaining sensitive to local concerns and traditions.