VISION 2017:
The Third Century

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THE UNIVERSITY OF MICHIGAN

State of the University Address

Senate Assembly

November 1993

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Foreword

   As one of the most enduring of institutions of our civilization, universities have been quite extraordinary in their capacity to change and adapt to serve societies. Far from being immutable, the university has changed quite considerably over time and continues to do so today. There is a broad consensus, both among leaders of American higher education and on the part of our various external constituencies, that the 1990s will represent another period of significant change if our universities are to respond to the challenges, opportunities, and responsibilities before them.

   This paper, **Vision 2017: The Third Century,** attempts to articulate an array of possible visions of the University for the longer term. In particular, it considers the various changes characterizing our society and higher education, and then uses this context to examine a set of possible visions or paradigms for the "university of the twenty-first century." It further suggests a particular vision for the University of Michigan which is built both on a foundation of our traditional values and a recognition of the challenges and opportunities that we will be likely to face in the decade ahead.

   This essay is intended to identify key issues and themes for further discussion by the University community. It is a document intended to invite comments, criticism, and involvement. The proposed Vision 2017 should be regarded as a work in progress, an organic vision of the future of the University that will evolve substantially as broader elements of the University community become engaged in its development. The development and articulation of a Vision 2017 for the University's third century is a fitting exercise for an institution aspiring to become "the leader and best."

Introduction

   Each fall, in preparation for my annual November address to the Senate Assembly on the state of the University, I have attempted to write an essay on a major issue facing our institution. This year marked the completion of my first five years as president. It also represented my family's silver anniversary in Ann Arbor, twenty-five years since we left the sunshine, earthquakes, and smog of Southern California

for the "seasonal excitement" of Michigan. It would have been natural to use the Fall 1993 exercise as an opportunity to look back over the past five years—or perhaps longer—and assess where we have tried to lead the University and where we ended up.

But I have never particularly enjoyed retrospectives. In fact, I suppose it is one of those character flaws of scientists that we are generally more comfortable thinking about the future rather than reflecting on the past. Since last year we celebrated the 175th year of the founding of the University of Michigan, it seemed more appropriate to look forward twenty-five years to the University's next big birthday in the year 2017, when it enters its third century.

Actually, such long-range visioning is becoming more and more common in higher education as universities ranging from Harvard and Princeton to Minnesota and Ohio State to UCLA and Stanford launch major strategic planning exercises to determine their direction as we approach a new century. At meeting after meeting of leaders of higher education, the discussion of such planning activities dominates the agenda. And the focus of such exercises can be captured in a single word: *change.*

There is a broad consensus, both among leaders of American higher education and on the part of our various external constituencies, that the 1990s represent a period of significant change if our universities are to respond to the challenges, opportunities, and responsibilities before them. Many institutions have already embarked on major transformation efforts similar to those characterizing the private sector. Indeed, many even use a corporate language as they refer to their efforts to "transform," "restructure," "re-engineer," or even "re-invent" their universities.

Hence this year's essay will focus both on possible visions of the University of Michigan for the century ahead and the changes these visions would demand on the part of our institution. Of course, change and transformation are not strangers to our University; Michigan has frequently led the process of change in public higher education. We blended scholarship with teaching a century ago to build the first of the great state universities, then rapidly expanded our professional schools to respond to societal needs, evolved into one of the nation's leading research universities following the war years and served as a stimulus for major social change in American society. It is my belief that our heritage of leadership calls on us to transform ourselves once again to better serve a changing nation and a changing world.

Actually, this topic should not surprise you. In essentially every address I have given to the Senate Assembly—and the University more generally—I have stressed two recurring themes: *leadership* and *change.*

For example, my inauguration address of five years ago suggested three themes that would drive change in our society: i) the increasing diversity of our population; ii) the internationalization of all aspects of our society; and iii) the degree to which knowledge itself was becoming the key strategic commodity determining

prosperity, security, and social well-being. Allow me to quote a passage from that speech:

> "The triad mission of the university as we know it today—teaching, research, and service—was shaped by the needs of an America of the past. Since our nation today is changing at an ever-accelerating pace, is it not appropriate to question whether our present concept of the research university, developed largely to serve a homogeneous, domestic, industrial society, must not also evolve rapidly if we are to serve the highly pluralistic, knowledge-intensive world-nation that will be America of the twenty-first century?
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> "Of course, there have been many in recent years who have suggested that the traditional paradigm of the public university must evolve to respond to the challenges that will confront our society in the years ahead. But will a gradual evolution of our traditional paradigm be sufficient? Or, will the changes ahead force a more dramatic, indeed revolutionary, shift in the paradigm of the contemporary research university?
>
> "Just as with other institutions in our society, those universities that will thrive will be those that are capable not only of responding to this future of change, but that have the capacity to relish, stimulate, and manage change. In this perspective it may well be that the continual renewal of the role, mission, values, and goals of our institutions will become the greatest challenge of all!"[1]

Each of my "State of the University" addresses over the past five years has focused on different aspects of change and the challenge and opportunity these presented to the University. An early address outlined many of the key challenges and constraints facing higher education. Another address raised a number of issues that should be considered in any effort to "re-invent" the university. One address focused on the changing external environment of the university and steps we were taking to respond to these challenges. And my address last year considered the challenge of intellectual change to our teaching and scholarship and to our current disciplinary organization of the university. In each of these presentations, I attempted to make the case that the University of Michigan itself had a long heritage of providing leadership to higher education during periods of change.

A Time of Challenge and Change

Yet, despite this persistent focus on change, I must admit that even I was unprepared for the profound nature and rapid pace of the changes we have experi-

enced in the early 1990s. Consider, for a moment, the changes which have occurred in our world over the past five years:

- The Cold War has ended, and communism has been rejected around the world, swept away by the winds of freedom and democracy.
- The Berlin Wall has fallen, Germany is now reunited, and Eastern Europe has broken away from the Soviet block to seek democracy.
- The Soviet Union has collapsed into chaos, torn apart by the forces of freedom, nationalism, and ethnic tensions.
- Over a decade of conservative Republican leadership in Washington has been swept aside by a liberal Democratic administration—with just the opposite political transition occurring in Lansing.
- Many of America's largest and most powerful companies including GM and IBM have been reeling from the rapid changes occurring in the world market-place.
- Asia is emerging as an extraordinary economic power, with Japan and China now ranked as the second and third largest economies in the world.
- During the past five years, the top ten companies receiving U.S. patents were Hitachi, Toshiba, Cannon, Fuji, Philips, Siemens, Mitsubishi, IBM, GE, and Bayer.
- We are now manipulating the human gene directly to cure disease—and may soon be doing it to create new life forms and influence the evolution of the human species.
- Computing power—speed, memory, communication rates—has increased by a factor of one hundred over the past five years, with world-wide networks connecting hundreds of millions of people, enabling them to communicate with ease and sophistication.
- The computer and television are merging in a so-called "digital convergence," triggering a similar merger of the phone companies and the entertainment industry to create a new multimedia communications medium. Indeed, sales volume of computer games now exceeds that of the motion picture industry.

Yet the changes we have seen thus far are just the tip of the iceberg. We have seen a worldwide explosion of ideological fervor and ethnic tensions, even as the nation-state has become less relevant to the world economy and security. Many of our traditional social structures have disintegrated, from our cities to our neighborhoods to the family itself. The explosion of new communication and transportation technologies has not only given us new mobility—it has linked us in ways we never dreamed possible.

The three themes articulated in my inaugural address continue to drive change both in our nation and our world: We continue to change dramatically as a people as we become ever more diverse and pluralistic. Our relationships with other nations and other peoples become even more important as the United States becomes a "world nation," a member of the global community. The nature of our activities is changing rapidly as we evolve into a new post-industrial society. Indeed, the key strategic resource necessary for prosperity and social well-being has already become knowledge itself, that is, educated people and their ideas.

To provide some context for further discussion, let me review with you the profound nature of these themes of change in our world:

1. Demographic Change: The New Majority:

We are becoming more diverse, more pluralistic as a people. Indeed, almost 85 percent of the new entrants into our work force during the 1990s will be people of color, women, or immigrants. Unlike all other advanced nations with whom we compete economically, the United States is becoming a truly pluralistic society. The pluralism that we see in America today is far more complex than it has been in the past because it is touched by race and the ravages of slavery and by a people deprived of education for more than a century. Further, the bonds that have held our society together in the past are shakier, and the disenfranchised among us are more alienated. Yet our challenge is not merely to address the problems associated with increasing pluralism, but rather to draw strength and vitality from the rich diversity of our people.

2. The Internationalization of America:

Our population, economy, and commerce are becoming more interdependent with other nations as the United States becomes a world nation, a member of the global village. For example, the startling political transformation of Eastern Europe and the Soviet Union has already changed the entire context of international economic, political, and military relations for decades to come. But beyond commerce and national security, there is an even more important reason to pay attention to the trends of internationalization. The United States has become the destination of many of the world's immigrants. With falling fertility rates, immigration may soon become the primary determinant of the variability in our population. As we have been throughout our history, we continue to be nourished and revitalized by wave after wave of immigrants coming to our shores with unbounded energy, hope, and faith in the American dream. Today, in a very real sense, America is evolving into the first true "world nation" with not simply economic and political ties, but also ethnic ties to all parts of the globe.

3. <u>The Post-Cold War World</u>:

As peace has broken out, so too has disappeared the principal rationale behind many of the major federal investments of the past half-century, including, in particular, the American research university. As the priorities of a new social agenda form in the years ahead, it seems clear that there will be a major shift in public investments. Far from benefiting from a peace dividend, the research university, along with many other knowledge-based institutions in our society, may find itself at considerable risk.

4. <u>Spaceship Earth</u>:

As the world population continues to grow, it is increasingly clear that human-kind is permanently altering the planet itself. Whether through consumption of limited natural resources, deforestation, depletion of the ozone layer, or the buildup of greenhouse gases, it seems imperative that our generation accept its responsibili-ties to the next by becoming better stewards of spaceship Earth. Sustainable human existence may well become the most serious challenge of the twenty-first century.

5. <u>The Age of Knowledge</u>:

We are evolving rapidly into a society in which the key strategic resource necessary for prosperity and social well-being has become knowledge itself. In this world knowledge will play the same role that in the past was played by natural resources or geographic location or labor pools. Put another way, while forces such as land, guns, and money drove the past, ideas will be the driving force of the twenty-first century.

6. <u>The Pace of Change</u>:

The America of the twentieth century that has defined most of our lives was a nation characterized by a homogeneous, domestic, industrialized society. But that is an America of the past. Our students will inherit a far different nation: a highly pluralistic, knowledge-intensive, world-nation that will be America of the twenty-first century.

Of course, these themes of the future—the changing nature of the American population; our increasing interdependence with other nations and other peoples; the shift to a knowledge-intensive, post-industrial society; the end of the Cold War; and the impact of population growth on our planet—are actually not themes of the future, but rather themes of today. In a sense, I have simply been reading the handwriting on the wall. But whether these are themes of the present or the future, it is clear that they are also themes of change, themes that will both reflect and stimulate even more fundamental structural changes in the nature of our society and our civilization.

Indeed, many believe that we are going through a period of change in our civilization just as profound as that which occurred in earlier times such as the Renaissance and the Industrial Revolution—except that while these earlier transformations took centuries to occur, the transformations characterizing our times will occur in a decade or less!

I used to portray the 1990s as the countdown toward a new millennium, as we found ourselves swept toward a new century by these incredible forces of change. But the events of the past several years suggest that the twenty-first century is already upon us, a decade early. We live in a time of breathtaking change, at a pace that continues to accelerate even as I speak.

But here we face a particular dilemma. Both the pace and nature of the changes occurring in our world today have become so rapid and so profound that our present social institutions—in government, education, the private sector—are having increasing difficulty in even sensing the changes (although they certainly feel the consequences), much less understanding them sufficiently to respond and adapt. It could well be that our present institutions, such as universities and government agencies, which have been the traditional structures for intellectual pursuits, may turn out to be as obsolete and irrelevant to our future as the American corporation in the 1950s. There is clearly a need to explore new social structures capable of sensing and understanding the change, as well as capable of engaging in the strategic processes necessary to adapt or control change.

Challenge and Change in Higher Education

Of course, higher education has been and will continue to be greatly affected by the changes in our society and our world. There are many symptoms of the changes occurring in higher education.

For example, the American research university is still very much on the minds of lots of folks: parents and students, governors and state legislators, the Congress and government bureaucrats, the media, and the public-at-large. To all too many we are seen as:

- being big, self-centered, and greedy;
- having spoiled, badly behaved students and even more spoiled faculty ("the new leisure class");
- gouging parents with high tuition and the government with inappropriate charges for research;
- being plagued by a long list of "isms"—racism, sexism, elitism, and extremism; and

- suffering from a deterioration of our own intellectual values—as evidenced by scientific fraud, political correctness, and a lack of concern for under-graduate education.

It might be easy enough to answer our critics with logic or a righteous dis-missal of any who would question our purposes and privileges. And, of course, there is much that is refutable in the recent spate of books and articles from the right and the left that question our performance and even reject the very foundation of what we do. But it would be a mistake to simply dismiss the criticisms of higher education. They contain quite genuine concerns of the American public—albeit characterized by a great misunderstanding of what we are and what we do—and they unfortunately contain a good deal of truth about us. They also point out a serious mismatch be-tween what the public wants from us and what we are currently providing.

To the extent that the criticism is constructive, we should try to hear it. To the extent that it is wrong, we should try to answer it with a compelling affirmation, a renewal of our vision and purposes, a confirmation of our unique community rights and responsibilities arrived at through extensive debate and discussion among our-selves and with many of our constituencies.

Another symptom of change can be found in the stresses felt by the faculty, particularly in research universities. During the course of the past year, I have been involved in an effort sponsored by the National Science Board to better understand the stresses on the academy as seen from the perspectives both of the faculty and university administrations. It is clear from a number of forums we have hosted on university campuses across the nation that there is a growing gulf between those characteristics faculty value—such as an emphasis on basic research; a highly disci-plinary focus; and strong, long-term support for individual investigators—and the terms dictated by federal and industrial sponsors, e.g., more applied investigations of a highly interdisciplinary nature involving large research teams. Put another way, the faculty believes they are deprived of the opportunity to do what they do best—think-ing, dreaming, talking, teaching, and writing—by the pressures of the day which force them to hustle contract research, manage research projects, and deal with gov-ernment and university bureaucrats, all of which takes them out of not only the classroom but the laboratory as well.

So too, there is an increasing recognition that there is a growing difference between today's generation of students and the faculty responsible for teaching them. Our students come from quite different backgrounds; they have different intellectual objectives; and they learn in quite different ways. This mismatch between teacher and student is also an important factor in the tensions surrounding teaching, particu-larly at the undergraduate level.

While the stress on the faculty today has many symptoms, it has fundamentally one major cause: the stress associated by the reaction to change—change occurring far more rapidly in universities than most of us can adjust to comfortably. Indeed, one member of our study group remarked that university faculties appear to be the last groups remaining in our society who believe that "the status quo is still an option!"

A third symptom of change is provided by the extraordinary turnover in university presidents in recent years. During the past five years, the leadership of almost every major university in the nation has turned over—from Harvard, Yale, Columbia, Penn, Brown, and Cornell to Stanford, Caltech, and MIT; from the Universities of California (and many of its campuses, including Berkeley), North Carolina, Virginia, and Texas to most of the Big Ten. Indeed, in managing to survive as the University's president for five years, I have already exceeded the 3.5 year average tenure characterizing major public universities to become the third most senior president in the Big Ten and rank among the top 20 percent of "elders" among AAU presidents.

While some of these changes in university leadership are the result of natural processes such as retirement, many others reflect the serious challenges and stresses faced by universities that all too frequently result in pressures destabilizing their leadership. The swirling politics characterizing college campuses, from students to faculty to governing boards, coupled with the external pressures exerted by state and federal governments, alumni, the media, and the public-at-large—all make the university presidency a very hazardous profession these days. At a time when universities require strong, decisive, courageous, and visionary leadership, the eroding tenure and deteriorating attractiveness of the modern university presidency pose a significant threat to the future of our institutions.

But these phenomena—public concerns, stresses on the faculty, and the turnover in university leadership—are only symptoms of the profound challenges faced by the American university in the 1990s. It seems useful to identify and discuss further several of the most important of these challenges:

- The rising costs of academic excellence and the limits on resources
- The changing relationship with diverse constituencies
- The difficulty in comprehending the modern university
- The challenge of intellectual change
- The changing role of the university in our society

Let me briefly consider each in turn:

1. <u>The Rising Costs of Excellence and the Limits on Resources</u>:

Higher education is suffering the consequences of structural flaws of national and state economies. There is a growing imbalance between revenues and expenditures that are undermining support for essential social institutions as governments struggle to meet short-term needs at the expense of long-term investment. The effort to adapt to limited resources is made more difficult by the fact that—at least within existing paradigms of teaching and scholarship—the costs of excellence have been growing considerably faster than the available resource base.

2. <u>The Changing Relationships with Diverse Constituencies</u>:

The modern research university is accountable to many constituents: to its students, faculty, staff, and alumni; to the public and their elected leaders in government; to business and labor, industry and foundations, and the full range of other private institutions in our society. The diversity—indeed, incompatibility—of the values, needs, and expectations of the various constituencies served by higher education poses a major challenge. The future of our colleges and universities will be determined in most cases by their success in linking together the many concerns and values of these diverse groups, even as they respond in an effective fashion to their needs and concerns.

3. <u>The Difficulty in Comprehending the Modern University</u>:

The modern research university is complex and multidimensional. People perceive it in vastly different ways, depending on their vantage point, their needs, and their expectations. Unfortunately, most people—and most components of state, federal, and local governments—can picture the university "elephant" only in terms of the part they can feel, e.g., research procurement, student financial aid, and political correctness. Few seem to see, understand, or appreciate the entirety of the university. Nor do many seem to understand or care that shifting state or federal priorities, policies, or support aimed at one objective or area will inevitably have an impact on other roles of the university.

4. <u>Intellectual Challenges</u>:

Many of the most significant challenges before higher education today are intellectual in nature. The knowledge of the world is available almost literally "out of the air" with modern computer/communications networks and digital libraries. Beyond access to vast amounts of knowledge, we have also entered a period of great intellectual change and ferment. New ideas and concepts are exploding forth at ever-increasing rates. We have ceased to accept that there is any coherent or unique form of wisdom that serves as the basis for new knowledge, as oral and visual communication begins to challenge our traditional writing and reading culture. Clearly the

capacity for intellectual change and renewal has become increasingly important to us as individuals and to our institutions.

5. <u>The Changing Role of the Research University</u>:

As we enter an age of knowledge, the university finds itself regarded as a key economic, political, social, and cultural institution as the result of extraordinary transformations occurring throughout our nation and the world. Beyond our traditional missions of teaching, research, and service, the university today is expected to play a broader role in providing the intellectual capacity necessary to build and sustain the strength and prosperity of our society. Society has an increasingly vital stake in what we do and how we do it. Given the divisions in society-at-large—the tensions between tradition and change, liberty and justice, social pluralism and unity, nationalism and internationalism—it is no wonder that we find ourselves the battleground for many competing values and interests, both old and new. The more important question is whether we can survive this new attention with our missions, our freedoms, and our values intact.

The profound character of the challenges and changes facing higher education in the 1990s seems comparable in significance to two other periods of great change in the nature of the university in America: the period in the late nineteenth century when the comprehensive public university first appeared, and the years following WWII when the research university evolved to serve the needs of postwar America.[2]

A century ago, the industrial revolution was transforming our nation from an agrarian society into the industrial giant that would dominate the twentieth century. The original colonial colleges, based on the elitist educational principles of Oxbridge, were joined by the land-grant public universities, committed to broad educational access and service to society. In the decades following this period, higher education saw a massive growth in merit-based enrollments in degree programs at the undergraduate, graduate, and professional level as the comprehensive university evolved.

A similar period of rapid change in higher education occurred in the years following World War II. The educational needs of the returning veterans, the role of the universities in national defense, and the booming postwar economy led to an explosion in both the size and number of major universities. So too, the direct involvement of the federal government in the support of campus-based research led to the evolution of the research university as we know it today.

Note that during each of these periods, the American university was transformed in response to changing societal needs. New kinds of educational institutions appeared, e.g., the state university, the comprehensive research university, and the community college. Higher education demonstrated a remarkable ability to change and adapt to the needs of the society it was created to serve.

Today we face challenges and opportunities similar to those characterizing these two earlier periods of transformation. Many point to negative factors, such as the rapidly growing costs of quality education and research during a period of limited resources, the erosion of public trust and confidence in higher education, or the deterioration in the partnership characterizing the research university and the federal government. It is my belief, however, that our institutions will be affected even more profoundly by the powerful changes driving transformations in our society, including the increasing ethnic and cultural diversity of our people; the growing interdependence of nations; the limits to our natural environment; and the degree to which knowledge itself has become the key driving force in determining economic prosperity, national security, and social well-being.

Planning for the New Millennium

With this context in mind, during the mid-1980s the University of Michigan set out to develop a planning process capable of guiding it into the next century. More specifically, the University leadership, working closely with faculty groups and academic units, sought to develop and then articulate a compelling vision of the University and its role and mission for the twenty-first century. This effort was augmented by the development and implementation of a flexible and adaptive planning process. A key element was the recognition that in a rapidly changing environment, it was important to implement a planning process that is not only capable of **adapting** to changing conditions, but to some degree capable as well of **modifying** the environment in which the University would find itself in the decades ahead.

In this effort, several critical assumptions were accepted at the outset. First, it was recognized that the University of Michigan was a very complex system, responding to the cumulative effects of its history as well as the dynamic boundary conditions characterizing its interactions with the changing world in which it functioned. Despite this complexity, it was considered essential for the University to take responsibility for its own future, rather than having this determined for it by simply reacting to external forces and pressures.

Second, there was a sense that the University of Michigan would face a period of unusual opportunity, responsibility, and challenge in the 1990s, a time during which it could—indeed must—seize control of its own destiny by charting a course to take it into the next century.

Finally, there was also a growing sense that the challenges before higher education in the late twentieth century would require a new paradigm of the university in America. The University of Michigan was believed to be in an excellent position to develop this model for the nation.

The strategic approach first taken by the administration involved four simultanous activities:

- Setting the themes
- Building the leadership teams
- Building the networks
- Implementing the plans, actions, and processes

These are illustrated in the diagram below.
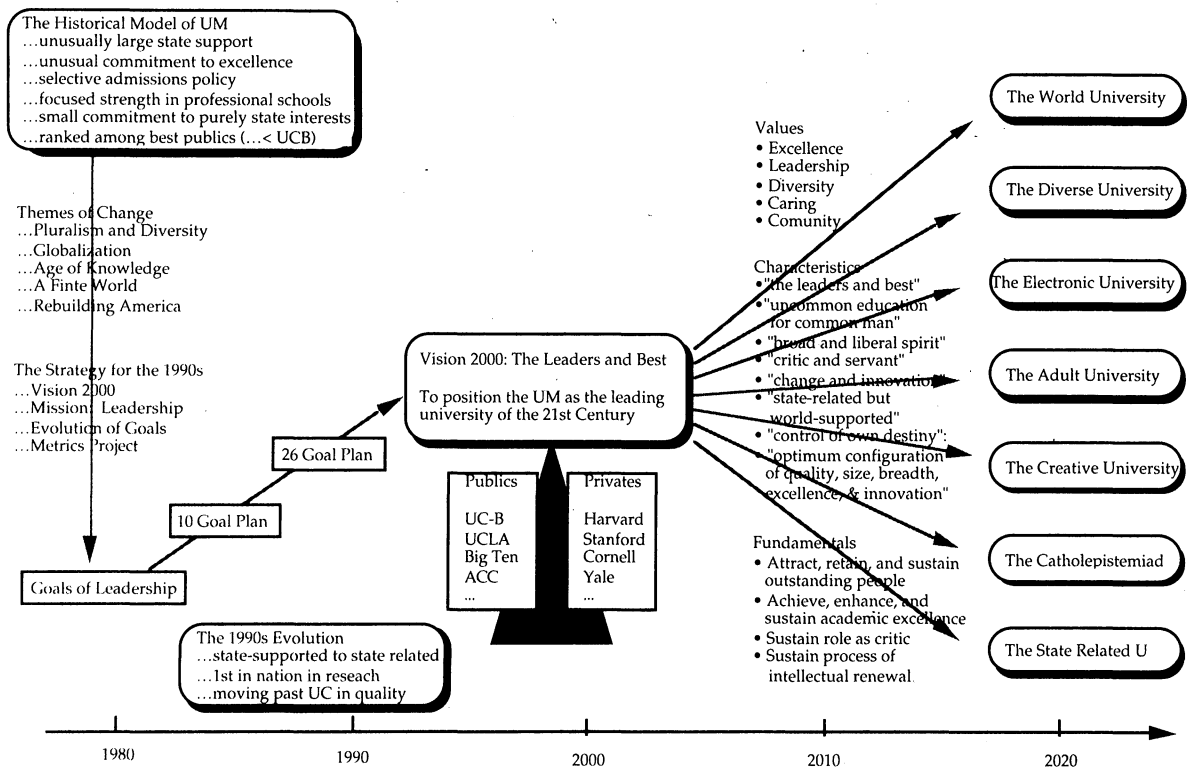
The key themes of change first identified and considered by the strategic planning process were set out in my inaugural address of 1988:

- The increasing pluralism and diversity of the American people
- The globalization of America and the shrinking global village
- The age of knowledge

These themes served as the rationale for the first major initiatives of the new administration: the Michigan Mandate, the Institute for International Studies, and the major leadership role played by the University in building and managing national computer networks (e.g., NSFnet, NREN, Internet). Further, the University took a number of important steps to achieve full participation of all groups in the life of the institution, including the Michigan Mandate (minorities), the Michigan Agenda (women), and the recent change in the Regents' Bylaws to explicitly prohibit discrimination based on sexual orientation.

In subsequent years, three new themes were added to the original list:

- A finite world (global change)
- The post-Cold War world
- Rebuilding America (human and physical capital and infrastructure).

Again, strategic initiatives were developed and launched in these areas, including the Global Change Project funded through the Presidential Initiative Fund and the efforts to position the University better in an array of economic development activities (e.g., the Flint Project, the IPPS State Economic Study, redesigning the University's technology transfer effort—the University Enterprise Zone project).

There were additional themes proposed that could better be classified as opportunities than challenges: exploration (of values, knowledge, the planet, the universe) and creation (of knowledge, art, objects, intelligence, life forms). These were the frontier themes traditionally addressed by research universities, although the rapid evolution of powerful tools such as information technology, molecular biology, and materials science triggered a rapid acceleration of University research in these areas. Examples here include the Molecular Medicine Institute in the School of Medicine, the Institute for the Humanities in LS&A, the Ultrafast Optics Laboratory in Physics and Engineering, and the adaptive complex systems activity affiliated with the Santa Fe Institute.

Efforts were also made to identify and understand the particular challenges facing higher education during the 1990s:

- The challenge of change
- The commitment to excellence
- The importance of fundamental values
- Building a community of scholars
- Restoring public understanding, trust, and support
- Acquiring and managing the resources necessary for excellence

While these themes of challenge were faced by most institutions, an effort was made to take the University of Michigan one step further by defining unique strategic themes for our institution during the 1990s:

- Inventing the university of the twenty-first century
- Redefining the nature of the public university in America
- Financing the University in an era of limits
- The Michigan Mandate
- A world university
- An electronic university
- Global change
- A strategic marketing plan
- "Keeping our eye on the ball"

The last theme, of course, referred to the fact that consistency and persistence were essential to the success of any strategic effort.

These themes were carefully woven into an array of efforts both on campus and off. They served as the rationale and foundation for a wide array of specific objectives and strategic actions—all aimed at moving the University toward *Vision 2000: The Leaders and Best!*

Vision 2000: The Leaders and Best!

In any strategic activity, it is important to develop both a vision of the future of the institution and a definition of its mission. Although a great many groups were involved in various stages of the planning process, there was one common theme characterizing all discussions of vision and mission: the theme of *leadership*.

More specifically, there was a general sense that leadership, more than any other characteristic of the University, would determine its impact on society, the state, the nation, and the world. While there was extensive discussion concerning the various definitions of the term "leadership," once again a consensus developed that institutional leadership should be interpreted as the University setting the pace or leading the way for higher education. In a sense, the University should strive to become the standard against which others would compare themselves.

This led to the following vision statement for the University:

> Vision 2000: "The leaders and best"
>
> To position the University of Michigan to become the leading university of the twenty-first century.

It was recognized that such a leadership vision would require a complex strategy, since all of the key characteristics of the University are involved: quality, capacity (size), breadth (comprehensiveness), excellence, and innovation. In fact, the achievement of the Vision 2000 would require an optimization of all of these factors.

In a similar sense, a great deal of effort was directed at developing an appropriate mission statement for the University. While there are many ways to articulate the mission of the University, we chose to do so using a language native to the business world, since this aligned most naturally with the particular strategic planning process we employed.

The Mission Statement:

Business Line:

Creating, preserving, transmitting, and applying knowledge
Products and Services:

Knowledge and knowledge-intensive services
Educated people with capacity and desire for leadership

Customers:

Primary:	Society at large
Others:	Students, patients, sponsoring agencies
Shareholders:	State, feds, private sector, public

Market Niche: *Leadership*

While some aspects of this mission statement would apply to any university—e.g., the triad mission of teaching, research, and service—other features are specific to the University of Michigan. For example, Michigan is one of the very few universities in the world that could claim society-at-large as its primary customer. And, indeed, over the course of its history, the University of Michigan's primary impact has been through its full array of activities rather than through a particular subcomponent of its mission such as teaching or research. So too, Michigan is one of the few universities that can claim leadership as a true component of its mission.

The Evolution of Goals

Any successful strategic planning process is highly iterative in nature. While the vision remains fixed, the goals, objectives, actions, and tactics evolve with progress and experience. Further, during a period of rapid, unpredictable change, the specific plan chosen at a given instant is of far less importance than the planning process itself. Put another way, the University sought an "adaptive" planning process appropriate for a rapidly changing environment.

As a consequence, the goals developed by the planning process have evolved over time, from general to the specific, as shown in the diagram below.

Challenges to Higher Ed
• Pace of Change
• Commitment to Excellence
• Importance of Values
• Restoring Public Trust
• Acquiring and Managing
  Resources Necessary for
  Excellence

Challenges to UM
• State support: 70% --> 12%
• Competition for faculty,
  students, resources
• Political environment
• Need for new vision of UM

Themes

Themes of Change
• Pluralism and Diversity
• Globalization
• The Age of Knowledge

Themes of Challenge
• A Finite World
• Post-Cold-War World
• Rebuilding America

Themes of Opportunity
• Progress
• Creation
• Exploration

Initial Goals (1986)
1. To pick up the pace
2. To focus resources
3. Academic excellence
4. Change-oriented culture
5. Risk-taking, entreprenurism

Goals of Leadership
...Institutional
...Intellectual
...Social
...Personal

Michigan Themes
• University of 21st Century
• Public --> Private Support
• The Michigan Mandate
• A World University
• The Age of Knowledge
• Strategic Communications
• Keeping our eye on the ball

10 Goal Plan (1990)
1. Protect autonomy
2. Strengthen leadership
3. Increase private support
4. The Michigan Mandate
5. UM as hybrid public-private
6. Restructuring the UM
7. Research leadership
8. Achieve extraordinary
9. World University
10. Strategic communications

--> Goals -->

Strategic Planning at Michigan

Process

The Strategic Planning Process
1. Vision, Goals, Values
2. Environmental Assessment
3. Operational Objectives
4. Strategic Actions
5. Tactical Implementation
6. Evaluation and Assessment

26 Goal Plan (1993)
1. Research leadership
2. Access and quality
3. The Michigan Mandate
4. The Athena Project
5. More UM "firsts"
6. Spires of excellence
7. Enhance academic quality
8. Undergraduate education
9. Improve student life
10. Strong leadership teams
11. Acquire necessary resources
12. Restructure UM
13. Strengthen external relations
14. Institutional advancement
15. Increase private support
16. Increase endowment
17. Improve capital facilities
18. Intellectual change
19. New models for 21st Century
20. World University
21. Electronic University
22. Knowledge transfer
23. AA --> economic engine
24. Restructure state
25. Intercollegiate athletics
26. UM loyalty, pride, respect

Vision 2000: The Leaders and Best
To position the UM to become the
leading university of the 21st Century

Vision

--> Actions -->

Initial Strategy
• Themes
• Teams
• Networks
• Goals

Strategic Leadership Plan
...Strategic Initative Fund
...Unit Strategic Plans
...Strategic Planning Team
...Futures Group
...Planning Responsibilities
...President's Advisory Council

1990s Strategy
...The Reality Test
...Vision 2000
...Michigan Metrics Project
...Strategic Assessment
...Restructuring Plans
...Vision 2017 Effort

Our current goals can be separated into three categories: leadership goals, resource goals, and trail-breaking goals:

Leadership Goals

1. To enhance the quality of all academic programs
2. To sustain UM blend of broad access and highest quality
3. To build more spires of excellence
4. To achieve more "firsts" for the University
5. To become the leading research university in the nation

6. To achieve the objectives of the Michigan Mandate
7. To achieve the objectives of the Michigan Agenda for Women
8. To develop a new paradigm for undergraduate education
9. To enhance the quality of the student living/learning environment

Resource Goals

10. To build strong leadership teams for the University
11. To acquire resources to compensate for the loss of state support
12. To restructure the University to better utilize existing resources
13. To strengthen external relationships (state, feds, public)
14. To enhance the quality of institutional advancement activities
15. To increase private support to exceed the state appropriation by 2000
16. To increase endowment to $2 B by 2000
17. To dramatically improve the quality of UM facilities

Trail-breaking Goals

18. To restructure the University to better respond to intellectual change
19. To explore new models for the University of the twenty-first century
20. To position UM as a "world university"
21. To position UM as an "electronic university" of the twenty-first century
22. To make UM a leader in knowledge transfer to society
23. To make the Ann Arbor area the economic engine of the midwest
24. To help implement a plan for "restructuring" the State of Michigan
25. To have the leading intercollegiate athletics program in the nation
26. To build more of a sense of pride in, respect for, excitement about, and loyalty to the University of Michigan!

A key aspect of any strategic effort involves an accurate assessment of progress toward meeting various goals. As we have refined our goals, we have also sought to identify "metrics," which are parameters subject to measurement and suitable for determining progress. Each of the goals listed above has been characterized by an array of such metrics, and we are in the process of gathering data characterizing these parameters over the past decade.

For example, we can easily measure our progress toward the objective of achieving strong representation of minority students:

Minority Student Enrollment
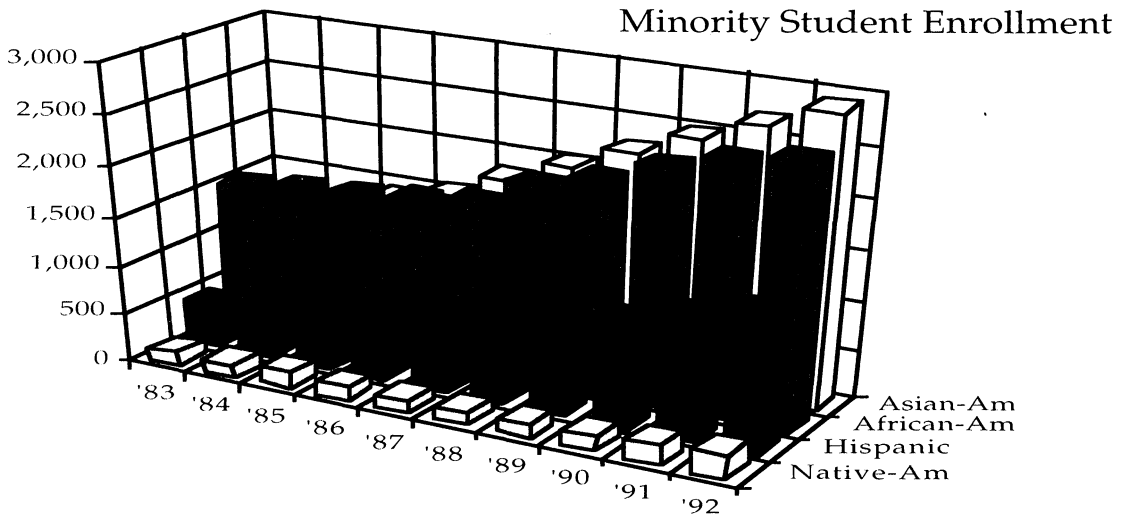
So too, we can measure the competitiveness of our faculty in attracting major research grants relative to other universities:
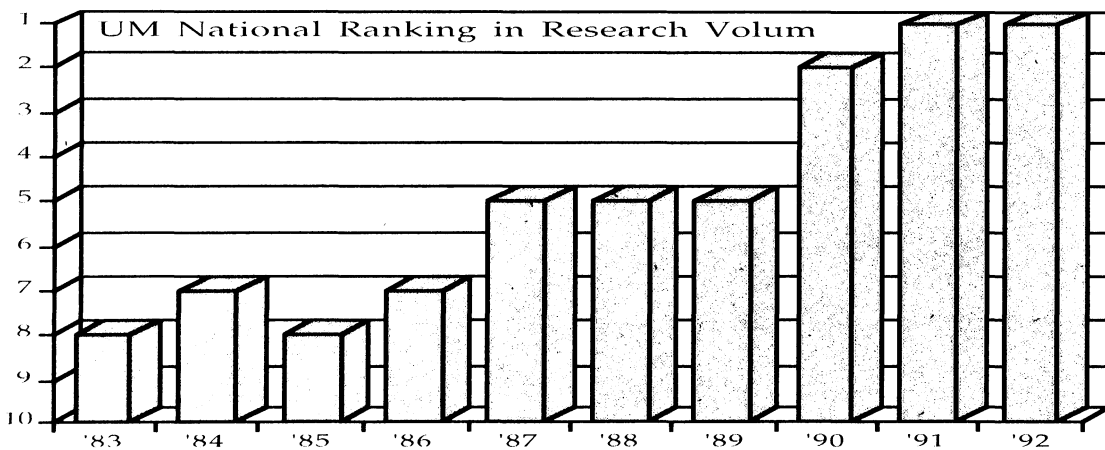
In a similar fashion, we developed metrics for each of the twenty-six goals involved in the Vision 2000 plan. The activity of identifying and gathering this assessment information is known as the Michigan Metrics Project. It is our intent to share this with the University community each year.

Vision 2017 and Beyond

The vision and goals set forth in this strategic plan are the result of seven years of strategic planning activities involving many people and many groups inside and outside of the University. In each of these planning exercises, the participants eventually focused on the theme of **leadership**. Hence we have set a course toward a vision that positions the University of Michigan to be the leading university in America by the year 2000. Further, the Michigan Metrics Project provides strong evidence that the University has made significant progress toward this vision in recent years.

Yet, the Vision 2000 strategy is very much a **positioning** effort. It is designed to position the University of Michigan as the leader in higher education by the end of the decade. But this strategy does not propose a specific direction beyond this point. Rather, the current strategy and the vision should both be regarded as intermediate phases and not as a final goals. Put another way, the strategy for the 1990s has been designed to move Michigan into a true leadership position in American higher education. But the task of determining just **where** the University will lead in the twenty-first century is still at an early stage of development.

Of course, one might adopt a Taoist philosophy and assume that the effort of positioning Michigan as a leader will establish objectives for the century ahead. A more pragmatic view would suggest that during the positioning effort of the 1990s, we will develop a better understanding of the challenges, responsibilities, and opportunities facing higher education and the University of Michigan in the next century.

Yet, the responsibility of leadership requires more than such a passive approach. If Michigan is to play a leadership role in defining the paradigm of the university in the twenty-first century, it must take steps now to better understand and articulate possible futures for higher education. That is, we should now shift at least a part of our strategic planning activity to the longer term, to the year 2017 and beyond.

While the *Vision 2000: The Leaders and Best*, is exciting, compelling, and clearly attainable for the 1990s, it is still only a short range vision. The development of a vision for the longer term—for the University of Michigan's third century—will pose an even greater challenge because the university itself is such a dynamic institution.

We are only beginning to sense the profound degree in which the comprehensive university is evolving rapidly once again during the 1990s. It is broadening considerably its traditional teaching-research-service mission to include an array of activities which can best be described as "knowledge-intensive." Yet even this evolutionary process may just be a transitional phase to institutional forms we cannot even imagine today. Perhaps we are thinking too narrowly, constrained by the mindset of a university of some distant past, which does not even resemble the university of today, much less that of the next century.

Traditional Visions of the University

There is strong evidence that, at least over the long term, the fundamental values and missions of the university are of great importance to society. Otherwise, how can one explain the fact that these institutions have survived more than a millennium and today are one of the few nearly universal human social institutions found in vastly different societies in every corner of the globe. Hence, perhaps if we understand better the source of our strength, we can identify the factors that should be preserved in any new paradigms of the university.

What explains the power of this durable and pervasive social institution? Lord Eric Ashby[3] points out that, whatever their flaws, universities are broadly accepted as the best means for social investment in human resources. Society believes in and supports the fundamental university missions of teaching and research. It entrusts to these institutions its children and its future. Our universities exist to be repositories, transmitters, and creators of human heritage. They serve as guardians and creators of that knowledge.

This mission is the glue that binds us together and accounts for our successful adaptation throughout the centuries, across so many disparate societies. Obviously, it is relatively easy to carry out our task in societies and times that are homogeneous and static, where there exists a high degree of consensus and gradual change. It is quite another thing to carry out our mission today in our own increasingly pluralistic society and interdependent world, a world characterized by the revolutionary transformations in knowledge itself and in the very nature of our role.

What has been the particular character of higher education in America? Certainly the education of our citizens has been its primary function—or, to quote Ralph Waldo Emerson's lofty ideal in his Harvard address to the Phi Beta Kappa Society in 1837:

> "Colleges have their indispensable office, to teach elements. But they can only serve us when they aim not to drill but to create; when they gather from far every ray of various genius to their hospitable halls, and by the concentrated fires, set the hearts of their youth aflame.[4]"

Or we might quote Michigan's own Henry Tappan:

> "Universities may, indeed, make learned men; but their best commendation is given when it can be said of them that furnishing the materials and appliances of learning, setting the examples in their professions and graduates, breathing the spirit of scholarship in all that pertains to them, they inspire men, by the

self-creative force of study and thought, to make themselves both learned and wise, and thus ready to put their hand to ever great and good work, whether of science, religion, or the state."[5]

Indeed, America's system of higher education went beyond this and attempted to provide an education to our entire population by achieving the variety of institutions necessary to meet the differing needs and abilities of our society. The size and number of institutions grew rapidly to keep pace with our increasing population.

The second traditional role of our colleges and universities has been scholarship: the production, criticism, reevaluation, dissemination, systematization, and preservation of knowledge in all forms. While the academy would contend that knowledge is important in its own right and that no further justification is required for this role, it is also the case that such scholarship and research were essential to its related missions of instruction and service.

Yet another traditional mission has been to provide service to society. American higher education has long been concerned with providing their special expertise to the needs and problems of society. Indeed, a unique type of institution, the land-grant university, was created in part to respond to the needs of our agricultural base. Furthermore, the commitment of our universities to the development of professional schools in fields such as medicine, nursing, dentistry, law, and engineering are adequate testimony to the importance of this role.

Finally, higher education in America was expected to provide leadership for society more generally. There was a conviction that the university could serve both as a laboratory and a model where the major problems of our society could be addressed. In a sense, the university, its students and faculty, were asked to become an intellectual community in which the human mind was brought boldly to bear on the largest and most enduring questions that confront us.

In planning exercises from years past, faculty at the University of Michigan have accepted this traditional triad mission statement:

    i) to educate students in light of certain education goals
    ii) to preserve and refine knowledge already acquired
    iii) to help define and assist in the solution of the problems of society

However, if one were to take a more pragmatic view of the University of Michigan of the mid-to-late twentieth century, one would identify the following characteristics:

- A public university with an unusual level of state support
- A public university with a serious commitment to scholarship
- Focused strength in the professions, particularly law, engineering, and medicine

- A public university with selective admissions policies and a strong "out of state" student component
- A relatively small commitment to purely state interests
- Programs generally ranked in quality "among the top public universities" but rarely regarded as the top public university (i.e., lagging behind the University of California-Berkeley)

Yet, this model has already changed considerably: The University of Michigan no longer enjoys an unusual level of state support relative to other public universities. Indeed, we have fallen below the national average for state appropriations per student. Further, in contrast to the mid-twentieth century, today we find many other public universities with an equally serious commitment to scholarship.

Some Simplistic Models

So, what are some alternatives to the historical model of the University of Michigan? For purposes of discussion, we might first consider the following highly simplistic—indeed, extreme—models:

1.   *The University of the Common Man*

    Goal
            UM = "The University of the Common Man"
    Priorities
            Minimize student costs (tuition, room and board)
            Broaden admissions
    Operational Objectives
            Maximize student financial aid
            Constrain tuition levels
            Avoid highly selective admissions policies
            Lower grading standards
            Lower graduation requirements
    Possible consequence
            —> The University of Mediocrity

2.   *The University of "the State of Michigan"*

    Goal
            Maximize service to State of Michigan
    Priorities

                    Maximize opportunities for Michigan citizens
                    Maximize service to State
        Operational Objectives
                    Reduce nonresident enrollments
                    Constrain tuition levels
                    Stress service activities
                    Stress breadth and variety of programs
                    Start an Ag school
        Possible consequence
                    —> Michigan State II

3. *The Harvard of the West*

        Priorities
                    Emphasize academic excellence as highest priority
                    Strive only for the best in students, faculty, programs
        Operational Objectives
                    Intensify Michigan's commitment to excellence
                    Stress quality over breadth and capacity
                    Stress priority of intellectual core
                    Operate as a national university
        Possible Consequence
                    —> "MUCH smaller but better"

4. *The Stanford of the East*

        Goal
                    Develop an entrepreneurial, change-oriented, risk-taking,
                        people-oriented culture
        Priorities
                    Strong incentives and opportunities for individual achievement
                    Minimum constraints, regulations, hassles
                    High-risk intellectual activities
        Operational Objectives
                    Harvard style of resource management
                        (every tub on its own bottom)
                    Stanford-MIT style of external interaction
                    Silicon Valley-Route 128 style
                    Modify organizational structures to stimulate change
                    Oppose efforts to constrain faculty and students

Possible Consequence
    "The University of the Bottom Line"

5. *The University of America*

Priorities
    BOTH quality and breadth
    Strong national representation among students and faculty
    Responsive to national (rather than state) priorities
Operational Objectives
    Stress institutional autonomy
    Continue shift toward nonresident enrollment
    Aggressive national marketing effort
Possible Consequence
    "The Dallas Cowboy model: America's university"

These models, while amusing, actually represent extreme cases of existing paradigms of the twentieth century. They do not provide much guidance about where the University of Michigan should head in the century ahead.

Some Radically Different Paradigms

We face a particular dilemma in developing more revolutionary models for the American university because of a challenge mentioned early in this essay. The pace and nature of the changes occurring in our world today have become so rapid and so profound that social institutions such as universities have great difficulty in sensing and understanding the true nature of the changes buffeting them, much less in responding and adapting adequately. Hence any process aimed at articulating and analyzing new models for the university must do so with the recognition that these models must themselves adapt to an environment of continual change.

With this caveat in mind, let us consider several of the more provocative themes suggested by colleagues across the University to illustrate the broad range of possibilities for the university of the twenty-first century. These include

- the state-related, but world-supported, university
- the "world" university
- the diverse university (or the "uni-di-versity")
- the cyberspace university
- the creative university
- the divisionless university

- the university college
- the university as capstone of a lifelong sequence of education
- the "laboratory" university ("the university within the university")
- the university as a "knowledge server"

Of course, it is unlikely that the University of Michigan will assume the form of any one of these models. But each paradigm has aspects that will almost certainly be a part of our character in the century ahead.

Theme 1: The State-Related, World-Supported University
        (or a privately-supported university with a strong public character)

Over the past two decades, the share of the University of Michigan's support provided by state appropriations has declined to the point today where it comprises only 37 percent of our General Fund, 22 percent of our academic budgets (non-auxiliary funds), and 11.6 percent of our total resource base:

State Appropriation as Percentage of UMAA Budget
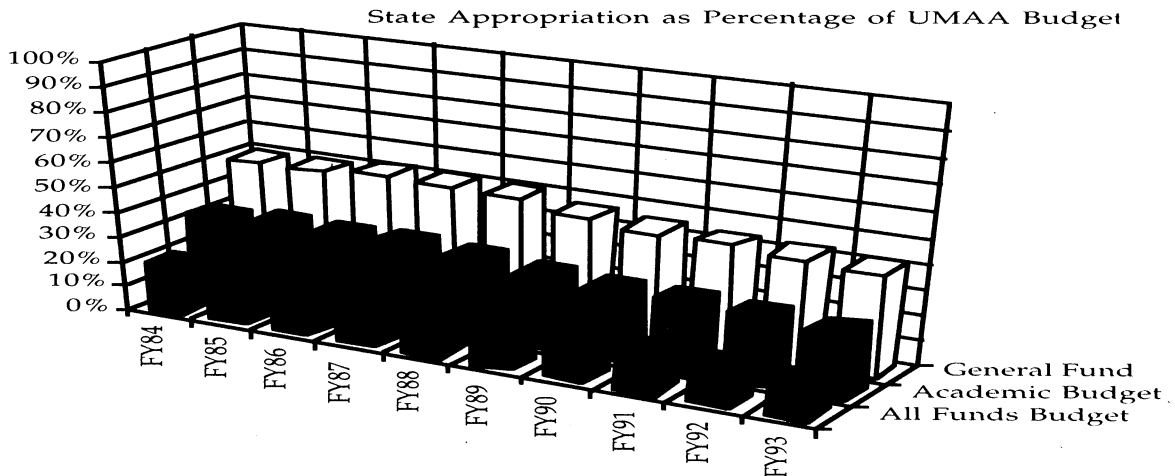
Further, it seems clear that if the present rate of deterioration continues, by the end of the decade, state support will amount to less than 7 percent of our total resources. In a sense, long ago we ceased to be a state-supported university. Indeed, today, we are, by most measures, not even a strongly state-assisted university, since other shareholders—students and parents through tuition, the federal government through research grants, alumni, friends, and benefactors through gifts, and patients through health care fees—each provide more support to the University than does the State of Michigan. Yet, despite the low level of state support, the University remains

committed to serving the citizens of Michigan. Further, it is clearly governed by the Board of Regents.

Hence, the University of Michigan has become a *state-related* university, supported by a broad array of constituencies at thenational—indeed, international—level, albeit with a strong mission focused on state needs. More precisely, in many ways it has become a privately-supported public university, in the sense that it must earn the majority of its support in the competitive marketplace (i.e., via tuition, research grants, gifts) much as a private university; yet it still retains a public commitment to serve the people of the State of Michigan.

While the University of Michigan was the first public university to see its state appropriations drop to such a low fraction of its operating budget, it is now being joined by other major public universities facing a similar "state-related" future—most notably the University of California, most Big Ten universities, and the Universities of Virginia and North Carolina. Today many might conclude that America's great experiment of building world-class universities supported by public taxes has come to an end. Put another way, it could well be that the concept of a world-class, comprehensive university supported primarily by state appropriations may not be viable over the longer term. It may not be possible to justify the level of public support necessary to sustain the quality of these institutions in the face of other public priorities such as health care, K-12 education, and public infrastructure needs—particularly during a time of slowing rising, or stagnant economic activity.

Perhaps we should consider more carefully the implications of being a "state-related, world-supported" university. For example, it is clear that if our viability depends on building and sustaining sufficient resources to maintain our remarkable combination of quality, breadth, and size, we must serve more than the state alone. It is also clear that our capacity to position the University to attract these resources will require actions that may come into conflict from time to time with state priorities. Hence, the autonomy of the University will be one of its most critical assets.

So, how might we embark on this path to serve far broader public constituencies without alienating the people of our state—or risking our present (albeit low) level of state support? One approach would be to simply observe that the present level of state appropriations is barely sufficient to cover the tuition "discount" provided for Michigan residents. Hence we could simply offer to educate only those students the state wished to pay for, at a tuition level determined by the degree of state subsidy.

A more diplomatic approach would be to attempt to persuade the public—and particularly the media—that the University of Michigan is vital to the state in a multidimensional way that goes far beyond education alone—through health care, economic development, pride (intercollegiate athletics), professionals (doctors, lawyers, engineers, teachers), etc. Further, we might shift the public perception of the Univer-

sity from that of a consumer of state resources to that of a generator of state resources.

We might argue that for a small contribution—less than 12 percent of our operating costs—the people of the state of Michigan get access to the vast resources and benefit from the profound impact of one of the world's great universities.

Some Questions:

1. How does one preserve the "public character" of a "privately financed" institution?

2. How does a "state-related" university adequately represent the interests of its majority shareholders (parents, patients, federal agencies, donors)?

3. Can one sustain an institution of the size and breadth of the University of Michigan on self-generated ("private") revenues alone?

Theme 2: The World University

The University of Michigan has evolved over time from a state university to a national university. Yet throughout its history it has always had a strongly international character. Perhaps now is the time to evolve once again, this time into a "world" university. To illustrate how dramatic such a paradigm shift might be, consider two possible futures suggested by University faculty members:

> "A new world culture will be formed over the next century, and a basic step in forwarding whatever we mean by that term will be the establishment of three or four world universities (Europe, Asia, Africa, Latin America) to be the focal point for certain sorts of study of international order—political, cultural, economic, technological. Since the genius of higher education in America is the comprehensive public university, the University of Michigan is well positioned in character—as well as geographical location—to play this role for North America."
>
> Ralph Williams, English

"Suppose that the University of Michigan in the year 2020 has an enrollment of 100,000 students—but only 20,000 are located in Ann Arbor. The remaining 80,000 are scattered about the globe, interacting with the University through robust information technology networks (holographic images, ubiquitous computing, knowbots, and such)."

Doug Van Houweling, Political Science

Such statements prompt a number of provocative questions:

1. What would be the characteristics of a world university? What would be its primary missions?
2. Teaching: Who would it teach? More international students? (Note that only 6.5 percent of our students today are international, and most of these are in our graduate programs.) What would such a university teach? Would our objective be to make our students more "worldly," to challenge their "Americentric" view of the world, to help them understand cultural differences and be able to handle them? How could we make better use of the extraordinary resource represented by our international students?
3. Scholarship: How would a world university organize its teaching and scholarship? Through conventional area centers? Major new schools of international studies? By infusing international content into its programs? How about "ausland/inland" issues, e.g., African studies vs. African-American studies?
4. Service: Would a world university be more committed to public service on an international scale? What about international development (through organizations such as the Midwestern Universities Consortium for International Activities)?

5. International Extension: What about overseas campuses? Overseas opportunities for faculty? Overseas extension programs for international students? What types of relationships would we build with other universities throughout the world?

Theme 3: The Diverse University

Yet another model of the University of the twenty-first century is suggested by the Michigan Mandate, the University of Michigan's steadfast commitment to become a leader in building the type of diverse learning community so critical to the future of our nation and the world.

The University of Michigan has long been among the most faithful realizations of the Jeffersonian concept of a public university—responsible and responsive to the needs of the people who founded it and supported it, even as it sought to achieve quality equal to that of the most distinguished private institutions. Throughout its long history, perhaps the most distinguishing characteristic of the University has been its commitment, as stated by President Angell, to "provide an uncommon education for the common man." This aspiration to provide an education of the highest quality to all with the ability to succeed and the will to achieve stood in sharp contrast to the role of the nation's earliest eastern colleges, which traditionally served those of the elite and specific religious groups. The University of Michigan instead was responsible to and shaped by the communities that founded it, with the mission of serving all the people.

The early focus of the University was on expanding the availability of a university education to all economic classes and religious groups. Throughout the nineteenth century, the University of Michigan continued to expand access to groups who had been denied educational opportunity elsewhere. The first African Americans were admitted to the University in 1868 and the first women in 1869; enrollments of women, students of color, and religious minorities grew rapidly in later years. The University has also played a major role in expanding the opportunity for higher education to students from abroad.

Yet, despite the degree to which the University broadened its commitment to provide an "uncommon education for the common man" to encompass gender, race, religious belief, and nationality, it has faced serious challenges. Many of these groups suffered from social, cultural, and economic discrimination. Simply opening doors—providing access—was not enough to enable them to take advantage of the educational opportunities of the University.

To address this challenge, this responsibility, this mandate, the University of Michigan began to transform itself five years ago to bring all racial and ethnic groups

fully into the life of the University. This process of transformation was guided by a strategic plan known as **The Michigan Mandate**. The fundamental vision was that the University of Michigan would become a leader known for the racial and ethnic diversity of its faculty, students, and staff—a leader in creating a multicultural community capable of serving as a model for higher education and a model for society-at-large. We were convinced that our capacity to serve our state, our nation, and the world would depend on our capacity to reflect the strengths, perspectives, talents, and experiences of **all** peoples in everything that we do.

The Michigan Mandate broke new ground, drawing on the best available research and experience for promoting significant social change. It has provided the framework for a dynamic and inclusive reassessment of the University's future, based on the University's best academic traditions and values. It called upon the entire community to join in a commitment to change. Unique solutions, experiments, and creative approaches were encouraged, and resources were committed to them.

As we have suggested in the Michigan Mandate, the University has a mandate not just to reflect the growing diversity of America—and, indeed, the world—in our students, faculty, and staff, but to go beyond this to build a pluralistic, multicultural model for our nation. This model seeks to build a community that values, respects, and draws its intellectual strength from the rich diversity of peoples of different races, cultures, nationalities, religions, and beliefs.

In this sense, the Michigan Mandate model seeks to join together objectives that initially may seem incompatible: community and pluralism, and excellence and diversity. In a sense, the goal would be to strengthen every part of our University community and our missions of teaching, research, and service by increasing, acknowledging, learning from, and celebrating our rich human diversity. Here we must make a very deep commitment to the achievement of an environment that seeks, nourishes, and sustains racial, cultural, and national diversity. We must learn how to resist the great pressures of prejudice, separatism, bigotry, and fear that push us apart. Societies around the world are being ripped apart by ethnic, racial, and religious strife that threatens world peace, causes untold suffering, and stands in the way of progress in addressing the most pressing problems facing humankind.

Hence, critical to this model is a recognition that we are first and foremost a "UNI" versity, not a "DI" versity. Our challenge is to weave together the dual objectives of diversity and unity in a way that strengthens our fundamental goal of academic excellence and serves our academic mission and our society.

There are many questions associated with this model, however:

1. What society do we strive to represent? Michigan? The United States? The World? The Present? The Future?

2. What kind of diversity do we seek? Racial? Ethnic? Gender? Socioeconomic? Geographical? Intellectual? Political? (Or do we just set our academic standards and then allow a "blind" selection process to determine our composition?)
3. How do we draw strength from diversity?
4. How do we teach our students to relate to, tolerate, enhance, and benefit from diversity?
5. How do we resist the forces of separatism driven by pluralism and build a "uni" versity—stressing the "unum" over the "pluribus?"

Theme 4: The Cyberspace University

Four important themes are converging in the final decade of the twentieth century: i) the importance of the university in an age in which knowledge itself has become a key factor in determining security, prosperity, and quality of life; ii) the global nature of our society; iii) the ease with which information technology—computers, telecommunications, multimedia—enables the rapid exchange of information; and iv) networking, the degree to which informal cooperation and collaboration among individuals and institutions are replacing more formal social structures such as governments and states.

In Michigan we have a unique vantage point from which to view a particularly important feature of these changes. If there was one sector that most strongly determined the progress of the twentieth century, it was *transportation* and its related industries—cars, planes, trains, oil, and space. Transportation determined prosperity, national security, even our culture—with the growth of the suburbs, international commerce, and so on. During this period Michigan's automobile industry had no equal, and the state rapidly became one of the most prosperous and powerful industrial regions on earth.

Today things are very different. We have entered a new era in which the engine of progress is not transportation but rather *communication*, enabled by the profound advances we are now seeing in computers, networks, satellites, fiber optics, and related technologies. We now face a world in which hundreds of millions of computers easily can plug into a global information infrastructure. Jacques Attali in his profound essay *Millennium*[6] suggested that the impact of information technology will be even more radical than that of the harnessing of steam and electricity in the nineteenth century. It will be more akin to the discovery of fire by our early ancestors, since it will prepare the way for a revolutionary leap into a new age that will profoundly transform human culture.

It is clear that the information technology on which our knowledge-intensive society is increasingly dependent continues to evolve very rapidly. In the next several years we will see yet another 1,000-fold increase in the power of computers and networks. In the same time frame, massively parallel computation servers will offer tera-operations per second, while the price performance ratio of workstations will continue to improve. Within several years, widely available international networks capable of point-to-point multi-media (including video) will be available. Wide-area networks in the gigabit-per-second range will be in routine use, although still well short of the 25,000 gigabit potential of third generation fiber optic technology. Wireless communication will support remote computing and communication.

Perhaps the university of the twenty-first century will become an invisible, world-wide network, a "cyberspace," linking students, faculty, and society. Today's campuses might become "knowledge servers" linked into a vast information network, providing their services (teaching, research, public service) to whomever might request and need them.

Since the business of the academic research enterprise is knowledge, the impact of the extraordinary advances in information technology could have—likely will have—profound implications. Technologies such as computers, networks, HDTV, ubiquitous computing, and knowbots may well invalidate most of the current assumptions in thinking about the future of the research enterprise. Consider, for example, the following questions:

1. Will the "university of the twentieth century" be localized in space and time or will it be a "meta-structure" involving people throughout their lives, wherever they may be on this planet—or beyond?
2. Is the concept of the specialist really necessary—or even relevant—in a future in which the most interesting and significant problems will require "big think" rather than "small think," where intelligent software agents can roam far and wide through robust networks containing the knowledge of the world and instantly and effortlessly extract whatever a person wishes to know?
3. Will lifestyles in the academy (and elsewhere) become increasingly nomadic, with people living and traveling where they wish, taking their work and their social relationships with them?
4. Will knowledge become less of a resource in the university of the twenty-first century and more of a medium?

Theme 5: The Creative University

The professions that have dominated the late twentieth century—and to some degree, the late twentieth century university—have been those which manipulate and

rearrange knowledge and wealth rather than create it, professions such as law, business, accounting, and politics. Yet it is becoming increasingly clear that the driving intellectual activity of the twenty-first century will be the act of creation itself.

"The winners of this new era will be creators, and it is to them that power and wealth will flow. The need to shape, to invent, and to create will blur the border between production and consumption. Creation will not be a form of consumption anymore, but will become work itself, work that will be rewarded handsomely. The creator who turns dreams into reality will be considered as workers who deserve prestige and society's gratitude and remuneration."[7]

Perhaps the determining characteristic of the University of the twenty-first century will be a shift in intellectual focus from the preservation or transmission of knowledge to the process of creation itself. Here, the University of Michigan is already very well positioned. On our campus we are fortunate to have several schools that focus on the act of creation—in music and dance and the performing arts; art and design; architecture; and in engineering, which, of course, is the profession concerned with "creating what has not been." But the tools of creation are expanding rapidly in both scope and power. Today we have the capacity to literally create objects atom-by-atom. We are developing the capacity to create new life-forms through the tools of molecular biology and genetic engineering. And we are now creating new intellectual "life forms" through artificial intelligence and virtual reality.

Hence, perhaps the University should structure itself in a more strategic fashion to nurture and teach the art and skill of creation. Perhaps we should form strategic alliances with other groups, organizations, or institutions in our society whose activities are characterized by great creativity.

Again, some questions arise:

1. Will the "creative" disciplines and professions acquire more significance (e.g., art, music, architecture, engineering)?
2. How does one nurture and teach the art and skill of creation?
3. What is the role of creativity within other scholarly and professional disciplines? How might we enhance this?

Theme 6: The Divisionless University

An earlier address to the Senate Assembly entitled "Redrawing the Boundaries" focused on the subject of intellectual change. At that time I noted that many of

our faculty had expressed their growing frustration with the current intellectual organization of the University. They felt that our traditional structure of narrow disciplinary and professional academic programs was increasingly irrelevant to their teaching, scholarly, and service activities.

Of course, our present organization into schools, colleges, and departments has much to recommend it. They set the norms for quality and provide a standard that relates to other academic institutions and to society-at-large. Furthermore, much of the real power in a university flows through these academic units, including the power to appoint and tenure faculty, allocate resources, and offer academic degrees.

Yet there are many signs that the university of the future will be far less specialized and far more integrated through a web of structures, some real and some virtual, which provide both horizontal and vertical integration among the disciplines. In my role as chair of the National Science Board, I have witnessed the blurring of the distinction between basic and applied research, between science and engineering, and between the various scientific disciplines. So too, we are seeing a far more intimate relationship between basic academic disciplines and the progress. Much of the most important basic biological research is now conducted by clinical departments in medicine—an example being molecular medicine. The professional schools of business, law, public health, and social work are deeply engaged in original and basic scholarship and teaching in the social sciences. And the performing arts are continually energized and nourished by the humanities—and vice versa!

We should seriously examine alternative ways to organize a university that are less constraining to the teaching and research of our faculty. For example, perhaps scholarly disciplines should be more closely integrated with professional schools through academic organization or campus location.
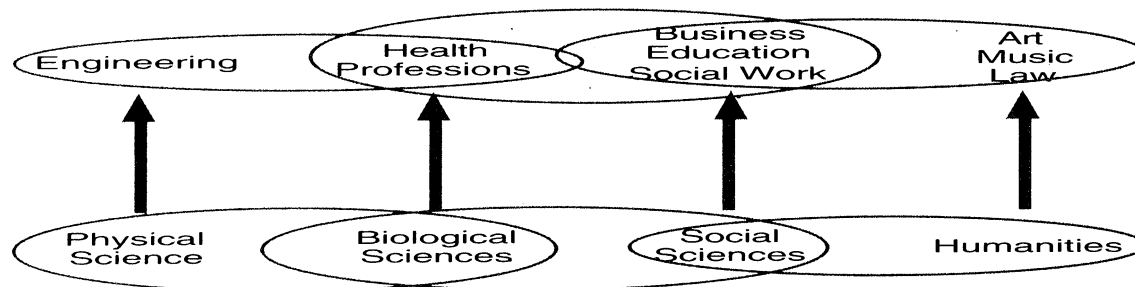
We might consider a fourth level of faculty appointment, beyond that of the professor, in which distinguished senior faculty of unusual intellectual span are appointed as professors-at-large with the ability to teach or conduct research wherever they wish in the University. We might construct various "integrative" facilities

which bring together the teaching and scholarship of a broad range of academic programs, e.g., the Gateway Campus project on the Central Campus and the Integrated Technology Instructional Center (or "Media Union") on the North Campus.

Some questions:

1. Perhaps we should resist the trend toward highly specialized undergraduate degrees in favor of a "bachelor of liberal learning" that would prepare students to enter a wide array of post-graduate studies and careers.
2. Has the Ph.D. itself become an obsolete degree to the extent that all too often it is used to produce highly specialized clones of the present graduate faculty? Perhaps it is time for a new graduate degree characterized by far greater breadth.
3. Should the basic disciplines be more intimately coupled to the professions? After all, many of the most exciting basic research is stimulated through interaction with the "real world."
4. How do we develop, evaluate, and reward faculty who are generalists rather than specialists?

Theme 7: The University College

In recent years there have been calls for research universities to make a new commitment to quality undergraduate education, particularly at the lower division level. Here, we must acknowledge the difficulties that large research universities have had with general education and supporting the intellectual and emotional development of younger students. It seems increasingly clear that we need to develop a new paradigm of the "university college," the undergraduate programs surrounded by the graduate and professional programs of the comprehensive university. Among the particular challenges that this paradigm must address are the following:

1. We need to resist the increasing specialization that characterizes existing undergraduate majors and strive instead for the ideals of a broad, liberal education. The world of change our students will enter requires a far broader undergraduate education than we now provide, one that integrates knowledge and enables them to continue learning throughout their lives.
2. We should recognize that today's student is quite different from earlier generations. Not only do they come from vastly more diverse backgrounds with different academic goals and expectations, but they learn in very different ways. Their knowledge-rich, media-dominated world has led them to develop
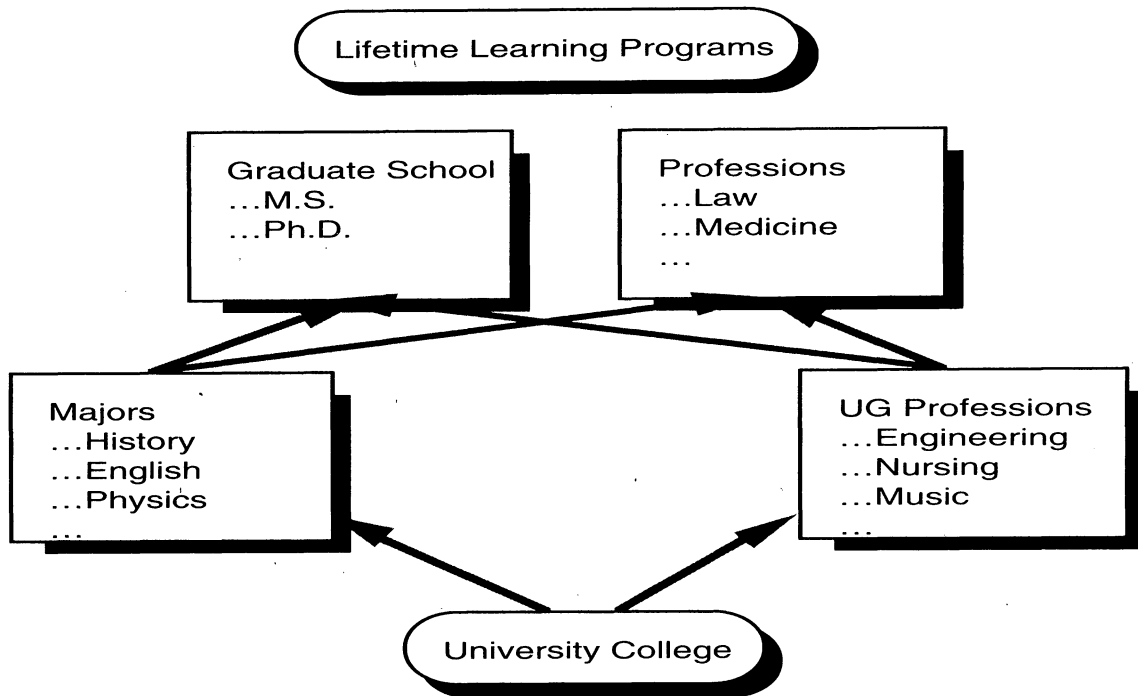
more complex learning patterns. For example, the "plug and play" generation tends to favor nonlinear, inductive learning processes rather than the linear, sequential approach favored by most faculty.

3. We need to provide undergraduates with an experience that draws on the vast intellectual resources of the entire university: its scholars; its libraries, museums, and laboratories; its graduate and professional programs; and its remarkable diversity of people, ideas, and endeavors.

4. We should expose our students to the excitement of great minds struggling to extend the bounds of knowledge. Of course we recognize that the scholars we place in the classroom may not always be the best teachers of knowledge in the traditional sense. But research universities benefit from the presence of a cadre of excellent, stimulating teachers; and we are convinced that only by drawing into the classrooms faculty with strong commitments to scholarship can we stimulate our students to develop the skill at inquiry across the broad range of scholarly disciplines that is so essential to life in an age of rapidly expanding knowledge.

5. We should develop in our students both the ability and will to strive for knowledge. We believe that a critical component of an undergraduate education in a research university is the development of the will to seek and the skill to find.

6. We should expose our students to the diversity, the complexity, the pluralism of peoples, cultures, races, and ideas that can only be found in the intellectual melting pot of the modern research university.

7. And we must also accept our mission to educate the leaders of American society. Indeed, if past experience is any guide, most of the leaders of this nation will continue to be produced by our great research universities.

One possible paradigm would be to extend and adapt Robert Hutchin's ideal of a "university college" in the following way:

1. Lower-division undergraduate education would be the responsibility of a separate college of the University, focused on providing general education of the highest quality to all first- and second-year students enrolling in the University. This university college would provide these students with a gateway both to more specialized upper-division education in the majors and the professions as well as introducing them to the great intellectual resources of a major research university.

Lifetime Learning Programs

Graduate School
...M.S.
...Ph.D.

Professions
...Law
...Medicine
...

Majors
...History
...English
...Physics
...

UG Professions
...Engineering
...Nursing
...Music
...

University College

2. The University College might have its own dean and administration, on a par with the deans of other schools and colleges and reporting directly to the provost. However, unlike other schools, it would have only a very limited number of faculty. It would draw most of its faculty from other academic units of the University, although there might be a few "master teacher" faculty members with tenure directly in the university college.

3. All first- and second-year (lower division) students would be admitted initially to the University College rather than to a liberal arts college or professional schools. They would then transfer into specific majors (concentrations) or into professional schools in their junior year. Some professional schools might choose to offer some outstanding students simultaneous admission to their advanced programs when admitted to the university college in order to attract the very best students.

4. The University College would be concentrated on a new campus with a complex of classrooms, laboratories, museums, and other academic facilities that would be clearly identified by students, faculty, and alumni as the University's focal point for undergraduate education. The College would also be adjacent

to residence halls for first-year students in an effort to provide a more integrated academic and residential life that better responds to their needs.

5. All faculty of the University, including those in professional schools, would be required to teach periodically in the University College.

6. All undergraduates would be required to complete a major research or creative project under faculty supervision during their first two years. Further, all undergraduates would also be required to complete a capstone project or experience during their senior year that would pull together their undergraduate education.

7. The faculty role would shift from traditional teaching to the activity of designing processes, experiences, and environments suitable for student learning. The student would shift from passive to active learning and intellectual engagement, with increasing involvement in collective rather than solitary learning experiences.

Theme 8: The Catholepistemiad of Michigania

In a world in which education becomes a lifetime commitment—in which we must prepare our students for multiple-career lives—perhaps we need to rethink the university in terms of an education continuum in which we interact through a lifetime with our students. In fact, this was noted by Howard Peckham in his popular history of the University of Michigan:

> "The original concept of the University was not as an isolated tower of learning, but rather the capstone of a statewide educational system which it would supervise. The president and didactors, or professors, were given power 'to establish colleges, academies, schools, libraries, museums, athenaeums, botanical gardens, laboratories . . . and to appoint instructors and instructrices in, among, and throughout the various counties, cities, towns, townships, and other geographical divisions of Michigan.' In a sense, Woodward followed the French idea of achieving a single and high set of standards for all schools by centering control in the university."[8]

Perhaps, then, we need to consider an evolutionary path through which the University becomes a "full service" educational institution, with an involvement across the entire spectrum of educational needs:
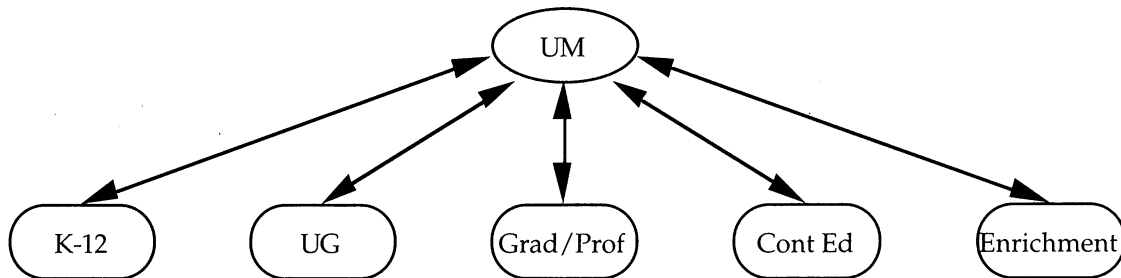
In this model, the university would commit itself to a lifetime of interaction with our students—once a Michigan student/graduate, always a Michigan student/graduate—providing them throughout their lives with the education necessary to responding to changing goals and needs. Further we would design our programs to bring together students with alumni who have established themselves in a particular career, thereby blurring the distinction between student and graduate, between the University and the external world.

Note here that information technology might be the key to providing such lifetime linkages with our students. This might allow our students to "take the University with them" when they graduate. It would also allow us to benefit from them as well.

Some questions:

1. How would this lifetime education be delivered?
2. How would the University related to other components of the educational continuum?
3. How would this "seamless web" approach relate to our current focus on well-defined degree programs?

Theme 9: The Laboratory University

Here the idea would be to explore the possibility of creating within the University a "laboratory" or "new" university that would serve as a prototype or test bed for possible features of a twenty-first century university. The "New U" would be an academic unit, consisting of students, faculty, and programs, with a mission of providing the intellectual and programmatic framework for continual experiment. This could be a highly interdisciplinary unit with programs organized around such overarching themes as global change, social infrastructures, and economic transformation. It would span undergraduate, graduate, professional, and continuing educa-

tion, bringing together students, faculty, and alumni to pool knowledge, work in teams, and address real problems. It would be a crucible for evolving new disciplines through interdisciplinary collaboration. Its programs would promote the transfer of knowledge to society through collaboration, internships, and exchanges of students, faculty, staff, and professionals. The "New U" would also be a place to develop new structural models for the university, to experiment with lifelong education, new concepts of service, faculty tenure, leadership development, and community building.
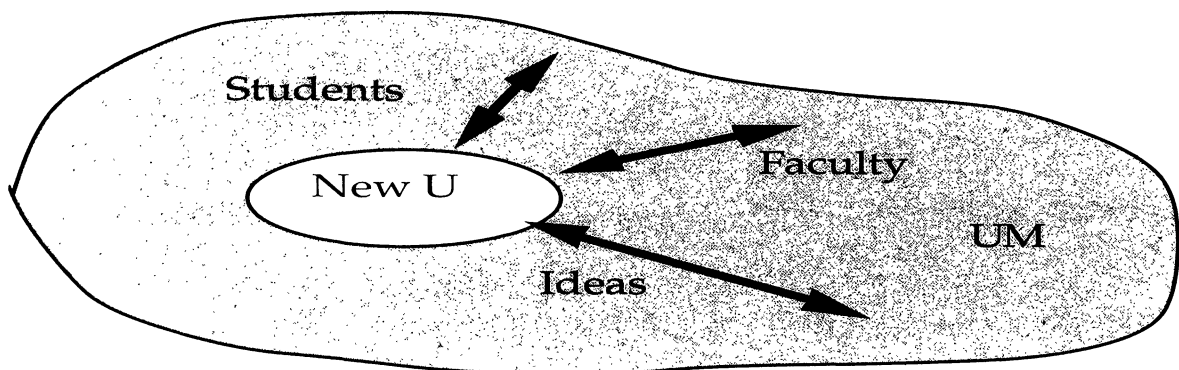
Ideas:

> i) This could be a prototype of what we believe the University of the twenty-first century might be, a laboratory or "proving ground" for various possibilities.
> ii) It could also be a more permanent part of the University that we intentionally try to keep twenty to thirty years ahead of the rest of the University—essentially our "corporate R&D" activity.
> iii) The "New U" project might also provide an excellent device to better articulate the needs and opportunities of the University for major efforts such as fund-raising campaigns. It would be a key strategic planning device in our efforts to take the next step in refining our vision of the University of the twenty-first Century.

Questions:

> 1. Would the New U require a major physical presence? Dorms, offices, classrooms, and such? Perhaps we could build it around other new facilities such as ITIC.

2. Perhaps we should build the New U around research as the most effective way to learn . . . at all levels, including the early undergraduate years.
3. Or perhaps we should build the New U around service, designing academic programs about major cross-disciplinary themes which address serious societal problems (e.g., global change, the plight of our cities).
4. Clearly the New U will have a strong information technology infrastructure. In fact, we might offer students a "technology sandbox" that they can apply to major intellectual or societal changes.
5. We might also construct the New U so that it would allow students to "dial" the type of learning environment they want, e.g., from intimate experiences like the Residential College to the full-blown mega-university.

Theme 10: The Knowledge Server

One frequently hears the primary missions of the university referred to in terms of teaching, research, and service. But these roles can also be regarded as simply the twentieth century manifestations of the more fundamental roles of *creating, preserving, transmitting,* and *applying* knowledge. If we were to adopt the more contemporary language of computer networks, the university might be regarded as a knowledge server, providing knowledge services (i.e., creating, preserving, transmitting, or applying knowledge) in whatever form needed by contemporary society.

From this more abstract viewpoint, it is clear that while the fundamental *knowledge server* role of the university does not change over time, the particular realization of these roles does change—and changes quite dramatically, in fact. Consider, for example, the role of "teaching," that is, transmitting knowledge. While we generally think of this role in terms of a professor teaching a class of students, who, in turn, respond by reading assigned texts, writing papers, solving problems or performing experiments, and taking examinations, we should also recognize that classroom instruction is a relatively recent form of pedagogy. Throughout the last millennium, the more common form of learning was through apprenticeship. Both the neophyte scholar and craftsman learned by working as apprentices to a master. While this type of one-on-one learning still occurs today, in skilled professions such as medicine and in advanced education programs such as the Ph.D. dissertation, it is simply too labor-intensive for the mass educational needs of modern society.

The classroom itself may soon be replaced by more appropriate and efficient learning experiences. Indeed, such a paradigm shift may be forced upon the faculty by the students themselves. Today's students are members of the "multimedia" generation. They have spent their early lives surrounded by robust, visual, electronic media—Sesame Street, MTV, home computers, video games, cyberspace networks,

and virtual reality. They approach learning as a "plug-and-play" experience, unaccustomed and unwilling to learn sequentially—to read the manual—and rather inclined to plunge in and learn through participation and experimentation. While this type of learning is far different from the sequential, pyramid approach of the traditional university curriculum, it may be far more effective for this generation, particularly when provided through a media-rich environment.

Hence, it could well be that faculty members of the "knowledge-server" university will be asked to set aside their roles as teachers and instead be asked to become "designers" of learning experiences, processes, and environments. Further, tomorrow's faculty may have to discard the present style of solitary learning experiences, in which students tend to learn primarily on their own through reading, writing, and problem solving. Instead they may be asked to develop collective learning experiences in which students work together and learn together with the faculty member becoming more of a consultant or a coach than a teacher.

One can easily identify other similarly profound changes occurring in the other roles of the university. The process of creating new knowledge—of research and scholarship—is rapidly evolving away from the solitary scholar to teams of scholars, perhaps spread over a number of disciplines. So, too, there is increasing pressure to draw research topics more directly from worldly experience rather than predominantly from the curiosity of scholars. Even the nature of knowledge creation is shifting away somewhat from the analysis of what has been to the creation of what has never been—drawing more on the experience of the artist than on analytical skills of the scientist.

The preservation of knowledge is one of the most rapidly changing functions of the university. The computer—or more precisely, the "digital convergence" of various media from print to graphics to sound to sensory experiences through virtual reality—has already moved beyond the printing press in its impact on knowledge. Throughout the centuries the intellectual focal point of the university has been its library; its collection of written works preserving the knowledge of civilization. Yet today, such knowledge exists in many forms—as text, graphics, sound, algorithms, virtual reality simulations—and it exists almost literally in the ether, distributed in digital representations over worldwide networks, accessible by anyone, and certainly not the prerogative of the privileged few in academe.

Finally, it is also clear that societal needs will continue to dictate great changes in the applications of knowledge it accepts from universities. Over the past several decades, universities have been asked to play the lead in applying knowledge across a wide array of activities, from providing health care, to protecting the environment, from rebuilding our cities to entertaining the public at large (although it is sometimes hard to understand how intercollegiate athletics represents knowledge application).

The knowledge-server theme for the university is not merely a possible paradigm for the future. Rather it is a paradigm which has existed throughout the long history of the university and will certainly continue to exist as long as these remarkable social institutions survive. But the particular realization of the fundamental roles of knowledge creation, preservation, transmission, and application will continue to change in profound ways, as they have so often in the past.

Other Possible Paradigms

These paradigms have only scratched the surface of the possibilities for future visions of the university. There are many other possible futures. For example, there are currently over 3,400 institutions of higher education in America, with many thousand more around the world. As the resource limitations and competitive pressures intensify, one might anticipate the same dynamics of mergers, acquisitions, and alliances that have characterized other industries. Further, it is likely that alliances between universities and other "knowledge-based" organizations such as national or industrial laboratories, research institutes, and museums may occur.

The Michigan Model

So how might we approach the task of developing a distinct model for the University of Michigan of the twenty-first century? One approach would be to examine the various themes and objectives that have been suggested in years past. For example, our fund-raising campaigns have touted Michigan's "heritage of leadership." In the earlier 1980s, we adopted the down-sizing slogan of becoming "smaller but better." We have long striven to be "the best public university in America"—although many argue we should elevate our sights to becoming "the best university in America" period!

Perhaps it is more appropriate to build a new model of the University based on descriptors which convey both our most cherished values and our hopes for the future. For example, we might embrace the following shared values:

- Excellence
- Leadership
- Critical and rational inquiry
- Liberal learning
- Diversity
- Caring and concern
- Community
- Excitement

Beyond this, we might also choose from among the many past descriptors of the characteristics of the University, those which seem most important to preserve for the future:
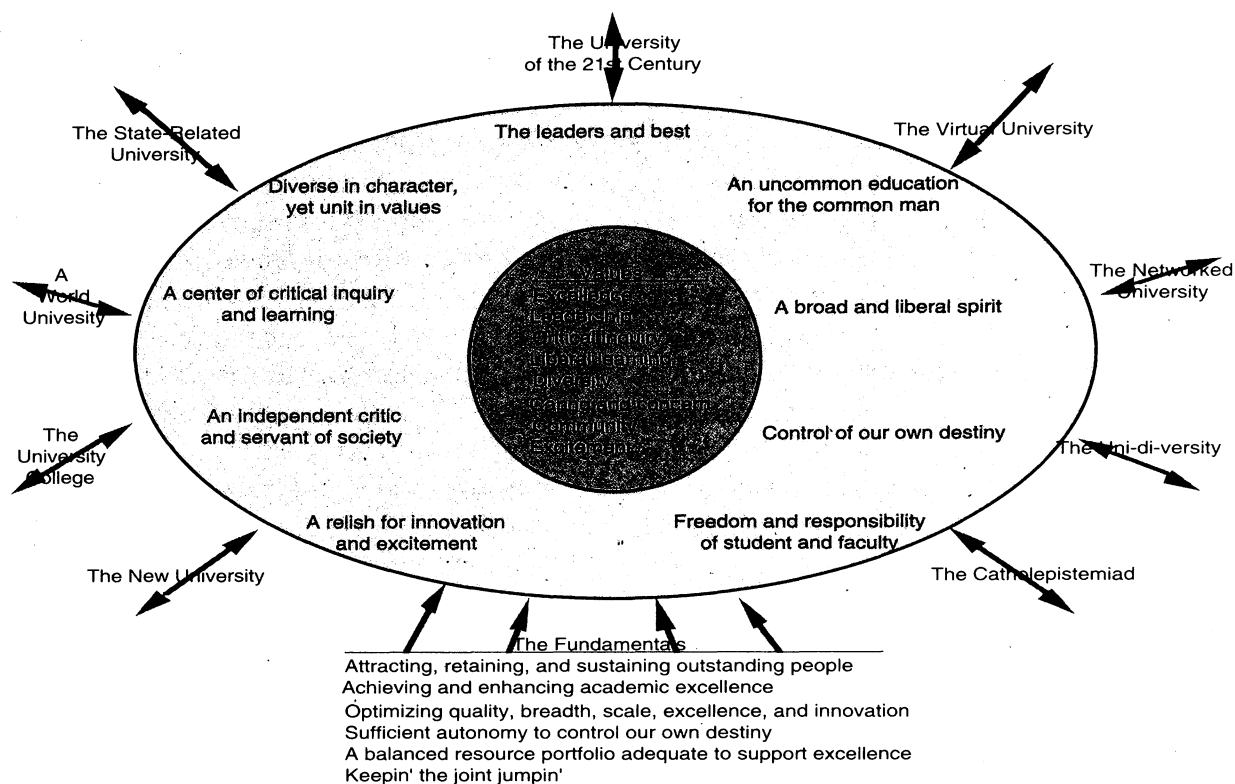
- "The leaders and best"
- "An uncommon education for the common man (person)"
- "A broad and liberal spirit"
- "Diverse, yet united in a commitment to academic excellence and public service"
- "A center of critical inquiry and learning"
- "An independent critic and servant of society"
- "A relish for innovation and excitement"
- "Freedom with responsibility for students and faculty"
- "Control of our own destiny comparable to private universities"

Undergirding these values and characteristics are descriptors that characterize "the fundamentals," those actions and goals we must continue to give high priority to achieve our vision:

- Attracting, retaining, and sustaining the most outstanding people (students, faculty, staff)
- Achieving, enhancing, and sustaining academic excellence in teaching and scholarship
- Optimizing the balance among quality, breadth, scale, excellence, and innovation
- Retaining sufficient autonomy to control our own destiny
- Maintaining a diversified resource portfolio to provide a stable flow of resources necessary for leadership and excellence regardless of the ebb and flow in particular areas (state, federal, private giving)
- "Keepin' the joint jumpin!"

We can put together these descriptors to develop the core of a possible design for the University of Michigan for the century ahead:

The University
of the 21st Century

The leaders and best

The State-Related University

The Virtual University

Diverse in character, yet unit in values

An uncommon education for the common man

A World Univesity

The Networked University

A center of critical inquiry and learning

A broad and liberal spirit

An independent critic and servant of society

Control of our own destiny

The University College

The Uni-di-versity

A relish for innovation and excitement

Freedom and responsibility of student and faculty

The New University

The Cathelepistemiad

The Fundamentals

Attracting, retaining, and sustaining outstanding people
Achieving and enhancing academic excellence
Optimizing quality, breadth, scale, excellence, and innovation
Sufficient autonomy to control our own destiny
A balanced resource portfolio adequate to support excellence
Keepin' the joint jumpin'

Notice that we have arranged around this core of values and characteristics a number of the specific paradigms discussed in the previous section. As we noted earlier, while none of these would be appropriate alone to describe the University as it enters its third century, all are likely components of our institution, as seen by various constituents. For example, we are already well down the road to becoming a **state-related university** with state support declining to roughly 10 percent of our resource base. It is highly unlikely that our appropriations will ever recover in relative terms to their previous levels in light of the limited capacity and competing priorities of our state.

So too, we are already well along in our efforts to transform Michigan into a **diverse university**, a university committed to building and sustaining a diverse learning community. Through major strategic efforts such as the Michigan Mandate and the Michigan Agenda for Women, we are becoming an institution more reflective of the rich diversity of our society. Further, we are learning how to weave together the dual objectives of diversity and unity in a way that strengthens our fundamental goal of academic excellence to better serve our state, our nation, and the world.

While some research universities may well decide to focus on advanced education and scholarship and leave general education to others, the University of Michigan should not only retain but greatly intensify its commitment to undergraduate education. The **university college** concept, whether as a formal self-standing entity or a virtual structure, seems an appropriate paradigm for the general education of lower-division students in a vast research university with an unusually broad array of disciplinary and professional majors. So too, several conditions point in the direction of a University College: the increasing need to broaden undergraduate education, to make it the responsibility of the entire University, and to change dramatically our pedagogical approaches so that we respond both to the changing learning styles of our students and to the rapidly expanding knowledge base. Our plan to construct a new Gateway Campus for undergraduate education will be key to this effort. This complex of new facilities—to be funded both through the Campaign for Michigan and through student fees (or state appropriation)—will not only contain the key learning spaces for undergraduate education, but it will be linked as well to our key museums (Art, Kelsey, Anthropology, Natural History) and performing arts centers (Power, Hill, Mendelssohn), thereby providing our undergraduates with a gateway to the knowledge of mankind.

Somewhat more controversial is the concept of the University of Michigan as a **world university**. Yet what could be more natural? Both our heritage as the flagship of public higher education and our location in the heartland of the nation provide us with an unusual claim on being the most "American" of universities. And over the past century, we have led the way both in opening up doors of opportunity to students from abroad and in developing outstanding programs in international studies. Further, we have strong relationships with most of the leading universities around the world. But there is another important reason for seriously considering shifting our focus to the world level: our leadership role in the development and implementation of the technology with the potential to make worldwide access possible.

Michigan has already made great progress toward becoming a **cyberspace university** through its management of NSFnet, the United States component of the Internet and the backbone of the National Research and Education Network. The University of Michigan's Ann Arbor campus has probably the most robust computing environment of any university in the world; and this environment—our students, faculty, and staff—are already linked to the world through our computer networks. Like many others, I believe that computer-communications technology will have a profound impact on the nature of teaching, scholarship, and service; and I believe Michigan is already in the vanguard of those knowledge-based institutions rapidly evolving to take advantage of this extraordinary resource.

This technology will likely make possible yet another vision of the University, the **Catholespistemiad**, in which we assume more direct responsibility for lifetime education. While I do not believe that the University should get into the business of managing K-12 systems, I do believe that we have both a public responsibility and a vested interest to be far more involved with primary and secondary education. We can certainly focus the vast resources of the University in a way that will better enable our public schools to meet their many challenges, particularly in the State of Michigan. But beyond that, I believe we must build a new relationship with our students and our graduates that will amount to a commitment to provide them with education through their lives. Using an array of devices ranging from short courses to distributed educational sites to computer networks, we should develop programs capable of delivering educational services to our graduates whenever they need it. In a sense, our alumni should always remain part of our organizational chart, just as they are always part of the Michigan family.

One of the most difficult tasks will be to move toward the paradigm of a **divisionless university**, an institution in which students and faculty are not constrained by disciplinary boundaries. Yet this change in the intellectual character of the University is one of the most important goals before us, since it is increasingly clear that knowledge, education, and scholarship simply cannot be organized or constrained along disciplinary lines. Of course, the University has long been known for strong interdisciplinary programs including the Institute for Social Research; the Howard Hughes Medical Research Institute; the Institute for Humanities; the Horace H. Rackham School of Graduate Studies itself; and hundreds of other institutes, centers, programs, seminars, and other informal groups. But far more must be done if we are to break the deification of the disciplines and allow our students and faculty the necessary freedom to keep pace with intellectual change. We must resist over-specialization in our degree programs at the undergraduate, professional, and graduate levels. We should allow our best faculty to become professors-at-large in the University, with the freedom to teach and conduct scholarship wherever they wish. We should allow interdisciplinary groups to form easily—but also insist that when they have outlived their usefulness, they may be easily abandoned. And we should develop a pool of resources, "venture capital" if you will, that we can use to stimulate new interdisciplinary efforts.

The University is also well-positioned to develop the vision of the **creative university**. Interestingly enough, the four schools whose intellectual nature place most stress on creativity—Music, Art, Architecture, and Engineering—are located together on the University's North Campus. Over the past several years the deans and faculties of these schools have been engaged in an exciting dialogue to better integrate their teaching and research efforts, to learn from one another how to better understand and teach the process of creation. One of the most important resources

for this effort will be a new North Campus facility, now under construction, that will bring these schools together in a "Media Union" that will contain libraries, classrooms, computer clusters, design spaces, and performance studios. The faculties of these schools even suggest that we should rename the North Campus the "Renaissance Campus" to reflect this new focus on the process of creativity!

It is important to consider the more abstract concept of the university suggested by the **knowledge server** paradigm. The different manifestations of the basic functions of creating, preserving, transmitting, and applying knowledge through the social institution of the university over the centuries is ample evidence that such evolution can be expected to continue.

Clearly, these visions of the University, these paradigm shifts, raise many questions which can only be answered through experience. For that reason, among the various visions I have proposed, the "university within a university" or the **new university** is among the most important, since it can provide a laboratory for developing the other visions. In our earlier discussion of the "new university," we have noted how it might be organized along highly non-disciplinary lines, perhaps even integrating together various degree programs. It might also be used to test various schemes to better link alumni to the University or to develop international experiences for our students. In such an academic unit, we would hope to build a risk-tolerant culture in which students and faculty are strongly encouraged to "go for it," in which failure is accepted as part of the learning process associated with ambitious goals rather than poor performance. And, the new university should be characterized by a level of excitement and adventure that will spread throughout the University.

Transforming the University

Any of these visions of the University of Michigan, circa 2017, would require great change. But, just as it has so many times in the past, it is clear that the University must continue to change and evolve if it is to achieve and sustain a position of leadership in the century ahead. Hence, it is appropriate to make a few remarks about the process of institutional change as it applies to our university.

Of course, such institutional change has become commonplace in the private sector, where companies frequently must "restructure" themselves to respond to rapidly changing markets. While such "restructuring," "repositioning," or "re-engineering" is sometimes associated with downsizing or "rightsizing," in reality it involves an intense process to rethink the values, mission, and goals of an organization and then to take steps to align these with the needs and desires of those it serves.

But herein lies one of the great challenges to universities. Our various missions and our diverse array of constituencies give us a complexity far beyond that encountered in business or government. As a result, the process of institutional

transformation is necessarily more complex.

Many elements of this transformation process are well underway. Indeed, the positioning strategy of Vision 2000, the "Twenty-six Goal" plan, spans many of the tasks necessary to transform the University; and we are well on the way toward achieving many of these goals.

But the most important and difficult part of any transformation process involves the culture of the institution. And it is here that we must focus much of our attention in the years ahead. We seek both to affirm and intensify Michigan's commitment to academic excellence and leadership. We seek to build more of a sense of community, of pride in and commitment to the University. And, of course, we also seek to create more of a sense of excitement and adventure among students, faculty, and staff.

The capacity for intellectual change and renewal has become increasingly important to us as individuals and to our institutions. Our challenge, as an institution and as a faculty, is to work together to provide an environment in which such change is regarded not as threatening but rather as an exhilarating opportunity to conduct teaching and scholarship of even higher quality and greater impact on our society.

Do we expect that any transformation effort would actually allow the University to achieve the paradigm shifts suggested by Vision 2017 during the remainder of this decade? Of course not. Rather, the real objective in this transformation effort must be to build the capacity, the energy, the excitement, and the commitment necessary to enable the University to move toward such bold visions. We need to remove the constraints that prevent the University from responding to the needs of a rapidly changing society, to remove unnecessary processes and administrative structures, to question existing premises and arrangements, and to challenge, excite, and embolden the members of the University community to embark on this great adventure.

In summary, our objective for the next several years should be to provide the University with the capacity to transform itself into an institution better capable of serving our state, our nation, and the world.

Concluding Remarks

The pace of change today is so great and our vision of the future is so hazy that some suggest we should settle for the positioning strategy represented by Vision 2000 and not attempt to venture further. With this more restricted strategy, the University would take the steps during the 1990s necessary to preserve its options, to create flexibility, to develop the capacity to adapt to and control change, and to open up opportunities. In a sense, by climbing to the top of the peak of higher education, the

University would then position itself to see farther into the future, to better under-
stand the alternatives before higher education, and better position itself to pursue
them. The Vision 2000 strategy would then be clearly identified as an effort to posi-
tion the University of Michigan for a changing world (universe) in a way that would
assume a far more organic, evolutionary view of our goals and the institution itself.

But such a laissez-faire approach to the future is not the Michigan style.
Rather, the University has tended to flourish when it has been enlivened—indeed,
emboldened—by an exciting, compelling, and challenging vision of the future.
Hence, while acknowledging the difficulties and the risks inherent in very long-range
planning exercises, we nevertheless believe it important to engage the University and
its various constituencies in a dialogue about the future of higher education and the
University of Michigan as it approaches its third century.

This essay is intended to launch our effort by identifying the key issues and
proposing some themes for further discussion by the University community. It is a
document intended to invite comments, criticism, and involvement. Further, the
proposed Vision 2017 should be regarded as a work in progress, an organic vision of
the future of the University that will evolve substantially as broader elements of the
University community become engaged in its development. The development and
articulation of a *Vision 2017* is a fitting exercise for an institution aspiring to become
"the leader and best."

Acknowledgment: This paper attempts to capture both the substance and the spirit
of University strategic planning efforts which have been underway for the past sev-
eral years. These activities have involved hundreds of faculty members across the
University, from senior scholars to junior faculty, from deans and chairs to executive
officers, working in an array of formal and ad hoc groups. Since this planning pro-
cess is organic and evolutionary in nature—in the spirit of logical incrementalism—it
will continue to broaden and change after more members of the University become
involved in it. While I accept full responsibility for this particular status report on the
effort, I also acknowledge that most of the ideas and creativity contained in report can
be attributed to others. It is therefore appropriate to express my gratitude for their
involvement and their wisdom.

[1] James J. Duderstadt, "The Challenge of Change", Presidential Inauguration Address, The University
of Michigan, October 6, 1988.
[2] Harold T. Shapiro, "Princeton University—Continuing to Look Ahead" (Princeton, 1993), 2.
[3] Eric Ashby, Adapting Universities to a Technological Society (San Francisco: Jossey-Bass Publishers,
1974), 22.
[4] Ralph Waldo Emerson, an oration delivered before the Phi Beta Kappa Society at Cambridge on
August 31, 1837 (Boston: James Munroe and Company, 1837), 4.
[5] Henry Tappan, University Education (1858), from Howard Peckham's The Making of The University

of Michigan 1817-1967 (Ann Arbor: The University Press, 1967), 34.

[6] Jacques Attali,. Millennium (New York: Random House, Inc., 1991)

[7] Ibid., 123.

[8] Howard Peckham. The Making of the University of Michigan 1817-1967 (Ann Arbor: The University of Michigan Press, 1967), 6.