A Case Study
in University Transformation

Positioning the University of Michigan for the New Millennium

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This book is dedicated to
the faculty, staff, and students
whose dreams, talents, and loyalty
have made the University of Michigan
such a remarkable institution.
They are truly the leaders and best!

Preface

Shortly after announcing my intention to leave academic administration and return to the faculty, after a decade of leading the University of Michigan as provost, acting president, and president, one of my colleagues slipped me a scrap of paper with the following quote:

> *There is no more delicate matter to take in hand, nor more dangerous to conduct, nor more doubtful of success, than to step up as a leader in the introduction of change. For he who innovates will have for his enemies all those who are well off under the existing order of things, and only lukewarm support in those who might be better off under the new.*
>
> Niccolo Machiavelli

To this, I could only respond "Amen!" Leading in the introduction of change can be both a challenging and risky proposition. The resistance can be intense, and the political backlash threatening. As one who has attempted to illuminate the handwriting on the wall and to lead an institution in transformation, I can attest to the lonely, hazardous, and usually frustrating life led by an agent of change.

Yet the times clearly call for such leadership. Our world is once again entering a period of dramatic social change, perhaps as profound as earlier periods such as the Renaissance and the Industrial Revolution—except, while those earlier transformations took decades, if not centuries, today's often take only a few years. We live in an era of breathtaking and accelerating change. If education was once simpler, our world was simpler too.

The most predictable feature of modern society is its unpredictability. We no longer believe that tomorrow will look much like today. Universities must find ways to sustain the most cherished aspects of their core values, while at the same time finding new ways to respond vigorously to the opportunities of a rapidly evolving world.

Universities have long defended the thorough but slow academic decision-making process which enables controlled change. "New" programs have been built up over the past two centuries over "old" ones in almost archaeological layers. But we can no longer afford the luxury of uncritical preservation. Obsolescence lies in store for those who cannot, in some manner, adapt to the new reality of our world.

In today's world, the fundamental purposes of the university—as a creator of knowledge, a trainer of young minds, a transmitter of culture—remain unchanged and undiminished in their importance. Yet, history suggests that the university must change and adapt if it is to preserve these traditional roles.

In spite of the growing awareness of these social forces, many within the academy still believe that change should occur only at the margins of higher education. They stress the role of the university in stabilizing society during a period of change rather than leading those changes. This too shall pass, they proclaim, and the university should hold fast to its traditional roles and character.

Others, both within and outside the academy, believe that significant change must occur not simply in the higher education enterprise but in each and every one of our institutions. Most of these see change as an evolutionary, incremental, long-term process, compatible with the values, cultures, and structure of the contemporary university.

There are a few voices espousing the belief that the dramatic nature and the compressed time scale characterizing the changes of our time will drive not evolution but revolution. These "dissenters," who are primarily outside the academy, express serious doubts about whether the challenges of our time will allow gradual change and adaptation. They point out that there are, in fact, no precedents we can follow. Some even suggest that long before reform of the educational system comes to any conclusion, the system itself may collapse.

It was our belief in the University of Michigan administration that the forces driving change in higher education, both from within and without, were far more powerful than most realized. The pace and nature of change affecting the higher education enterprise both in America and worldwide would be considerably beyond that which could be accommodated by business-as-usual evolution. As one of my colleagues put it, while there is certainly a good deal of exaggeration and hype about the changes in higher education over the short term—meaning a decade or less—it is difficult to stress too strongly the profound nature of the changes likely to occur in most of our institutions and in our enterprise over the longer term.

Part of the challenge we face in higher education stems from our very success. Americans have built the finest system of higher education in the world. The problem is that we have built universities for the 20th Century, and that century has come to an end. The universities that we have built, the paradigms in which we have so excelled, may no longer be relevant in the world before us.

Change has always characterized the university, as it has sought to preserve and propagate the intellectual achievements of our civilization. The university has endured as an important social institution for a millennium, in part because it has evolved in profound ways to serve a modernizing world. Higher education in America has adapted to embrace the concept of a secular liberal education, to weave scholarship into its educational mission, and to broaden its activities to provide public service and research in response to societal needs.

The past decade has witnessed significant development in higher education, as our institutions have attempted to adapt to the changing nature of resources and to respond to public concerns. The changes in the university that have resulted have been important, but they have been largely reactive rather than strategic. For the most part, our institutions still have not grappled with the extraordinary implications of the age of knowledge and culture of learning that will likely be our future. While most of our colleges and universities are changing to adapt to a changing world, they are not yet transforming themselves into educational institutions suitable for our future.

This is the principal challenge to higher education as we approach a new century. It represented our top priority at the University of Michigan during my presidency. We sought to integrate the principle and practice of change into the day-to-day life of the institution, even as we held to the fundamental values that give us direction in a shifting world. Beyond simply adapting to a time of change, we also sought to influence the nature of our changing world. Instead of simply following society, we tried to be leaders in the journey.

As will be described in Part IV of this book, the University of Michigan launched a program intended to guide it into the next century. 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. Key was the recognition that in a rapidly evolving environment, it was important to implement a process that was not only capable of adapting to fluctuating conditions, but also capable of modifying the environment itself in the decades ahead.

The first phase of this effort was essentially a *positioning strategy*. A plan known as *Vision 2000* was set in motion to position the University of Michigan for a leadership role in higher education during the next century. By establishing a series of specific goals and associated initiatives, the University became stronger, more diverse, and more exciting. This strategy fell short, however, because it achieved leadership only within the current paradigm of the research university in 20th Century America. It became increasingly clear that this paradigm would no longer be adequate to respond to the great changes occurring in our society and our world.

Hence, in the early 1990s, the University turned toward a bolder vision aimed at providing leadership during a period of global transformation. This objective, termed *Vision 2017* in reference to the date of the two-hundredth anniversary of the University's founding, was designed to provide Michigan with the capacity to re-invent the very nature of the university, to transform itself into an institution better capable of serving a new world in a new century. This *transformation strategy* contrasted sharply with the earlier positioning strategy that guided us during the 1980s. It sought to build the capacity, the energy, the excitement, and the commitment necessary for the University to explore entirely new paradigms of teaching, research, and service. It sought to remove the constraints that would 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 a great adventure.

The task of developing a vision for institutional transformation is daunting when the future is so dimly understood, when both our challenges and our opportunities appear so numerous, diverse, and complex. With each step we took to position the University of Michigan during the 1990s, we became more convinced that the changes that would likely occur in higher education were far more profound and would occur far more rapidly than we had first surmised. We concluded that the most appropriate strategy for the near term would be one of experimentation—of building and examining an array of new educational and research paradigms. While such an exploratory vision was disconcerting to some members of the community, and frustrating to others, there were many on our campus and beyond who viewed this phase as an exciting adventure.

This book is intended to describe our experience in developing and then executing these successive strategies of positioning and transformation. While intended primarily for members of the University of Michigan community, it also serves as a case study that might benefit other institutions. While the size and complexity of

the University of Michigan may be unusual, the challenges and opportunities it has faced, the experiences it has had, and the lessons it has learned are similar to those characterizing many other academic institutions.

At Michigan we learned that the capacity for intellectual change and renewal has become increasingly important to us as individuals and to our institutions. The challenge for us, as academic institutions, as faculty, and as administrators, is to work together to provide an environment in which such change is regarded not as a threat but rather as an exhilarating opportunity to engage in the primary activity of a university: learning, in all its many forms, as a means to better serve our society and our world.

There should be little doubt that higher education will flourish in the decades ahead. In a knowledge-intensive society, the need for advanced education will become ever more pressing, both for individuals and for society more broadly. It is also likely that the university as we know it today—or rather, the current constellation of diverse institutions comprising the higher education enterprise—will transform in exciting and probably unforeseen ways.

Change will not only be the challenge to the American university, it will be the watchword for the years ahead. With change will come unprecedented opportunities for those universities with the talent and the will to respond. We must work hard to develop university communities into arenas where uncertainty is an exhilarating opportunity for learning. The future belongs to those who face it squarely, to those who have the courage to transform themselves to serve a new society.

The future is not yet written, but we should not wish it any other way. The excitement that comes with uncertainty and discovery draws us inexorably into tomorrow.

JJD
Ann Arbor

Acknowledgments

The strategic effort described in this book succeeded only because of the wisdom, skill, and labor of many committed members of the University community. During the decade covered by this book, the University of Michigan was particularly fortunate to have a truly remarkable executive officer team, many of whom continued on to other significant leadership roles in higher education, all of whom had extensive experience with higher education, and all of whom are owed a deep debt of gratitude.

The Team:

Provost: Chuck Vest, Gil Whitaker, Bernie Machen
VP-Chief Financial Officer: Farris Womack
VP-Research: Linda Wilson, Bill Kelly, Homer Neal
Graduate Dean: John D'Arms, Bob Weisbuch
VP-Student Affairs: Henry Johnson, Mary Ann Swain, Maureen Hartford
VP-University Affairs: Walt Harrison
VP-Development: Jon Cosovich, Joe Roberson, Tom Kinnear
Secretary: Dick Kennedy, Roberta Palmer
Assoc VPs: Doug Van Houweling, George Zuidema, Chuck Moody, Lester Monts, Rhetaugh Dumas, Harold Jacobson, John Jackson, Lisa Baker
Chancellors: Blenda Wilson, Clint Jones, Jim Renick, Charlie Nelms
Athletics Directors: Bo Schembechler, Jack Weidenbach, Joe Roberson
Assistants: Robin Jacoby, Shirley Clarkson, Connie Cook, Ejner Jensen Susan Lipschutz

During this period, Michigan was clearly a "deans' university," providing deans with unusual authority and opportunity, depending heavily upon their leadership, and attracting some truly remarkable academic leaders. And, of course, the progress achieved by a university of the size and complexity of the University of Michigan depends on the efforts of talented and committed faculty, staff, and student leaders. Hence, in a very real sense, this document should be regarded as a summary and a tribute to all of their extraordinary achievements.

It is important to acknowledge the work of all of those who have worked with me over the years in drafting the array of speeches, reports, policy documents, memoranda, and other materials that are so clearly linked with this effort: Shirley Clarkson, Robin Jacoby, Connie Cook, Ejner Jensen, Aaron Schutz, Mary Jo Frank, Carole LaMantia, and Liene Karels. Thanks are due as well to Julie Steiff and Elise Frasier for their editing efforts. And, or course, neither the president nor the University could long function without the talents and effort of Nona Mustard, Secretary to the President.

Finally, it is essential to recognize the extraordinary impact that the other half of my presidential team and first lady of the University, Anne Duderstadt, had during this decade. Only those who serve in a major university presidency understand the critical role played by the president's spouse. Such presidencies are a team endeavor. They could never be done, or at least done well, by a president alone, particularly in a university the size, scope, and complexity of the University of Michigan. Most presidents' spouses, and certainly Anne Duderstadt, work just as hard, and frequently have just as much impact, as the president. The only difference is that they rarely receive the recognition, the respect, the understanding, and the support that their critical role would merit in other circumstances.

Anne Duderstadt's role was far-reaching, with an array of formal activities related to institutional advancement (e.g., fund-raising, politics, entertaining VIPs) and innumerable managerial duties. Yet, probably even more significant during this period was the role she played in several key University efforts: launching the University History and Tradition's Committee and its many activities, stimulating the Michigan Agenda for Women, and, in many ways, setting the standards for excellence in University activities. She was not only a critical member of the University leadership. She was probably the best appointment I made during my administration!

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Part I

The Challenge of Change

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A hot summer day in late August. Still air under the wide, timeless branches of the tree canopy shading the University of Michigan Diag. A moment of quiet before Ann Arbor begins to fill once again with students and faculty returning for the fall term. The only premonition of impending change: the muffled thunder of an approaching summer storm.

Today, that storm of change is our reality. Our world is once again entering a period of dramatic social change, perhaps as profound as earlier periods such as the Renaissance and the Industrial Revolution—except, while those earlier transformations took centuries, today's often take only a few years. We live in an era of breathtaking and accelerating change. If education was once simpler, our world was simpler too.

Universities have long defended the thorough but slow academic decision-making process that enables controlled change. "New" programs have built up over two centuries in almost archaeological layers over "old" ones. But we can no longer afford the luxury of uncritical preservation. Obsolescence lies in store for those who cannot, in some manner, adapt to our new reality.

The magnitude 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 19th Century when the comprehensive public university first appeared, and the years following World War II when the research university evolved to serve the needs of postwar America.

Some believe that we are going through a period of change in our civilization as momentous as any in our earlier history. In contrast to earlier social transformations that evolved over centuries, the changes charactering our times will occur in decades or even years. This time of great change, of shifting paradigms, provides the context in which we must consider the changing nature of the university itself. We must take great care not simply to extrapolate the past but, instead, to examine the full range of possibilities for the future.

Chapter 1 *Introduction*

The most predictable feature of modern society is its unpredictability. We no longer believe that tomorrow will look much like today. Our world is once again entering a period of dramatic social change, perhaps as profound as earlier periods such as the Renaissance and the Industrial Revolution—except, while those earlier transformations took centuries, today's often take only a few years. The challenge, both to us as individuals and to our institutions, is to learn to adapt to and thrive in an era of breathtaking and accelerating change.

There is a broad consensus, both among leaders of American higher education and within our various external constituencies, that our era must become a period of transformation if our universities are to respond to the challenges, opportunities, and responsibilities before them. On our campuses, just as in broader society, the discussions are dominated by the theme of change. Many of our institutions have moved beyond discussion to embark 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.

Change is the principal challenge to higher education as we approach a new century. Universities must find ways to sustain the most cherished aspects of their core values, while discovering new ways to respond vigorously to the opportunities of a rapidly evolving world.

Change was also the major challenge to the University of Michigan during my presidency. It was our task to integrate the practice of change into the day-to-day life of the institution, even as we held tightly to the fundamental values that gave us direction in a shifting world. But, beyond simply adapting to a time of change, we sought to influence the nature of our changing world. Instead of simply following society, we tried to be leaders in the journey.

The State of American Higher Education

The fortunes of higher education in America seem to ebb and flow from generation to generation. The principal themes of America's colleges and universities during the latter half of the 20th Century have been diversification and growth. In the three decades following World War II, strong public investments allowed our system of higher education to expand rapidly to keep pace with expanding populations and growing aspirations. The research university became the cornerstone of our national effort to sustain American leadership in science and technology, thereby ensuring both our economic prosperity and military security. The triad mission of our colleges—teaching, research, and service—acquired a degree of prestige and public support unprecedented in our history.

Today, higher education faces a much different world with its own unique challenges. In many parts of the country, the pool of college-bound students graduating from high school has been declining for two decades, as the surge of post-war baby boomers has swept through. Although we hit the bottom of this demographic dip in the mid-1990s, growth in this traditional source of college students will be modest for at least another decade, with the exception of sunbelt states experiencing the impact of immigration. Yet at the same time, the increasing skill and education requirements of the high performance workplace are spurring a rapid growth in the number of adult college students. Universities are also facing both the challenge and the uncertainty of an aging professoriate, no longer compelled to retire after the removal of mandatory retirement caps and increasingly posing a logjam for younger academicians.

Public support of higher education has leveled off in the face of other competing social needs. As the share of college costs financed by both state and federal governments has fallen, the share borne by families has inevitably increased, returning to relative levels more typical of the 1950s than the 1970s. And as families have been asked to bear a larger share of the costs of educating their offspring, the outcry about the "excessive" cost of a college education has reached a crescendo.

These voices join a chorus expressing a multitude of concerns about the American university. Like so many other institutions in our society, we find ourselves roundly criticized from the right, the left, and the center—indeed, even from within by many of our own faculty, students, and staff—for flaws large and small, fundamental and trivial, real and imagined. The American university is clearly under attack: criticized by parents and students for the uncontrolled escalation of tuition; attacked by state

legislatures and governors for insufficient attention to state needs; investigated by the Department of Justice for price fixing of tuition and financial aid; criticized by Washington and our own faculties for rising overhead costs; attacked by Congress for misconduct in research; censured by legislators for the tenure system; attacked by the left and the right for the quality and nature of undergraduate education; and generally blasted by the media in essentially any and all of our activities, from teaching to health care to athletics.

What a contrast with earlier times. Throughout much of American history, the university was a respected, if largely ignored, social institution. Our mission was a simple one: to prepare the next generation of leaders of our society. Today, however, the university finds itself identified as a key economic, political, social, and cultural institution as the result of extraordinary transformations occurring throughout our nation and the world.

Today, our nation, just as the world, faces the challenge of making the transition from a resource-intensive to a knowledge-intensive society. One of the primary sources of intellectual capital—creativity, innovation, and well-educated graduates capable of applying this new knowledge—will be the university. There has never been a time in our nation's history when our colleges and universities will be asked to play a more significant role.

Yet there has also never been a time when the university was the target of greater concern and more criticism from our society, ranging from elected public officials and corporate leaders to the press and members of the public at large. While we may disagree with many of our critics, we should nevertheless listen carefully to them, consider, and respond. Many of the concerns voiced by our multiple constituencies contain a good deal of truth. Others, while perhaps not on target, may reveal deeper concerns worthy of attention.

Among this array of criticisms, one in particular stands out: the growing frustration of society with the hesitancy or reluctance of the university to face up to the challenge of change. In our rapidly changing world, corporations have undergone restructuring and re-engineering. Governments and other public bodies are being overhauled, streamlined, and made more responsive. More individuals are facing a future of impermanence, in their employment, in their homes, even in their families. Even the nation-state itself has become less relevant and permanent in an increasingly interconnected world.

Yet, at least according to our critics, the university has responded to the needs of a changing society largely by defending the status quo. Change has usually occurred in higher education on glacial time scales—not surprising since the career of a tenured faculty member typically spans three decades or more. Even in the late 20th Century, when our society, our nation, and the world itself are changing rapidly, the university tends to frame its contemporary roles largely within traditional paradigms. It resists any major changes in curricula or pedagogy. Students continue to be evaluated and credentialed relative to "seat time" or course credit hours rather than learning outcomes. The technology that is changing our world has largely bounced off the classroom, which continues to function largely as it has since the 19th Century. Tenure is seen not as a protection for academic freedom but rather as a perquisite that shields the faculty from accountability and change.

At times we are tempted to respond to our critics: "We agree with you. Our universities are not good enough, not accountable enough, and not smart enough. But they are the best in the world." And in fact, the American university is the envy of the world, both as attested by the multitude of foreign students seeking education in our institutions and by the effort of other nations to imitate the American approach to higher education. But this argument may no longer suffice, particularly if the university should become more detached from a changing world or should other social institutions compete more effectively for our roles.

Beyond stubbornness and deeply entrenched practices such as tenure, consensus decision making, and disciplinary rigidity, there are other significant forces that inhibit change in higher education. The extraordinary complexity of the university, its many missions, and its complex array of constituencies makes any level of transformation difficult. Furthermore, the diversity characterizing the higher education enterprise in America leads to parallel diversity in the responses to change—real or proposed—at the microscopic level of individual institutions. So, too, the capacity of universities to respond to calls for reform has been undermined by the shifting rules of the game for public financing of higher education. Finally, the very nature of the modern university, structured as a loosely coupled collection of highly entrepreneurial faculty members, makes change far more reactive than strategic, more short term than long term. All these factors make change more difficult—but do not lessen its importance to our institutions.

The Challenge to Michigan

Change and transformation are no strangers to the University of Michigan: our institution 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. We rapidly expanded our professional schools to respond to societal needs during the past century. We evolved into one of the nation's leading research universities following the war years. We have served as a stimulus for major social change in American society. Today, our heritage of leadership calls on us to transform ourselves once again to better serve a changing nation and a changing world.

In almost every address I gave during my presidency, in every available forum, I stressed two recurring themes: leadership and change. My inauguration address in 1988 suggested three forces that would drive change in our society: the increasing diversity of our population, the internationalization of all aspects of our society, and the degree to which knowledge itself was becoming the key strategic resource determining prosperity, security, and social well-being. 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 the America of the 21st Century?*
>
> *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?*
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> *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 annual "State of the University" addresses over the years focused on different aspects of required change and the challenges and opportunities these presented to the University. An early address outlined many of the key concerns and constraints facing higher education. A second 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. Another considered the challenge of intellectual change to our teaching and scholarship and to our current disciplinary organization of the university. Each of these presentations stressed that the University of Michigan had a long heritage of providing leadership to higher education during periods of change, and we were positioned to do the same in the 21st Century.

A Philosophy of Leadership

In approaching university leadership, some presidents adopt a fatalistic attitude, believing that the university is basically unmanageable. They focus their attention on a small set of issues, usually tactical in nature, and let the institution essentially evolve in an nondirected fashion in other areas. For example, they might pick a few items to fix every few years—state relations or private fundraising or student life. This *laissez-faire* approach assumes that the university will do fine on its own. And, in fact, most institutions can drift along for a time without strategic direction.

Over a longer period of time, however, a series of small tactical decisions will dictate a *de facto* strategy that may not be in the long-range interests of the university. At Michigan, for example, a sequence of such tactical resource allocation decisions during the 1960s led to investment in a number of programs (e.g., dentistry, education, and natural resources) that were to experience major enrollment losses in the 1970s. Because the University did not have adequate mechanisms in place to adjust resources as enrollments dropped, these losses led to serious problems by the 1980s when resources became more limited. While the decisions leading to selective growth in these units may have responded to the tactical situation at the time, they were not guided by a broader strategic vision of the future of the University.

My administration believed that a far more strategic and opportunistic approach to leadership was necessary for the last decade of the 20th Century. To this end, we aimed at developing flexible strategies that avoided rigid paths ("deep ruts"). This groundwork would best position us to take advantage of windows of opportunity to pursue well-defined objectives as they arose. In a sense, we utilized an informed dead-reckoning approach, in which we selected our strategic objectives (where we

wanted to go) and then followed whichever path seemed appropriate at the time, possibly shifting paths as strategic plans were updated and as additional information and experience indicated.

Perhaps because of my background as both a scientist and an engineer, the leadership style of my presidency had an additional characteristic: we never assumed that the planning framework was rigid. We believed that what might appear first as constraints could, with skill and cleverness, frequently be transformed into opportunities. The key was to begin with the challenging question of asking what one could do to modify the planning environment and never to accept the status quo as limiting the University's options.

We acknowledged that it was not appropriate, or possible, to manage centrally an institution of the size, complexity, and diversity as the University of Michigan. But we did believe in the importance of establishing institutional priorities and goals and instituting a process that encouraged leadership at all levels of the University to move toward these objectives. We sought an organization with broad decentralization of authority, but strong central strategic direction and information.

The Approach

The approach to leadership established during my presidency involved three quite distinct phases:

Phase I: Consultation

The early phase involved setting and publicizing the themes of challenge, opportunity, responsibility, and excitement. During this phase, we spent much of our time meeting with various constituencies both on and off campus—with students, faculty, and staff, with alumni and friends, and with targeted groups throughout the state, the nation, and the world. In hundreds of meetings, we listened to their aspirations and concerns, challenged them, and attempted to build a sense of excitement and optimism about the future of the University. This was a period of listening, learning, and thinking.

We sensed the extraordinary quality and excitement "out in the trenches," among the faculty, staff, and students of the University. We found individuals deeply committed to quality teaching, scholarship, and service. We began to understand more clearly the very special nature of the University of Michigan, its impressive intellectual breadth and the diversity of its teaching and research.

Phase II: Positioning

The second phase of our leadership, while not so public, was far more proactive. Together with dozens of groups comprised of hundreds of faculty, staff, and consultants, we developed a strategic plan to position the University for a leadership role. This plan, given the code name *Vision 2000,* was then executed through a broad array of initiatives.

During this period, we determined some of the most important strategic directions for the University. These included the Michigan Mandate, rebuilding the campuses of the University, financial restructuring, the Campaign for Michigan, strengthening state and federal relations strategies, improving the research environment, the undergraduate experience, and student life. Associated with these initiatives were the recruitment and appointment of key leaders at various levels of the University, from executive officers and deans, to chairs and directors.

Largely as a result of these efforts, the University grew rapidly in strength, quality, and diversity during the early 1990s. One by one, the various goals of the Vision 2000 strategy were achieved. Yet, even as we executed the plan and moved the university ahead, we had growing concerns. We certainly could take great pride in what the Michigan family—faculty, students, staff, alumni, and friends—accomplished during these stressful times. Working together, we managed to strengthen Michigan's position as one of the leading universities in the world. But we came to realize that we had strengthened the University within a 20th-Century paradigm, and that century was rapidly coming to an end.

We responded by challenging ourselves with the question of whether the university that we had built and the paradigms in which we have so excelled would remain relevant in a rapidly changing world. The America of the 20th Century was a nation characterized by a homogeneous, domestic, industrialized society—an America of the past. Our students would inherit a far different nation—a highly pluralistic, knowledge-intensive, world-nation that would be the America of the 21st Century.

It was during this second phase that we sensed that we were entering a period of dramatic change for higher education. Hence, by the early 1990s, we began to shift the University into a third phase, progressing from a *positioning* effort to a *transformation* agenda.

Phase III: Transformation

The more we planned and strategized, the more we became convinced that the University faced a pivotal moment in its history, a fork in the road. Taking one path could, with dedication and commitment, preserve the University as a distinguished—indeed, a great—university, but only one among many such institutions. But there was another path, a path that would require great vision and courage in addition to dedication and commitment. By taking this second path, the University could not only sustain its quality and distinction, but it could also achieve leadership.

We believed the University could—and should—accept its heritage of leadership in public higher education by taking that second path. We saw the 1990s and beyond as a time similar to that extraordinary period in the late 19th Century when the University of Michigan was a primary source for the innovation and leadership in higher education. The University stood poised to influence the development of a new paradigm of what the university will be in 21st-Century America, a new model capable of responding to the changing needs of both our state and our nation. This would require clear vision, an unusual commitment to excellence, and strong leadership, and we believed our institution was up to the challenge.

Hence, our strategic focus shifted from building a great 20th-Century university to transforming Michigan into a 21st-Century institution. We launched a series of key initiatives intended as seeds for a university of the future. Certainly highly visible efforts such as the Michigan Mandate and financial restructuring were components of this effort. Beyond these were a series of visionary experiments such as the Media Union, the School of Information, the Institute of Humanities, the Global Change Institute, and the Office of Academic Outreach, all of which were designed to explore new paradigms for higher education. Since several of these initiatives were highly controversial, such as a new form of decentralized budgeting that transferred to individual units the responsibility both for generating revenues and meeting costs, it was important that the president return to a more visible role. In a series of addresses and publications, I challenged the University community to make our plans a success, stressing the importance of not only adapting to but relishing the excitement and opportunity of a time of change.

The Challenges

The challenge to the University of Michigan during the 1990s, just as it was to all of higher education in America, was the challenge of change. To illustrate both the scope and complexity of this challenge, it is useful to consider the mandate for change in several areas critical to the University.

Education

No longer static and dependable commodities, today's facts quickly become tomorrow's myths. Our students, when they leave us, will enter a society whose very foundations are challenged almost daily. The workers and citizens of the next century must not only continue to learn over a lifetime, but they will also need to make difficult decisions in the midst of uncertainty, decisions that will collectively affect our entire society.

No more compelling challenge has faced our universities—particularly, our research universities—than reaffirming our commitment to education, especially for undergraduates. If our undergraduate students are to love the process of learning, they must work closely with those who are deeply involved in the excitement of discovery. Students, we have learned, must be involved in the struggles for new knowledge. They need to see that "thought" is never completely formed; it is happening all the time.

At the University of Michigan, instead of apologizing for our size, we began to take advantage of our unique strengths. We worked to connect undergraduates more directly with the vibrant intellectual activity going on around them—whether through hundreds of small seminars, student participation in faculty research projects, or broader community projects. Increasingly, even our youngest students are learning to question the authority of intellectual sources, instead of simply imbibing accepted truths. We assume they are creative actors, not just listeners. Our curriculum aims to involve students in the deep complexity of real-life problems, problems that have no "right" answers. Instead of giving students the facts of science or history, we strive to introduce them to the critical world views of scientists and historians.

The old paradigm of heroic individualism in education and elsewhere has become an unrealistic myth. Today's complex social and intellectual problems overwhelm the limited resources of isolated individuals. In universities, in government, and in the business world, those who succeed are now those who collaborate with others. At

the University of Michigan, from our chemistry laboratories, to our engineering classes, to our business school internships, and beyond, we realized the need to organize student inquiry increasingly around teams.

Our professional schools also faced dramatic transformations. Our medical and business curricula, for example, needed to be restructured to reflect modern changes in practice. Our graduate programs required reform in order to reduce time to degree and to create more opportunities for interdisciplinary majors.

Even intercollegiate athletics would not be spared from the challenge of change. Like most universities, we needed to align athletics more closely with academic priorities. We sought to help coaches expand their roles as teachers, to give athletes the extracurricular opportunities of other students, and to develop clear policies in many areas, ranging from admissions to student behavior. In addition, we felt compelled to set aside specious arguments and commit to full gender equity in athletics.

Research

The basic structure of today's academic research enterprise was established fifty years ago in the aftermath of World War II. The national research policies adopted at that time created a partnership between the federal government and the nation's leading universities. These policies were based on the premise that the nation's health, economy, and military security required continual deployment of new scientific knowledge, and that the federal government was obligated to ensure basic scientific progress and the production of trained personnel in the national interest. They declared that federal patronage was essential for the advancement of knowledge. These policies also accepted a corollary principle: that the government had to preserve "freedom of inquiry," to recognize that scientific progress results from the "free play of free intellects, working on subjects of their own choice, in the manner dictated by their curiosity for explanation of the unknown."[2]

The resulting partnership between the federal government and the nation's top universities has had extraordinary impact. It has made America the world's leading source of fundamental scientific knowledge. It has also produced the well-trained scientists and engineers capable of applying this new knowledge. This academic research enterprise has played a critical role in the conduct of more applied, mission-focused research in a host of areas, including health care, agriculture, national defense, and economic development.

As important as research universities are today in our everyday lives, it seems clear that in the future, they will play an even more critical role. They will become the key players in providing the knowledge resources—knowledge itself and the educated citizens capable of applying it wisely—necessary for our prosperity, security, and social well-being. As Erich Bloch, former Director of the National Science Foundation, stated in Congressional testimony: "The solution of virtually all the problems with which government is concerned, health, education, environment, energy, urban development, international relationships, space, economic competitiveness, and defense and national security, all depend on creating new knowledge—and, hence, upon the health of America's research universities."[3]

Unfortunately, in recent years, the basic principles supporting this extremely productive research partnership between research universities and the federal government have begun to unravel, so much so that, today, this relationship is rapidly changing from a partnership to a procurement process. The government is increasingly shifting from being a partner with the university—a patron of basic research—to becoming a procurer of research, just like other goods and services. In a similar fashion, the university is adopting the role of a contractor, regarded no differently from other government contractors in the private sector.

The most ominous warning sign for academic research is this erosion, even breakdown, in the fifty-year partnership uniting government and universities. Scientists and universities must now question whether they can depend on the stable and solid relationship they have come to trust, and that has paid such enormous dividends in initiative, innovation, and creativity. It is truly perverse that the partnership that has been, in large measure, responsible for our long, undisputed national prosperity and security, should be threatened at the very moment when it has become most critical for our future.

Service

The comprehensive university is a distinctively American institution. These unique institutions are a primary societal mechanism for the creation, preservation, and dissemination of knowledge through their instructional and research activities. They are also expected to apply this knowledge to serve society as a whole.

In many ways, the university has become the very embodiment of the American dream. It provides opportunity through education. Its research fuels the progress of industry, the quality of health care, and the security of our nation. Its cultural activities enrich our lives. It helps to protect our natural environment. It accepts a profound responsibility to serve our society at a multitude of levels.

Public service is one "real-world" extension of the research, teaching, and professional expertise of the faculty. The support of public universities, through general taxation, implies particular service responsibilities, and the commitments that such institutions are willing to assume for society cannot remain implicit. The public has the right to ask how public universities are responding to its needs, and these institutions have an obligation to provide a clear answer.

Most large universities have launched a diverse range of efforts to strengthen local communities. Many programs draw on the expertise of all the university's schools and colleges, supporting local communities with legal, urban planning, public health, environmental, and other services. Some programs are based on student volunteers and internship. As critical catalysts for change, community service projects draw students, faculty, and staff into neighborhoods to serve and to learn that our true community encompasses the world, not just the campus.

As a haven for those in critical need, our medical centers have served society with the most advanced care for decades. Each year, our emergency helicopters transport thousands of critically-ill patients, our hospitals serve millions, and our doctors develop the medical breakthroughs of the future. Today, we have branched out into community care, breaking ground on new outpatient facilities throughout the nation. We operate health centers at local schools, offering a wide range of health, education, and social services to students and their families. From cuts and bruises to the most traumatic injuries and life-threatening illnesses, our academic health centers provide a sense of security and hope.

Our universities are also at the forefront of efforts to create new jobs from new knowledge. Our technology-transfer activities encourage researchers to bring their discoveries to the marketplace. As the world economy enters a time of unpredictable change, the university is working hard to ensure that our nation sustains momentum as a economic powerhouse. We work directly with business and industry, helping to produce and compete more efficiently.

Today's university is more heavily involved than ever in public service activities, ranging from economic development to health care delivery to strengthening inner-city schools. Yet, in this world of intense economic competition, technological change, and social complexity, public universities are continually besieged by requests, demands, and exhortations to do even more to serve the public.

In the late 20th Century, the public's willingness to support higher education tends to be determined not by the value placed on its traditional missions of teaching and

scholarship, but instead, by the perception of direct and immediate benefit stemming from its public service activities. Populism and parochialism are again affecting public attitudes toward higher education. The themes of today are no longer "excellence in teaching and research," but, rather, "excellence for whom and for what purpose"—or, more to the point, "What have you done for *me* lately?"

Diversity

In our struggle against discrimination, America has come a great distance, but a terribly long journey remains. Separate "white" and "colored" drinking fountains passed from the scene decades ago, but racism remains, and it is more subtle and more difficult to root out. Women still face violence, discrimination, and sexual harassment. Millions of our citizens languish in depressed inner-city and rural areas, struggling valiantly against terrible schools, desperate poverty, and minimum-wage jobs.

To be a public university is to accept the challenge of egalitarianism. As we have learned, simply opening doors and providing access has not been enough. Many groups suffer from social, cultural, and economic discrimination. Those who have managed to find their way to universities have faced immense barriers in a society still largely designed to serve the needs of a white, male majority. For too long, Michigan was blind to the pain of campus life for those who were "different." We cannot undo the past, but we can work to change the present and the future.

We know that 21st-Century America will be one of the most diverse nations in the world. Yet, our students arrive on campus from economically and racially segregated communities. One of our greatest challenges will be to model a diverse and egalitarian democracy in our own community, resisting the often violent splintering in our society and world. Academic success itself depends on our ability not merely to tolerate, but to harness the potential that plurality brings.

The University of Michigan has long played a leadership role in extending the opportunities of higher education to broad elements of our society. The institution had been at the forefront of higher education, grappling with the difficult issues of plurality and promoting equality. Yet despite these efforts, it had become obvious by the end of the 1980s that the University had not made adequate progress in its goal to reflect the rich diversity of our nation and our world among its faculty, students and staff. Simply providing access to our institutions was not sufficient to provide full opportunity for those groups which continued to suffer from social, cultural, and economic discrimination in our society. People from underrepresented groups who

did manage to find their way here faced serious barriers to their success and advancement in a University (and national) culture still largely dictated by a white, male majority.

We knew we had to do more. We also knew that the University would have to change dramatically if it were to remain faithful to its century-old commitment of making education available to all people. Diversity is not just about "numbers"; it requires profound structural change. An egalitarian community cannot be created in a single mighty act—it requires a dialogue that never truly ends.

Increased financial aid programs were needed to ensure that a college education was affordable to any academically qualified student, regardless of income. Many of our policies and much of our physical infrastructure needed to be modified to make our campus and community more accessible and responsive to students with disabilities. And, we needed to expand our anti-discrimination policies to include other characterististics such as sexual orientation

The political climate in Washington, state actions such as Proposition 209 in California, and a series of court tests such as the Hopwood case in Texas, raise serious questions about our national commitment to achieve equity and social justice in education for all Americans. Polls suggest that most Americans today oppose using mechanisms such as affirmative action to remedy social inequities. There seems to be a new postmodernist, deconstructionist force in politics aimed at reversing past social commitments and destroying existing social institutions—without providing any vision of what will replace them.

At a time when some were trying to squelch discussions about diversity—labeling it just another example of political correctness—we believed it critical that the academy talk openly, with boldness, about the need for more, not less, diversity. It was time to stand up and be counted. It was more important than ever to reaffirm the importance of diversity for our institutions and our society.

A Learning Environment

Vibrant intellectual communities provide shelter from the elements, nurturing growth for all who join in fellowship. Over the past decade, our universities have struggled to eliminate barriers to academic success, barriers of fear, and barriers between individuals. It is safety—safety to explore, to speak one's mind without fear of reprisal—that nourishes profound advances in knowledge. The shared values of a university—honesty, intellectual rigor, and trust—must serve as our foundation

The dedication of our faculty to all aspects of learning—their openness to new and different ways of understanding through their teaching, research, and service—has long served as a model for future generations of scholars. As the 1990s began, faculty needed to respond to new challenges, particularly the different ways today's students learn, by encouraging group work, developing multimedia, and experimenting with new techniques for learning. It often required faculty to tread on unfamiliar ground in the world of technology in order to keep up with their students.

Another challenge was to enable academic excitement to spill over into our residential environment. Living-learning communities would fundamentally change what it meant to be a student. Because all of our residence hall rooms would be wired for computers and video, students would soon be able to "visit" with faculty during televised office hours, search for information on the Internet, or watch programs produced by other students on closed circuit television.

The classroom itself might even be supplemented by more appropriate and efficient learning experiences. Indeed, such a paradigm shift could be forced upon the faculty by the students themselves. Today's students are members of the "digital generation." They have spent their early lives surrounded by robust, visual, electronic media. They approach learning as a "plug-and-play" experience, unaccustomed and unwilling to learn sequentially; rather, they are inclined to plunge in and learn through participation and experimentation. While this type of learning is far different from the linear, pyramid approach of the traditional university curriculum, it may be far more effective for this generation, particularly when provided through a media-rich environment. Students seek a highly interactive and collaborative process. This is the way they learn. Our styles of learning are not theirs.

Hence, it could well be that faculty members of the 21st-Century university will find it necessary to reinterpret their roles as teachers as designers of learning experiences, processes, and environments. In so doing, 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, teachers may 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 traditional teacher.

As we approached the end of the 20th Century, we were on the threshold of a revolution that would make the world's accumulated information and knowledge accessible to individuals everywhere. This possibility had breathtaking implications for education, research, and learning. At universities, there was an increasing sense that

cyberspace would not permit business-as-usual. Rather, it would demand radical changes in the institutional arrangements among students, faculty, and educational institutions.

Financing the University

Traditional funding sources for public universities began declining with the national recession in the 1980s. Since then, government budgets have steadily tightened, and funding for research and financial aid has come under increasing scrutiny, as legislators search for savings while entitlement programs soar in cost. At the same time, the costs of higher education, of sustaining high-quality teaching and research programs, have continued to rise.

As a result, universities found themselves in a "Catch-*22*" situation as they entered the 1990s. Success in a rapidly evolving society demanded quick and creative responses to opportunity. But, bold action was not free. How, we asked, could we respond appropriately to change while still preserving and enriching our core mission of teaching and learning?

Of great concern in this arena was the recent trend among elected public officials to shift the costs of public higher education from general tax revenues to the tuition charged to students and their parents. Our public leaders seemed to have abandoned a consensus that had governed the public support of higher education for the past century—that those who benefit from and those who pay for higher education are part of the same collective "we" for public purposes.[4] Whether it was a deliberate stance or simply a response to tightening constraints and changing priorities for public funds, the new message was that education was a "private good," and, hence, that it should be paid for by the individuals who benefit most directly, the students.

Caught between declining funding, spiraling costs, and competing priorities, we realized that only a stable financial foundation, less susceptible to the shifting winds of government fortune, would sustain both our quality and our capacity to serve into the next century. We needed to develop a multifaceted strategy, based on cost containment, prudent resource management, and an aggressive development of alternate revenue sources, such as private fund-raising.

The Infrastructure for Learning

One of the more visible challenges faced by the University arose from the burden of its aging physical plant. Our academic buildings, many fifty to one hundred years

old, had served us well. Thousands of students had skipped up stairs, rushed down halls, and scooted out doors, on to other commitments, leaving behind scuffed walls, drafty windows, and heating and cooling systems of a by-gone era.

These buildings desperately needed renovation to meet the educational needs of today and tomorrow. For example, modern research methods required more space than was allotted decades ago. Changing teaching styles demanded flexible classroom spaces that could accommodate small seminars and group projects as easily as large lectures.

Outside these buildings, many more lumens of light were needed to bathe campus landmarks and illuminate sidewalks and footpaths to create a safer environment for all members of the community. Behind the flora, miles of fiber optics were necessary to link libraries, research laboratories, and residence hall rooms to the information super highway.

With the disappearance of federal support for facilities during the 1980s, universities had been forced to depend primarily upon private support, student fees, or limited state support—for public universities—to rebuild their physical plants. The growth in the equity markets enabled some well-endowed private universities to take important steps toward addressing these needs during the 1990s. But, many other, less affluent institutions, including Michigan, continued to struggle with inadequate facilities for their educational programs.

The Michigan Strategy

It is useful, even in this brief introduction, to summarize several key aspects of the Michigan strategy for the 1990s. As with most strategic efforts, we began with a consideration of mission and vision.

The Mission

The University of Michigan's mission is complex, varied, and evolving. At the most abstract level, this mission involves the creation, preservation, integration, transmission, and application of knowledge to serve society. The University was created to produce not only educated people but also knowledge and knowledge-intensive services such as research, professional consultation, health care, and economic development. All of these activities, in turn, are based upon the core activity of *learning*. We saw the mission of the University of Michigan captured in a brief phrase as:

The Mission: Learning, in the service of the state, the nation, and the world.

We recognized that the University serves a vast array of constituents: students at the undergraduate, graduate, professional, and continuing education levels; patients and clients; local, state, and federal government; business and labor; and communities, states, and nations. It also serves society at large. This latter fact is quite important. The University of Michigan is one of the few universities in the world that can claim society at large as its primary client rather than a particular region or constituency. Throughout its history, the University's most enduring impact has been through its full array of activities, rather than through individual components of its multi-faceted missions.

The Vision

As at many large organizations, strategic planning exercises at the University proceed through a variety of mechanisms, formal and informal, centralized and distributed among various units. Most efforts begin with an attempt to articulate a vision of the University's future. Despite the great diversity of planning groups, visioning efforts during my presidency generally converged on two important themes: *leadership and excellence*. We combined these two ideas into one simple vision statement:

The Vision: To position the University to become a leading university of the 21st Century through the quality and leadership of its programs and through the achievements of its students, faculty, and staff.

This vision emphasized both the development of leadership as an institution and the development of leaders among members of the University community, all based on a foundation of excellence in our programs. This leadership vision required a comprehensive strategy designed to improve and optimize all of the key characteristics of the University: quality, capacity (size), breadth (comprehensiveness), excellence, and innovation.

The Strategic Intent

Beyond this simple vision statement, we also attempted to develop a bolder view of the University's future: a *strategic intent*. A strategic intent for an organization provides a "stretch vision" that cannot be achieved with current capabilities and resources.[5] It forces an organization to be inventive and to make the best use of all available resources if it is to move toward this goal. The traditional view of strategy focuses on the fit between existing resources and current opportunities; strategic

intent creates an extreme misfit between resources and ambitions. In this way, we are able to challenge the institution to close the gap by building new capabilities. We framed the strategic intent in one sentence:

> *The Strategic Intent: To provide the University with the capacity to transform itself into an institution more capable of serving our state, our nation, and the world.*

If the vision statement was designed to position the University among the leading institutions in the world, the strategic intent was aimed at enabling the institution to transform itself into an entirely new paradigm, more suited to serve a changing world. The strategic intent, and its associated strategy of transformation, sought to build the capacity, the energy, the excitement, and the commitment necessary for the University to explore entirely new paradigms of teaching, research, and service. It sought to remove the constraints that prevented the University from responding to the needs of a rapidly changing society, to remove unnecessary processes and administrative structures, and to question existing premises and arrangements.

The Goals

The vision of positioning the University of Michigan as a leader of higher education for the next century involved achieving leadership and excellence within the present paradigm of the university in America, of polishing the status quo, of becoming the very best "university of the twentieth century" that we could become. The strategic intent was designed to move beyond this, to provide the University with the capacity to transform itself into new paradigms more capable of serving a rapidly changing society and a profoundly changed world.

The goals proposed to move the University toward both the vision and the strategic intent of transformation were as follows:

> *Goal 1: To attract, retain, support, and empower exceptional students, faculty, and staff.*
>
> *Goal 2: To provide all members of the university community with the resources, environment, and encouragement to push to the limits of their abilities and their dreams.*

Goal 3: To build a University culture and spirit that values:
- *adventure, excitement, and risk-taking*
- *leadership*
- *excellence*
- *diversity*
- *caring, concern, and community.*

Goal 4: To develop the flexibility and ability to focus resources necessary to serve a changing society and a changing world.

Although stated simply, these four goals were profound in their implications and challenging in their execution. For example, while we had always sought to attract high-quality students and faculty to the University, we tended to recruit those who conformed to more traditional measures of excellence. If we were to go after "paradigm breakers," then other criteria such as creativity, intellectual span, and the ability to lead would become important.

To pursue our second goal, we needed to acquire the resources necessary to sustain excellence, a difficult task at a time when public support was dwindling. This goal suggested something beyond that: we needed to focus resources on our most creative people and programs. And we needed to acquire the flexibility in resource allocation to respond to new opportunities and initiatives.

While most would agree with the values set out in the third goal of cultural change, many would not assign such a high priority to striving for adventure, excitement, and risk-taking. We were certain, however, that if the University was to become a leader in defining the nature of higher education in the century ahead, this type of culture was essential.

Strategic Initiatives

The general strategy created to move the University both toward the leadership vision and the strategic intent of transformation was organized into a series of strategic thrusts or initiatives. Each strategic thrust was designed as a self-contained effort, with a clearly defined rationale and specific objectives; together, these initiatives would move the University toward the more general (and abstract) goals of Vision 2017. Special care was taken to monitor and coordinate the individual strategic thrusts, since they were interwoven and interdependent.

The University of Michigan, circa 1996

The strategy designed in light of our leadership vision was successful by any measure. As a consequence of this decade-long effort, by the mid-1990s the University of Michigan had become a better, stronger, more diverse, and more exciting institution. Some of the more important indicators included:

- National rankings of the quality of the University's academic programs by the mid-1990s were the highest since these evaluations began several decades ago. The academic reputations of many of our individual programs increased quite significantly during the decade. In addition, if rankings across all academic programs and professional schools were considered, four institutions stood apart: Harvard, Stanford, the University of California, and the University of Michigan.

- Detailed surveys throughout the University indicated that Michigan had been able to hold its own in competing with the best universities throughout the world for top faculty. In support of this effort, the University had been able to increase average faculty salaries over the decade to the point where they ranked number one among public universities and number five to number eight among all universities, public and private, respectively.

- Through the remarkable efforts of our faculty, the University had become the nation's leading research university, attracting more federal, state, and corporate support for our research efforts than any other university in America (exceeding $450 million in 1996).

- Despite the precipitous drop in state support over the past two decades, the University had emerged financially as one of the strongest universities in America. It was the first public university in history to receive an Aa1 credit rating by Wall Street, with its bonds trading at AAA ratings. Our endowment had increased six-fold to over $2.0 billion. And thanks to the generosity of our alumni and friends, the University had become the first public university to raise over $1 billion in a fund-raising campaign, with $1.4 billion raised by the campaign's end in 1997.

- We had made very substantial progress in our efforts to restructure the financial and administrative operations of the University, including award-winning efforts in total quality management, cost containment, and decentralized financial operations.

- A walk around the University revealed the remarkable transformation in our physical environment as we approached the completion of our massive program to rebuild, renovate, and update essentially all of the buildings on our campuses—a $1.8 billion effort funded primarily from non-state sources.

- The University Medical Center had undergone a profound transformation, placing it in a clear leadership position in health care, research, and teaching.

- Numerous exciting intellectual initiatives had been launched such as the Institute of Humanities, the Media Union, the Institute of Molecular Medicine, the Davidson Institute for Emerging Economies, and Tauber Manufacturing Institute, and the School of Information.

- Through efforts such as the Michigan Mandate and the Michigan Agenda for Women, we had achieved the highest representation of people of color and women among our students, faculty, staff, and leadership in our history. Michigan had become known as a national leader in building the kind of diverse learning community most suited to serving an increasingly diverse society.

As we approached the 21st Century, it had become clear that the University of Michigan had not only become one of the leading universities in America, but that it was challenged by only a handful of distinguished private and public universities in the world in the quality, breadth, capacity, and impact of its many programs and activities. This progress was not serendipitous. It resulted from the efforts of a great many people following a carefully designed and executed strategy.

The Future

As we approach a new century, we can all take great pride in what the Michigan family—regents, faculty, students, staff, alumni, and friends—have accomplished during these stressful times. Working together, we have built one of the finest public university in America—perhaps the finest in the world. But we have built a university for the twentieth century, and that century is rapidly coming to an end. The university that we have created, the paradigms in which we have so excelled, may no longer be relevant to a rapidly changing world.

Our universities are at an important turning point in their histories. The students we are educating today will spend most of their lives in the 21st Century. Theirs will be a very different world than the one we have known. Most of us who are leaders and

teachers in the university are products of the 20th Century. And the structure of the American university today is a product of the 19th Century and earlier.

As our society transforms, so too will societal institutions such as the university. This is nothing new. Change has always characterized the university, even as it sought to preserve and propagate the intellectual achievements of our civilization. The university has endured as an important social institution for a millennium because it has changed in profound ways to serve the world around it. Higher education in America, for example, has embraced the concept of a secular liberal education, woven scholarship into its educational mission, and broadened its activities to provide public service and research to respond to societal needs.

There should be little doubt that higher education will flourish in the decades ahead. In a knowledge-intensive society, the need for advanced education will become ever more pressing, both for individuals and society more broadly. It is equally likely that the university as we know it today—or rather the current constellation of diverse institutions comprising the higher education enterprise—will change in very profound ways.

Change will not only be a challenge to the American university, it will also be the watchword for the years ahead. And with change will come unprecedented opportunities for those universities with the talent and will to respond. We must work hard to develop a community where uncertainty is an exhilarating opportunity for learning. The future belongs to those who face it squarely, to those who have the courage to transform themselves to serve a new society.

This book represents an account of our struggle with the challenges of transforming the University of Michigan to serve a rapidly evolving world.

[1] James J. Duderstadt, "The Challenge of Change", Presidential Inauguration Address, The University of Michigan, October 6, 1988.
[2] Vannevar Bush, *Science, the Endless Frontier* (National Science Foundation, Washington, 1945).
[3] Erich Bloch, Testimony to Congress in support of the budget of the National Science Foundation, 1988.
[4] Robert Zemsky, "Rumbling," *Policy Perspectives*, (The Pew Higher Education Round Table, Sponsored by the Pew Charitable Trusts, April, 1997).
[5] C. K. Prahalad and G. Hamel, "The Core Competence of the Corporation," *Harvard Business Review* 68:79-91, (1990).

Chapter 2 *The University of Michigan circa 1990*

Before exploring change and transformation in higher education, it is important to determine what the university had become in the late 20th Century—what we were going to change from. This is not as simple a question as it seems. In fact, very few people, on campus or off, understand the reality of the contemporary university.

What is a university? There are perhaps as many different definitions as there are individuals who have attended, served, or been served by these marvelous and enduring institutions. To some, the university is "a place of light, of liberty, and of learning" or "a place of instruction where universal knowledge is professed."[1,2] To others, perhaps more skeptical of such lofty definitions, the university is a far more utilitarian concept, centered on the many roles it plays in contemporary society: to provide an education for our citizens; to produce the scholars, professionals, and leaders needed by our society; to perform the research necessary to generate new knowledge critical to the progress of our nation; and to provide service to society across a number of fronts that draw on the unique expertise of our institutions.[3]

Recall the old parable of the blind men each feeling different parts of an elephant and arguing over just what the whole beast looks like. The modern research university is like the elephant, complex and multidimensional, and perceived in vastly different ways, depending on one's vantage point, needs, and expectations.

Students and parents want high-quality, but low-cost, education. Business and industry seek high-quality products: graduates, research, and services. Patients of our hospitals seek high-quality and compassionate care. Federal, state, and local governments have complex and varied demands that both sustain and constrain us. And the public itself sometimes seems to have a love-hate relationship with higher education: they take pride in our quality and revel in our athletic accomplishments, but they also harbor deep suspicions about our costs, our integrity, and even our intellectual aspirations and commitments.

Beyond the classic triad of teaching, research, and service, society has assigned to the university over the past several decades an array of other roles:

- improvements in health care
- national security
- social mobility
- parenting
- public entertainment (intercollegiate athletics)

Today, society is asking us to assume additional roles such as:

- revitalizing K-12 education
- improving race relations in America
- rebuilding our cities
- securing economic competitiveness

As one of the most comprehensive and complex universities in America, the University of Michigan embodies all these images and many more.

Images of the University of Michigan

The University of Michigan has a remarkable ability to touch the lives of those associated with it. In the few short years that students spend on our campus during their education, they become part of the Michigan family. Ann Arbor is forever their home, at least in their hearts and in their minds, which are so richly shaped by a Michigan education. The same emotional kind of attachment rapidly grows with those faculty and staff that become part of the University community.

What is this institution, this force, that can have such an impact on our lives? When we hear the words "University of Michigan," some typical images probably come to mind: brilliant faculty challenging and exciting students in the classroom; students studying in the library or perhaps protesting on the Diag; scientists toiling away late in the evenings in our laboratories, striving to understand the universe; or scholars poring over ancient manuscripts, rediscovering our human past.

The truth is that the University of Michigan is many things to many people. Some treasure memories of walking to Michigan Stadium through the falling leaves on a marvelous autumn afternoon to become one of 105,000 fans to be thrilled by the Michigan Wolverines or the Michigan Marching Band. Or they remember proudly sharing in those special moments such as a Rose Bowl victory or a NCAA Final Four.

Others remember a Michigan of the arts, with great orchestras and artists performing in Hill Auditorium, one of the great concert halls of the world. They may reminisce

about the wonderful concerts of the University Musical Society, or the hundreds of student and professional productions of plays, concerts, dance, film and opera, which make this such a vibrant and cosmopolitan cultural community.

For some, Michigan represents the youthful conscience of a nation: inventor of the Teach-In, site of the first Earth Day, home of the century-old *Michigan Daily,* with student engagement in so many of the critical issues of the day. There is also the caring Michigan, as experienced each year by the over one million patients who are served by the University of Michigan Medical Center, one of the world's great centers of medical research, teaching, and treatment.

Many see Michigan as "Silicon Valley East," working to attract the scientists and engineers in order to build the high-tech infrastructure needed to create new companies and new jobs. The $450 million of research contracts attracted by the University each year serves as the "venture capital" to diversify and strengthen the economy of the industrial heartland.

There is the Michigan of the cutting-edge research that so improves the quality of our lives. For example, it was at Michigan that the clinical trials were conducted for the Salk vaccine. It was at Michigan that the gene responsible for cystic fibrosis was identified and cloned.

Michigan can also be seen as a university of the world, long renowned as a truly international center of learning. Walk down the streets of any capital city in the world and you will find our graduates, often in positions of leadership. Indeed, Michigan is even a university "of the universe," with the establishment of the first chapter of the UM Alumni Association on the moon by the crew of Apollo 15 ("the Michigan mission to the moon")!

For many of us, Michigan becomes the unifying force linking us to friends and family through alumni activities and involvement all across America and around the world.

We all think of this marvelous university in our own way, with an image formed by the way it has touched our lives. There will never be just one way to capture the scope and influence of this place, to measure all that we do and stand for as an institution. But perhaps for our current purposes, one of the most appropriate comparisons to capture the character of the University is to think of it as the inventor of the future, because the knowledge we create and the students we educate will truly change the world.

A Heritage of Leadership

It can be argued that Michigan developed the paradigm of the public university capable of responding to the needs of a rapidly changing America in the 19th Century, a paradigm that still dominates higher education today. In many ways, Michigan has been, throughout its history, the flagship of public higher education in America.

Although the University of Michigan was not the first of the state universities, it was the first to be free of sectarian control and become a true public institution, governed by the people of its state. The state constitution establishing Michigan in 1837 was regarded as the most advanced and effective plan for a state university, a model for many of the state institutions of higher learning which were established subsequently.

From its founding, Michigan was identified with the most progressive forces in American higher education. It was the first to blend the classic curriculum with the European approach that stressed faculty involvement in research and dedication to the preparation of future scholars. It was the first university in the west to pursue professional education, establishing the medical school in 1850, the law school in 1859, and engineering courses in 1854. The University was among the first to introduce instruction in zoology and botany, modern languages, modern history, American literature, pharmacy, dentistry, speech, journalism, teacher education, forestry, bacteriology, naval architecture, aeronautical engineering, computer engineering, and nuclear engineering.

The University of Michigan has frequently been a source of major paradigm shifts in higher education. For example, the formation of the Survey Research Center and associated Institute of Social Research in the 1950s stimulated the quantitative approach to the social sciences so important today. Michigan was a pioneer in the development of time-sharing computing in the 1960s, and in the 1990s, it took a leadership role in building and managing the Internet, the electronic superhighway that is now revolutionizing our society.

The activism of Michigan students has often worked to change our society, from the teach-ins against the Vietnam War in the 1960s to Earth Day in the 1970s to the Michigan Mandate in the 1980s. In a similar fashion, Michigan has played a key role in public service, from the announcement of the Peace Corps on the steps of the Michigan Union in 1960 to the new AmeriCorps in 1994.

Nothing could be more natural to the University of Michigan than challenging the status quo; change has always been an important part of the University's tradition. Michigan has long been the prototype of the large, comprehensive, public research university, with a serious commitment to scholarship and progress. It has been distinguished by unusual breadth, a rich diversity of academic disciplines, professional schools, social and cultural activities, and intellectual pluralism. It has benefited from an unusual degree of participation by faculty and students in University decisions. And throughout its history, Michigan has been known for a spirit of democracy and tolerance among its students and faculty. Over a century ago *Harper's Weekly* noted that "the most striking feature of the University of Michigan is the broad and liberal spirit in which it does its work."[4]

Michigan's greatest contribution to American education may be its commitment to providing an education for students from all backgrounds—or, as President Angell put it, providing "an uncommon education for the common man." In many ways, it was at the University of Michigan that Thomas Jefferson's enlightened dreams for the public university were most fully realized.

Through its unrelenting commitment to quality, Michigan has sustained its leadership through the 20th Century. In virtually all national and international surveys, its programs rank among the very best. Most of its schools, colleges, and departments rank in quality among the top ten nationally, and several are regarded as the leading programs in the nation.

Today the University of Michigan has a solid foundation on which to build new strengths to serve a new era. Its current assests can be summarized into the following characteristics.

Excellence: Michigan's unwavering commitment to quality encompasses its people—students, faculty, and staff—and its programs. As a result, we rank among the top ten among peers in virtually everything we do, whether in the classroom, the studio, the laboratory, the library, the concert hall, or on the football field or swimming natatorium. By any measure, Michigan is known throughout the world as one of the preeminent universities in teaching, research, and service.

Character: With its more than 50,000 students, 17 schools and colleges, two regional campuses, 3500 faculty and 12,000 staff, Michigan is a university of exceptional scholarly breadth, depth, and range in academic disciplines and professions. It has a highly entrepreneurial, decentralized organization and a tradition of creative interdisciplinary collaboration in its approach to problem solving.

Autonomy and Flexibility: The University uniquely bridges the gap between public and private education and between national and state roles and responsibilities. As a public university, Michigan is remarkable in its ability to control its own destiny. Thanks to its constitutionally guaranteed autonomy, the University has the flexibility to attract a balance of resources to sustain the quality and range of its academic programs regardless of short-term shifts in the political or economic environment. In recent years, the University's resource portfolio has become far more diverse, with its state appropriation now comprising less than 10 per cent of its operating funding, drawn largely from tuition and fees, federal grants, private giving, and auxiliary activities such as the UM Medical Center.

Public-Private Partnership: Michigan forges a partnership of public and private resources. Public funding builds and sustains our foundation, size, and scope; private funding supports the margin for excellence, the creative innovation, and the generous extension of opportunity.

Public Stewardship: Michigan has long been animated by a progressive vision and spirit. The University of Michigan embodies the hopes and dreams, the energy and drive, the commitment and stewardship of eight generations of Michigan citizens and University friends and alumni. They entrust to us the responsibility for sustaining the Michigan educational opportunity for future generations.

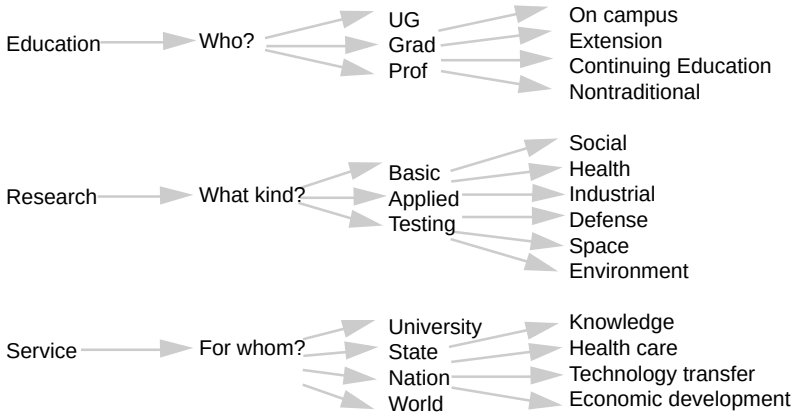
The Michigan Spirit: Above all, there is the special gift of the Michigan spirit—the willingness and ability to take the risks necessary for leadership, a determination to be the best.

Of course, these attributes might characterize many of our leading public universities; however, there is a different view of the contemporary university that indicates the challenges posed by its extraordinary array of activities.

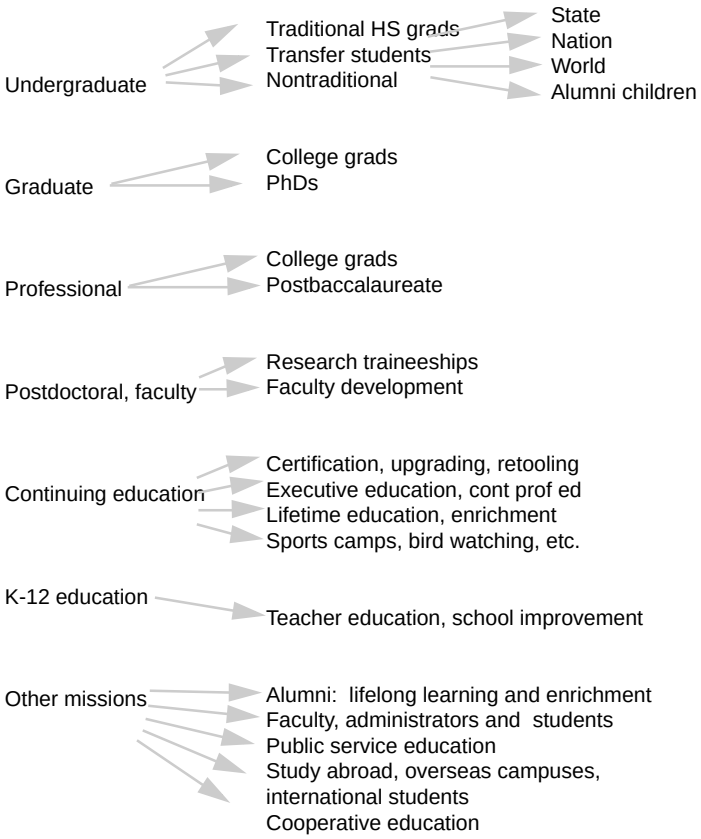
A Loosely Coupled, Adaptive System

The nature of the contemporary university and the forces that drive its evolution are complex and frequently misunderstood. The public still thinks of us in very traditional ways, with images of students sitting in large classrooms listening to faculty members lecture on subjects such as literature or history. The faculty thinks of Oxbridge—themselves as dons, and their students as serious scholars. The federal government sees another R&D contractor or health provider—a supplicant for the public purse. And armchair America sees the university on Saturday afternoon as yet another quasi-professional athletic franchise. The reality is far different—and far more complex.

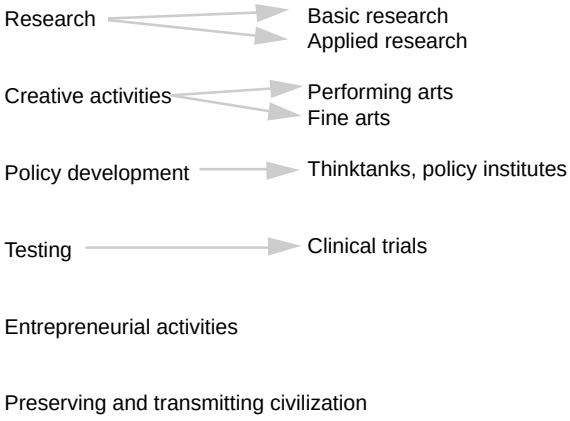
The classic and highly simplified triad of higher education, of teaching, research, and service, branches extensively. In one of our early planning exercises, we attempted to list the various activities of the university in the hopes that we might be able to red-pencil all but the most important of these activities—our "core competencies"—in our efforts to reallocate limited resources. Our brainstorming sessions led to the following network of activities:



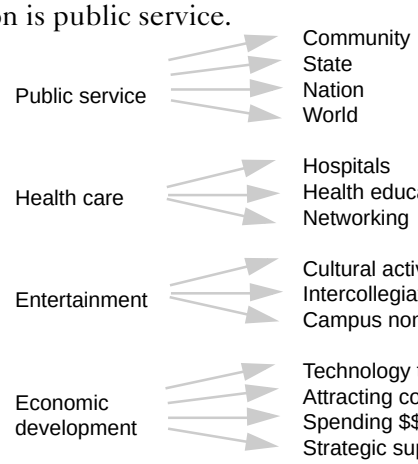
We could break up each of these missions still further. For example, the education mission branched as follows:



The research mission can be best understood by identifying our intellectual products:



The most complex mission is public service.
This branches on …



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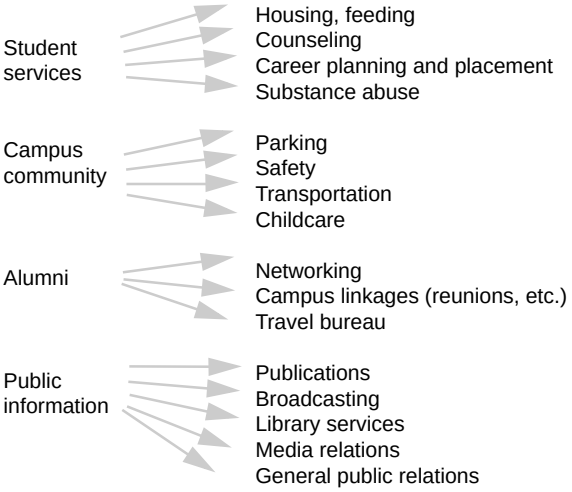

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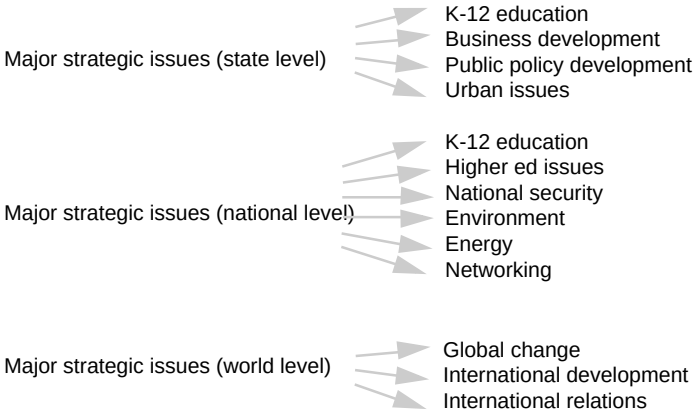
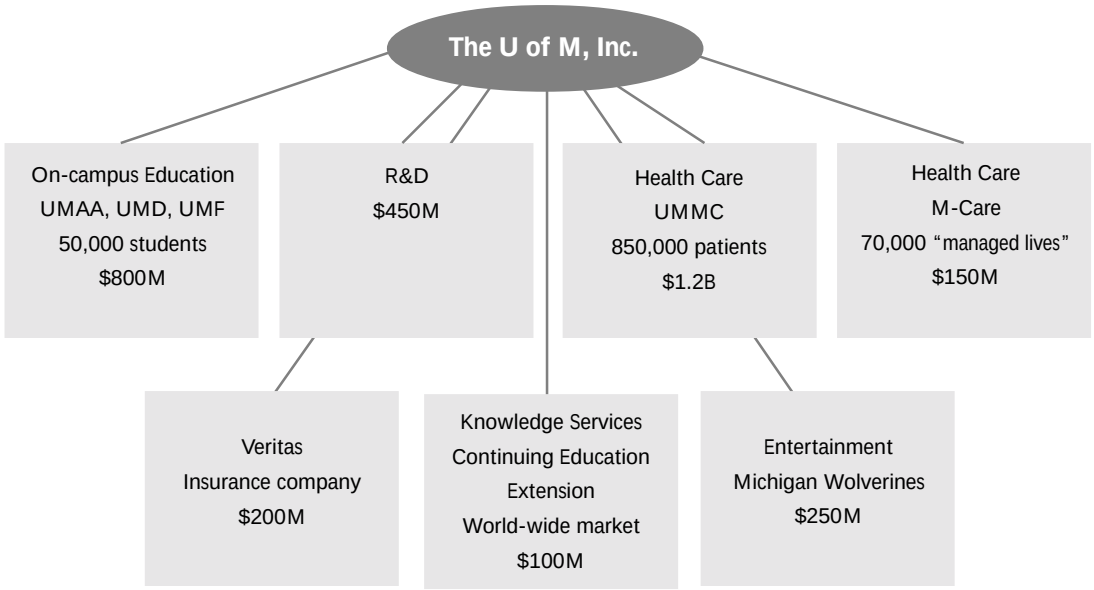


After identifying these multiple missions, we asked the planning group to cross off all but the most critical activities. Not surprisingly, we managed to cross out only a few of the items on the list. All of the other activities were felt to be essential by someone in the group. (And those we had marked out were later reinstated by several members, after further reflection.)

This branching network of multiple missions creates a very different image of the modern research university than that commonly perceived by students, faculty, or society: that of a very complex, international conglomerate of highly diverse businesses. To illustrate, consider a simple organizational diagram of "business lines" of the University of Michigan, Inc.:



The University of Michigan, with an annual budget of roughly $3 billion per year, and an additional $3 billion of investment assets under active management, would rank roughly 390th on the Fortune 500 list. We educate roughly 50,000 students on our several campuses at any given time. This would correspond to an educational business line with a budget of roughly $1 billion per year. The University is also a major federal R&D laboratory conducting over $450 million a year of research, supported primarily from federal contracts and grants.

We run a massive health care company. Our university-owned hospitals and clinics currently treat almost a million patients a year, with a total medical center income of $1.2 billion per year. We have a managed care corporation with almost 150,000 "managed lives." In 1995 we formed a non-profit corporation, the Michigan Health Corporation, which allows us to make equity investments in joint ventures to build a statewide integrated health care system of roughly 1,500,000 subscribers—the patient population we believe necessary to keep afloat the tertiary hospitals that we own.

We are already too big and complex to buy insurance, so we have our own captive insurance company, Veritas, incorporated in New Hampshire. We have become actively involved in providing a wide array of knowledge services, from degree programs offered in Hong Kong, Seoul, and Paris, to cyberspace-based products such as the Michigan Virtual University. And, of course, we are involved in public entertainment with the Michigan Wolverines. That $250 million under the Michigan Wolverines on the chart is not our athletic budget—our operations amount to "only" $40 million per year. But when we include licensing and marketing—including even the "block M," which we have copyrighted—our college sports activities become a far larger enterprise. It is big-time show business!

The corporate organization chart shown above would compare in both scale and complexity with many major global corporations. And it is not unique to Michigan. Most of the major research universities in America are characterized by very similar organizational structures, indicative of their multiple missions and diverse array of constituencies.

The university today has become one of the most complex institutions in modern society—far more complex, for example, than most corporations or governments. We are comprised of many activities, some non-profit, some publicly regulated, and some operating in intensely competitive marketplaces. We teach students; we conduct research for various clients; we provide health care; we engage in economic development; we stimulate social change; we provide mass entertainment (athletics). In systems terminology, the modern university is a "loosely coupled, adaptive system," with a growing complexity, as its various components respond to changes in its environment.[5]

The modern university has become a highly adaptable knowledge conglomerate because of the interests and efforts of our faculty. We have provided our faculty with the freedom, the encouragement, and the incentives to move toward their personal goals in highly flexible ways. We can see the university of today as a type of holding

company of faculty entrepreneurs, who drive the evolution of the university to fulfill their individual goals.[6, 7]

We have developed a transactional culture, in which everything is up for negotiation. The university administration manages the modern university as a federation. It sets some general ground rules and regulations, acts as an arbiter, raises money for the enterprise, and tries—with limited success—to keep activities roughly coordinated.

The entrepreneurial university has been remarkably adaptive and resilient throughout the 20th Century, but it still faces serious challenges. Many contend that we have diluted our core enterprises of learning, particularly undergraduate education, with a host of entrepreneurial activities.[8] We have become so complex that few, whether on or beyond our campuses, understand what we have become. We have great difficulty in allowing obsolete activities to disappear. We face serious constraints on resources that no longer allow us to be all things to all people. We also have become sufficiently encumbered with processes, policies, procedures, and past practices that our best and most creative people no longer determine the direction of our institution.

If we are to respond to future challenges and opportunities, the modern university must engage in a more strategic process of change. While the natural evolution of a *learning organization*[9] may still be the best model of change, it must be guided by a commitment to preserve our fundamental values and mission. We must find ways to allow our most creative people to drive the future of our institutions. Our challenge is to tap the great source of creativity and energy associated with entrepreneurial activity in a way that preserves our core missions, characteristics, and values.

[1] John Henry Newman, *The Idea of a University*, Frank M. Turner, Ed. (New Haven: Yale University Press, 1996) 366 pp.
[2] John Dewey, *Democracy and Education* (New York: MacMillan, 1916).
[3] Gerhard Casper, Come the Millennium, Where the University?", Annual Meeting of the American Educational Research Association, San Francisco, April 18, 1995.
[4] Harper's Weekly, 1885.
[5] K. E. Weick, "Educational Organizations as Loosely Coupled Systems," Administrative Science Quarterly 21: 1-19 (1976).
[6] R. S. Lowen, *Creating the Cold War University: The Transformation of Stanford* (Berkeley: University of California Press, 1997).
[7] B. S. Clark, *Creating Entrepreneurial Universities: Organizational Pathways of Transformation* (Surrey: Pergamon Press, 1998).
[8] S. Slaughter and L. L. Leslie, *Academic Capitalism: Politics, Policies, and the Entrepreneurial University* (Baltimore: Johns Hopkins Press, 1997).
[9] Peter M. Senge, *The Fifth Discipline* (New York: Doubleday Currency, 1990).

Chapter 3 *A Time of Challenge, Opportunity and Responsibility*

The French poet, Paul Valery, once wrote, "The trouble with our times is that the future is not what it used to be." Think about it for a moment. The students we are educating today will spend most of their lives in the next century; they will be citizens of the 2lst Century. Yet, we, their educators, are very much products of the 20th Century. And our institutions, the American universities of today, are a product of the l9th Century (or earlier)! This, of course, is the key issue. We must ask whether the university as we know it today is prepared to educate the citizens, and to serve the society of the 2lst Century.

Early in my presidency, I conducted an informal survey of attitudes toward change in higher education. I asked several groups to quantify the degree of change they believed the university would undergo over the next decade, using a scale of 0 to 10—with 0 representing no change, the *status quo*, and 10 representing radical change, a total reinvention of the university. Most faculty tended to suggest relative modest change, in the range of 3 to 4 on the 10-point scale. Most academic administrators—deans, provosts, and the like—believed there would be more radical change, on the order of 7 to 8 on the 10-point scale.

During one of our annual Association of American Universities (AAU) meetings, I asked a number of presidents of major research universities this same question. Most of them responded that, on a scale of 0 to 10, the magnitude of the changes would be about 20! This result corresponded to my own estimate of the amount of change the American university would experience in the decade ahead: 20, on a 10-point scale.

This estimation should be neither alarming nor surprising. As one of civilization's most enduring institutions, the university has been extraordinary in its capacity to change and adapt to serve society. The remarkable diversity of institutions of higher education, ranging from small liberal arts colleges to gigantic university systems, from storefront proprietary colleges to global "cyberspace" universities, demonstrates the evolution of the species.

The profound nature of the challenges and changes facing higher education today seems comparable in significance to two other periods of great change in the nature of the university in America: the period in the late 19th Century when the comprehensive public university first appeared, and the years following World War II, when the research university evolved to serve the needs of postwar America.

A century ago, the Industrial Revolution was transforming our nation from an agrarian society into the industrial giant that would dominate the 20th 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, as the comprehensive university evolved, higher education saw a massive growth in enrollments in degree programs at the undergraduate, graduate, and professional levels.

A similar period of rapid change in higher education occurred after 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. 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.

We now face challenges and opportunities similar to those of these two earlier periods of transformation. Many reflect 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, and the deterioration in the partnership between the research university and the federal government. But in the long run, our institutions will be affected more profoundly by the powerful transformations in our society such as the increasing ethnic and cultural diversity of our people, the growing interdependence of nations, and the degree to which knowledge itself has become the key determiner for economic prosperity, national security, and social well-being.

Signs of a Changing World

We are living in the most remarkable of times. Consider some of the changes that have occurred in our world within the past decade:

- 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 Bloc to seek democracy.
- The Soviet Union has collapsed into chaos, torn apart by the forces of free dom, nationalism, and ethnic tensions.
- Many of America's largest and most powerful corporations have been reeling from the rapid changes occurring in the world marketplace.
- Asia is emerging as a powerful economic force, with Japan and China now ranked as the second and third largest economies in the world.
- During the 1980s, the top ten companies receiving U.S. patents were Hitachi, Toshiba, Canon, Fuji, Philips, Siemens, Mitsubishi, IBM, GE, and Bayer.
- We are now manipulating the human gene directly to cure disease, and we may soon be doing so 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 decade, 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 telecommunications 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 thus far are only 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, but it has also linked us in ways we never dreamed possible.

Along these lines, let us consider in more detail the forces driving change in our world and in our social institutions. While there are many ways to classify these forces, let us consider first the broader societal forces of change, and then focus on those pressures driving change in higher education.

Themes of Change

The Age of Knowledge

Looking back over history, one can identify certain periods of change in the nature, the fabric of our civilization: the Renaissance, the Age of Discovery, the Industrial Revolution. There are many who contend that our society is once again undergoing such a dramatic, fundamental shift in perspective and structure.

The signs are all around us. We are evolving rapidly into a post-industrial, knowledge-based society, just as a century ago our agrarian society evolved through the Industrial Revolution.[1] Industrial production is steadily switching away from material and labor-intensive products and processes to knowledge-intensive processes. Our nation's future has probably never been less constrained by the cost of natural resources. In addition, increasing productivity has come to mean decreasing use of low-skilled labor. In the 1920s, one out of three workers was a blue-collar worker. Today, that number is one in six and dropping fast, probably to about one in twenty within a decade or so. Over 90 percent of the new jobs created by our knowledge-driven economy require a college degree, and for many careers, a baccalaureate degree will not be enough to enable graduates to keep pace with the knowledge and skill-level required.[2]

New ideas and concepts are exploding forth at ever-increasing rates. We are increasingly surrounded by radical critiques of fundamental premises and scholarship. In many fields, the knowledge base is doubling every few years. Indeed, in some

fields, the knowledge taught to undergraduates becomes obsolete even before they graduate! The typical college graduate of today will likely change careers several times during a lifetime. A college education will serve only as a stepping stone to a process of lifelong education. The ability to adapt—indeed, to manage—change will become the most valuable skill of all.

It is clear that a transition is occurring in which intellectual capital is replacing financial and physical capital as the key to our strength, prosperity, and well-being. We are entering a new age, an *Age of Knowledge*, in which the critical strategic resource necessary for prosperity is knowledge: educated people and their ideas.[3]

From a broader perspective, we find that four important themes are converging in the final decade of the 20th Century:

1. The importance of knowledge as a key factor in determining security, prosperity, and quality of life

2. The global nature of our society

3. The ease with which information technology—computers, telecommunications, and multimedia—enables the rapid exchange of information

4. Networking, or the degree to which informal cooperation and collaboration among individuals and institutions are replacing more formal social structures, such as governments and states

These themes of change present both great challenges and opportunities to social institutions such as the university.

Our rapid evolution into a knowledge-based society has been driven by the emergence of powerful new information technologies—computers, digital communications networks, software, and the like. Modern electronic technologies have increased vastly our capacity to know and to do things. Moreover, they allow us to transmit information quickly and widely, linking distant places and diverse areas of endeavor in productive new ways. This technology allows us to form and sustain communities for work, play, and learning in ways unimaginable just a decade ago.

As knowledge-driven organizations, colleges and universities are greatly affected by the rapid advances in information technology. This technology has already had dramatic impact on campus research activities, including the creation of an entirely new form of research: computer simulation of complex phenomena. Many adminis-

trative processes have become heavily dependent upon information technology—as the current concern with the approaching date reset of Year 2000 has made all too apparent. And information technology will have an even more profound impact in the future on the educational activities of the university and how we deliver our services. To be sure, there have been earlier technology changes such as television, but never before has there been such a rapid and sustained period of change with such broad social applications.

Most significant here is the way in which emerging information technology has eroded the constraints of space and time. We can now use powerful computers and networks to deliver educational services to anyone at anyplace and anytime, no longer confined to the campus or the academic schedule. The market for university services is expanding rapidly, but so is competition, as new organizations such as virtual universities and "learning-ware" providers enter this marketplace to compete with traditional institutions.

Demographic Change: The New Majority

When Americans hear references to the demographic changes occurring in our nation, we probably first think of the aging of our population. It is true that the baby boomers are now entering middle age, and their generation was followed by a baby bust, in which the number of young adults declined by about 20 percent during the 1970s and 1980s. This decline in the number of young people has followed on the heels of a significant growth in the l980s in the number of senior Americans. In this country, there will soon be more people over the age of sixty-five than there are teenagers, and this situation is certain to continue for the remainder of our lives. Further, the growth rate in both our population and our work force is declining to the lowest level in our nation's history. Since fertility and mortality rates are below their long term averages, it has become clear that the United States will not be a nation of youth again in our lifetimes; and this fact poses a most serious challenge to institutions, such as universities, which have traditionally served the young.[4]

Even today, the majority of college students are no longer traditional high school graduates, and likely to be less so in the years ahead. The changing character and needs of the American population are driving a redefinition of the concept of a college student and, hence, of our institutions more generally. No longer are the students on our campuses drawn primarily from the ranks of middle- and upper-class high school graduates. Colleges and universities are now challenged to build educational programs for a student population diverse in essentially every human characteristic: age, gender, race, socioeconomic background, etc.

Today's college student is more typically a working adult with a family, commuting to campus or enrolling through cyberspace, who seeks the education and skills necessary for his or her career. With these new students come new expectations for colleges and universities, as students demand a higher degree of quality and relevance in their education. We are beginning to see pressures for a shift from faculty-centered to learner-centered institutions. There are also calls for a shift from "just-in-case" education, in which we have traditionally expected students to complete degree programs at the undergraduate or professional level long before they actually need the knowledge, to "just-in-time" education, in which learning is provided, frequently through non-degree programs, when careers require it.

There is another demographic challenge faced by higher education. Many institutions will face massive retirements of their faculty over the next decade. The dramatic expansion of higher education in the 1950s and 1960s in response to the post-war baby boom and the related surge in faculty hiring in the 1960s has resulted in a large population of tenured academic faculty of roughly the same age group, which is approaching retirement age in lockstep. The counterbalance is that with the elimination of mandatory retirement age caps, there is a growing tendency for faculty members to stay on well past the traditional retirement age.

Given that the distinction of an institution is determined primarily by the quality of its faculty, we must sustain the quality of our institutions by renewing our human capital, our faculties. Without a more definitive mechanism to determine limits to faculty service, the next generation of faculty members may face a log jam in opportunities for faculty appointments.

Far more complex than the changing age demographics of our society is its increasing diversity by race, ethnicity, and nationality. America is rapidly becoming one of the most pluralistic, multicultural nations. Women, minorities, and immigrants now account for roughly 85 percent of the growth in the labor force.[5] By the year 2000, they will represent 60 percent of all of our nation's workers. At that point, roughly 50 percent of school children will be Hispanic or Black. By the second half of the 2lst Century, Hispanics are likely to become the largest ethnic group in the United States. Those groups we refer to today as minorities will become the majority population of our nation in the century ahead, just as they are today throughout the world. And women, who have already become the predominant gender in our nation and our institutions, are rapidly assuming their rightful role as leaders in our society.

The full participation of currently underrepresented minorities and women is crucial to our commitment to equity and social justice, as well as to the future strength and

prosperity of America. Our nation cannot afford to waste the human and cultural potential, the cultural and social richness, represented by those currently underrepresented in our society. If we do not create a nation that mobilizes the talents of all our citizens, we are destined for a diminished role in the global community, increased social turbulence, and, most tragically, a failure to fulfill the promise of democracy upon which this nation was founded.

In discussing demographic change, it is important to realize that 21st Century America will *not* be a melting pot in which all cultures are homogenized into a uniform blend, at least not during our lifetimes. Rather, it will be pluralistic, composed of peoples of vastly different backgrounds, cultures, and beliefs, people seeking to retain their cultural roots, to maintain their differences from others. Our challenge will be to find the common bonds and values that unite us, even as we learn to respect and value our differences.

The growing pluralism of our society is one of our greatest challenges as a nation, and one of our most important opportunities, because it gives us an extraordinary vitality and energy as a people. As both a reflection and leader of society-at-large, the university has a unique responsibility to develop effective models of multicultural, pluralistic communities for our nation. We must strive to achieve new levels of understanding, tolerance, and mutual fulfillment for peoples of diverse racial and cultural backgrounds both on our campuses and beyond.

The Internationalization of America

Whether through travel and communication, through the arts and culture, or through the internationalization of commerce, capital, and labor, the United States is becoming increasingly linked with the global community. The world and our place in it has changed.

A truly domestic United States economy has ceased to exist. It is no longer relevant to speak of the health of regional economies or the competitiveness of American industry, because we are no longer self-sufficient or self-sustaining. Our economy, our companies, are international, spanning the globe and intensely interdependent with other nations and other peoples.[6] World-wide communication networks have created a genuinely international market, not only for conventional products, but also for knowledge professionals, research, and educational services.

Trends toward internationalization affect our nation beyond commerce and national security. The United States has become the destination of almost one-half of the

world's immigrants, probably about ten million during the 1980s alone. With falling fertility rates of U.S. citizens, immigration has become a 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 a "world nation," with not simply economic and political ties, but also ethnic ties to all parts of the globe.

From this perspective, it becomes clear that understanding cultures other than our own has become necessary, not only for personal enrichment and good citizenship, but for our very survival as a nation. Hence, among the contemporary university's many responsibilities and priorities, one of the highest must be the development and maintenance of programs that reflect a greater international perspective. Certainly we have a long way to go in this country to master what we need to know to participate fully as members of our human family. American knowledge of other languages and cultures is abysmally inadequate. Too many of our graduates have never been exposed to a foreign language or visited a foreign country. Many have not had a chance to feel the texture of life in another era or another culture through literature and poetry or film. By every measure, we fall short educationally of the knowledge and skills it will take to do business, work cooperatively on common problems , and advance our common ideals for humanity.

Despite the intellectual richness of our campuses, we still suffer from the inherited insularity and ethnocentrism of a country that for much of its history has been protected from the rest of the world and self-sufficient in its economy—perhaps even self-absorbed. To respond, we must reexamine the way in which we foster, manage, and promote the international dimension of our educational mission. If our institutions are to serve America in its role as a member of the global community, we must think and act more imaginatively, more aggressively, and more strategically to strengthen our role as truly international centers of learning.

The international component of our teaching and scholarship should pervade the curriculum of the liberal arts and of the professional schools. Knowledge should not be tied to geographic regions; the knowledge revolution is a world-wide phenomenon, and science speaks a universal language. We must ensure that our students are prepared with an understanding of how the rapidity of modern communications and ease of travel will change the texture of their lives. Our intellectual work only flourishes with the infusion of the experiences and the perspectives of other regions, cultures, and traditions.

The Post-Cold War World

For almost half a century, the driving force behind many of the major public investments in our national infrastructure has been the concern for national security in the era of the Cold War. The evolution of the research university, of national laboratories, of the interstate highway system, of our telecommunications systems and airports, and of the space program all was stimulated by concerns about the arms race and competition with the Communist Bloc. Many of the technologies that we take for granted, from semiconductors to jet aircraft, from computers to composite materials, were originally spin-offs of the defense industry.

In the wake of the extraordinary events of the last decade—the disintegration of the Soviet Union and Eastern Europe, the reunification of Germany, and the major steps toward peace in the Middle East—the driving force of national security has weakened and, along with it, much of the motivation for major public investment. Peace has not freed up new resources in the post-Cold War world for investment in key areas such as education and research; instead, the nation is drifting in search of new driving imperatives. While there are numerous societal concerns, such as economic competitiveness, national health care, crime, and K-12 education, none of these has yet assumed an urgency sufficient to set new priorities for public investment.

Furthermore, much of the existing intellectual infrastructure, which was developed to underpin national defense, is now at risk. The national laboratories are facing massive downsizing and are searching for new missions. Intensely competitive markets coupled with the quarter-by-quarter pressure on bottom-line results by institutional investors have forced corporate America to refocus industrial research activities from long-term research to short-term product development.

Equally serious are signs that the nation is no longer willing to invest in research performed by universities, at least at the same level and with the same willingness to support curiosity-driven research. Congress has made it clear that universities must focus more on applied research, more directly related to national priorities. The federal government has yet to develop a successor to the government-university research partnership which served so well during the Cold War years. Hence, it is likely that many of society's most important research institutions, including the research university, will stand at some risk until a new social agenda is developed in post-Cold War America.

Spaceship Earth

There is no question that the growing population and invasive activities of humankind are now altering the fragile balance of our planet. The concerns are multiplying in number and intensifying in severity:

- the depletion of the stratospheric ozone layer
- the buildup of greenhouse gases and global warming
- the destruction of forests, wetlands, and other natural habitats
- the extinction of millions of biological species and the loss of biodiversity
- encroaching desertification
- the pollution of our air, water, and land

With the world population now at 6 billion, we are already consuming 40 percent of the world's photosynthetic energy production.[7] Most estimates place a stable world population at 8 to 10 billion in the mid-21st Century. At this rate, we will eventually consume most of the planet's resources, unless we do something. And because of this overload of the world's resources, even today, over 1.2 billion of the world's population live below the subsistence level, and 500 million live below the minimum caloric-intake level necessary for life; that is, they are starving to death.

Yet, in the face of such alarming global challenges, the U.S. environmental effort is highly self-indulgent, and litigious, focusing on toxic waste dumps and nuclear power, and completely ignoring our nation's greedy consumption of the world's resources. According to most polls, the biggest problem Americans identify in their personal lives is dieting to overcome excess weight—oblivious to the tragic reality that over one-half billion people today are starving to death.

It could well be that coming to grips with the impact of our species on our planet, learning to live in a sustainable fashion on Spaceship Earth, will become the greatest challenge of all to our generation. Universities must take the lead in developing the knowledge and educating the world's citizens to allow us to live upon our planet while protecting it.

Challenge and Change in Higher Education

The American university is the object of great concern to a wide range of people: parents and students, governors and state legislators, the Congress and government bureaucrats, the media, and the public at large.[8] Many of them see us as:

- big, self-centered, and greedy institutions
- the home of spoiled, badly behaved students and even more spoiled faculty ("the new leisure class")
- the parasite of parents with high tuition rates, and of the government with inappropriate charges for research
- the victim of a long list of "isms"—racism, sexism, elitism, and extremism
- the site of a deterioration of intellectual values—as evidenced by scientific fraud, political correctness, and a lack of concern for undergraduate education

We could try to answer our critics with logic or a righteous dismissal 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 our mission. It would be a mistake, however, simply to dismiss these criticisms of higher education. They represent the genuine concerns of the American public—albeit characterized by a great misunderstanding of what we are and what we do—and unfortunately, they contain a good deal of truth about us. They also point out a serious mismatch between what the public wants from us and what we are currently providing.

In the face of all these different, and sometimes contradictory, demands and expectations, the faculty, particularly at research universities, is feeling the stress. It is clear from a number of forums held on university campuses across the nation that there is a growing gulf between those characteristics faculty value (e.g., an emphasis on basic research, a highly disciplinary 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). As a result, many faculty believe they are deprived of the opportunity to do what they do best—thinking, dreaming, talking, teaching, and writing—by the "pressures of the day" which force them to hustle contract research, manage research projects, and deal with government and university bureaucrats, all of which removes them not only from the classroom, but from the laboratory as well.

There is also a growing gap between today's generation of students and the faculty responsible for teaching them. Today's students come from quite different back-

grounds than their teachers; they have different intellectual objectives, and they learn in quite different ways. This mismatch between teacher and student is an important factor in the new tensions surrounding teaching, particularly at the undergraduate level.

All these arenas of stress on the faculty have one fundamental, underlying cause: the stress associated with the reaction to change—change occurring far more rapidly in universities than most of us are comfortable with. Indeed, one frustrated colleague remarked, "The university faculty appears to be the last group remaining in our society who believes that the *status quo* is still an option"!

At an administrative level higher than the faculty, the challenge of change manifests itself in the extraordinary turnover in university presidents. During the past several 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, the average tenure of public university presidents has dropped to less than five years—far too brief to provide the stability in leadership necessary to achieve effective change.

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, destabilize their leadership. The swirling politics on 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 1990, several of which merit further discussion:

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- the cost, price, and value of a college education
- 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
- diversity and pluralism
- the increasing relevance of the university

The Cost, Price, and Value of a College Education

Perhaps no other issue in higher education has become so controversial as its cost. Students, parents, politicians, the press, and the public at large all have expressed strong concerns about the costs of a college education, usually measured in terms of the tuition, room, and board prices charged to undergraduate students. There is a widespread belief that a college education is being priced out of the reach of many—if not most—Americans. Some have even begun to wonder whether a college education is worth the investment.

Despite the clear evidence that a college education, even in private institutions, remains affordable for middle- and upper-income students, public concerns about the costs of a college education remain at an all-time high, even among these groups. This disjunct of reality and belief makes more sense in a historical perspective. Throughout most of this century, the cost of a college education has tended to increase somewhat more rapidly than the rate of inflation. So too has the average family income. In fact, until the early 1980s, increases in family income kept pace with tuition increases so that the fraction of a family's income used for college education remained relatively stable. (With the increase in both state and federal support in the 1960s and 1970s, this fraction actually declined during these decades.) However, as public support weakened in the 1980s, and as the growth in family income slowed, there was an inevitable cross-over. Since 1980, the cost of sending a student to a public university has risen from 9 percent to 20 percent of the average family income, and from 20 percent to 40 percent of annual income for a private university.[9] Little wonder there has been an outcry about the costs of a college education.

There is a paradox here, however. Despite the rising costs of a college education and despite the demographic decline in the number of high school graduates and the rise in public and private tuition levels during the 1980s and 1990s, enrollment rates have continued to rise.[10] This has been driven in part by the increasing value of a college education (as measured by the difference in earning capacity afforded by a college degree),[11] the educational needs of non-traditional students, and the introduction of new degree programs. Another key factor has been the growth in financial aid programs, which have mitigated the impact of increasing tuition on lower- and middle-income students.

In discussing this issue, it is important to distinguish among the costs experienced by the university in the conduct of educational programs, the prices charged to students enrolled in these programs, and the value to the student of this education. From this more detailed viewpoint, one can distinguish three important trends.

We have already noted the first of these trends: the increasing value of advanced education in a world in which one's knowledge is key in determining personal prosperity and well-being.

The second trend is the rapidly increasing cost of education in fields in which the knowledge content is exploding exponentially. While the costs of traditional programs such as literature and history are relatively stable, those associated with high-demand, technology-intensive fields such as science, engineering, and medicine understandably increase at far more rapid rates.

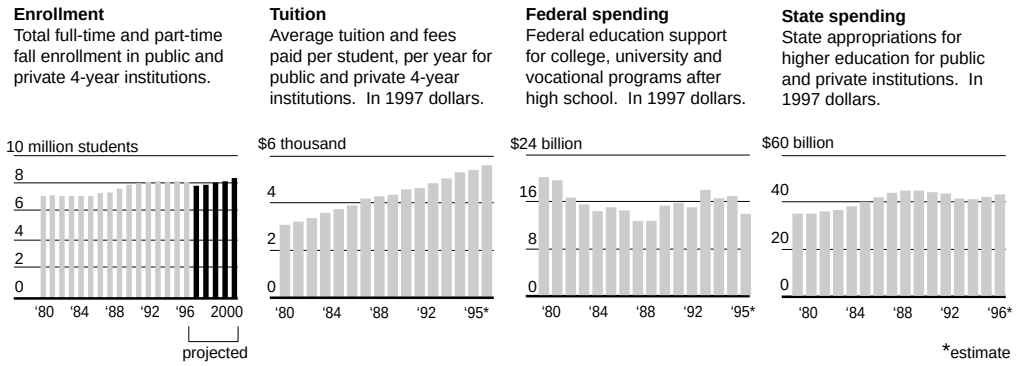
The third trend involves the price of a college education. Since the tuition charged to students in all institutions, public or private, is generally far less than the actual cost of the education they receive, pricing in higher education is strongly dependent on subsidies from other stakeholders. During the decades following World War II, there was a rapid expansion in both state and federal support of higher education, which allowed relatively low tuition levels. As such public support weakened in the 1980s, both public and private universities were forced to increase prices so that students and families would bear more of the true costs. Although universities increased their efforts to seek private gifts to compensate for eroding public support, they also faced the additional burden of providing sufficient financial aid to enable low- and middle-income students to continue to have access to their institutions. This dramatic shift in who pays for a college education, from public tax dollars to individual tuition payments, is one of the most important forces driving change in the 1990s, and it is likely to continue in the years ahead.

The Rising Costs of Excellence and the Limits on Resources

Higher education has faced the challenge of making a transition from the growth era of the 1950s and 1960s characterized by increasing populations, public and private support, and prestige, to the no-growth era of the 1980s and 1990s. Today we face a future in which the costs of excellence in education and scholarship will almost certainly increase faster than the resources available to most institutions.[12]

Realistically speaking, there have probably never been enough resources to meet the needs of enterprising faculty, students, and administrators. Yet it seems evident that higher education has entered a period of budgetary straits in which the resources available from traditional sources in future years will be inadequate to support the desired level and quality of activities sought by most institutions.

Higher education is suffering the impact of a deep and profound political-economic crisis. Universities face the consequences of structural flaws in national and state economies captured by the growing imbalance between revenues and expenditures. These are undermining support for essential institutions as governments struggle to meet short-term demands at the expense of long-term investment.[13]



At the federal level, funding for higher education has been stagnant or declining since the late-1970s. While tax revenues as a share of personal income have increased over this period, the impact of federal entitlement programs such as Social Security, Medicare, Medicaid and the national debt have consumed an ever larger share of the federal budget, now accounting for about 67 percent of federal expenditures.

Cuts in federally supported financial aid have shattered the dream of equal educational access for many students. Universities have had to scramble to make up the difference, in part through increasing tuition for those who can afford the costs of education. The federal government also has taken steps to shift more of the costs of federally sponsored research to the universities through limits on reimbursement for overhead costs and requirements for higher university cost-sharing on federal grants. This has forced many universities to reallocate resources away from education and service to attract federal research funding.

While higher education was a priority in the 1997 agreement between Congress and the White House on balancing the federal budget, the primary beneficiaries are likely not to be colleges and universities, but rather middle-class families. More specifically, the roughly $40 billion of federal tax benefits included in the budget

agreement will flow directly to students and parents through tax credits and deductions aimed at mitigating the cost of a college education. In the end, these dollars will likely be channeled into alternative forms of consumption, not into improving the quality or increasing the capacity of higher education.

The states are in serious trouble. For the first time in thirty years, state support for higher education is dropping. There are few areas of the country in which state support for public higher education will be able to keep pace with inflation during the 1990s, despite the fact that enrollment pressures are now building rapidly as our national demographics shift back into the upswing part of the post-war baby-boom/bust cycles. Most states now spend more on prisons than on colleges, as investing in corrections has soared while investment in higher education has fallen over the past decade.[14]

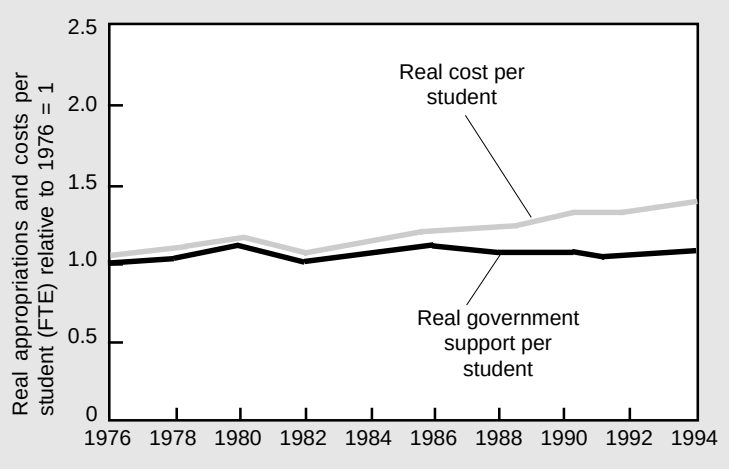
Many universities are facing the bleak prospects of limited resources with seriously deteriorating infrastructures. There is little doubt that failure to build and maintain facilities in the past has resulted in an inadequate level of facilities, which constrains both quality research and teaching. While there was substantial investment in the 1960s, this declined appreciably in the 1970s and 1980s; as a result, equipment has been underfunded for over two decades.

With regard to the funds still used to support higher education, there has been concern that much of this investment has been deployed to achieve continued expansion of our system of higher education— quantity over quality. Because of strong local interests, there has been a tendency to proliferate institutions of higher education, particularly those claiming research as a mission. Community colleges have become almost as common as high schools in many parts of the country. The aspirations of community colleges to become four-year institutions, of four-year institutions to start graduate programs, and of state colleges to become research universities, when endorsed by a willing and energetic political constituency, has led to an overbuilt system of higher education. The obligations created by this over-expansion have effectively reduced the share of the public resources pool available to any given institution.

Harold Shapiro, former president of Michigan and now president of Princeton University, identifies what he calls the "one-percent problem" facing those institutions that compete to be the very best in teaching and scholarship. The 1980s witnessed a trend in which the costs of achieving excellence in higher education rose roughly one percent per year more rapidly than the available resource base. Most studies projected that this trend was likely to continue throughout the 1990s, driven

in part by the expanding knowledge base and by the cost structures of quality research and teaching. While a given institution may be able to accommodate such an imbalance between costs and revenues over the short term, it is clear that over the long term, the "one-percent problem" will require a significant restructuring of the mission and activities of the university.

This concern has been reinforced by a recent study commissioned by the RAND Corporation,[15] the results of which are illustrated in the chart below:



American higher education faces a growing demand for its services: increased enrollments; new forms of education; research to address critical national priorities; and public service at the local, state, and national level. These educational services are becoming ever more expensive, both because of the degree to which costs are driven by the growth in knowledge itself and by the difficulty colleges and universities have had in achieving productivity gains. And in the face of these growing costs and growing demands, public support of higher education at both the state and federal level has been stagnant for two decades.

It seems clear that even if we were to restore national resolve to invest in the future, our resource base could not expand as rapidly as the desires, the opportunities, or the needs of higher education. And it may be difficult to inspire this kind of resolve. In the face of other major societal needs, such as health care, primary and secondary education, crime, and rebuilding our national infrastructure, society will continue to ask harder questions about whether the social product of higher education is commensurate with the resources invested in it.

What are the alternatives facing higher education? Traditionally, private institutions have relied heavily upon tuition and fees as a source of needed income. But the tuition at these institutions is rapidly approaching levels that only the wealthy can afford. The tuition charged by public universities, while still only a small fraction of that at private institutions, is seriously constrained by political considerations. Hence, tuition increases by themselves do not appear to be an option available to most institutions to meet the increasing costs of quality.

For some universities, highly targeted federal support has been an option. Some have even used professional lobbying firms to push special facilities or program support through the congressional appropriation process. Although efforts have been made to constrain such pork-barrel efforts, their apparent success has encouraged more and more institutions to climb on the bandwagon. In addition, private giving can play a key role over the long term, and all universities have greatly intensified their fund-raising efforts.

Universities engage in a host of other activities with resource implications. For example, technology-transfer activities such as patent development and business startups have provided revenue streams for some research universities. Others engage in health-care delivery, extension services, and continuing education. But in the end, it is unlikely that these auxiliary activities can bear much of the cost of quality education, particularly given the strong evidence that government will act to constrain—or at least heavily tax—such activities.

The limits on resources will inevitably force most institutions to shift from a focus on the revenue side to a focus on the expenditure side of the ledger. Cost containment has already become a priority at all institutions, along with strategies borrowed from the corporate world such as total quality management and continuous improvement. As part of this effort, institutions have accepted the necessity of reducing the number of activities in order to better focus their resources—to sustain quality at the likely expense of breadth and capacity.

Despite early efforts at cost containment, higher education has yet to take the bold steps to constrain cost increases that have been required in other sectors of our society such as business and industry. The manner in which our colleges and universities are organized, managed, and governed inhibits change. But, even if our universities were to acquire both the capacity and the determination to radically restructure costs, it is debatable whether industrial sector actions designed to contain cost and enhance productivity could have the same impact in education. The current paradigm of higher education is simply too people- and knowledge-intensive.

Another interesting transformation occurring in higher education today is the convergence in financial character of a number of the leading universities. The distinction between public and private universities is disappearing. For example, although the University of Michigan is a public university, less than 10 percent of its support comes from state appropriation. The majority of its support comes from the same sources available to private universities: tuition, sponsored research, and private giving. Similarly many large private research universities such as Stanford, Harvard, and Columbia are finding an increasing fraction of their resources flowing from public sources. In fact, the most "public" university in the nation today is a private institution: MIT. Over 80 percent of its support comes from the federal government.

As the leading public and private research universities converge, the top tier of fifty or so institutions–those generally identified with the Association of American Universities–now find themselves competing for the same pool of students, faculty, and resources from public and private sources. These institutions have achieved the prestige and prosperity that allow them to attract and retain the best people and to attract the massive resources necessary to sustain quality programs. It has been the unrelenting commitment of these institutions to excellence and leadership—their determination to be the best—that has led to their strength and distinction in the past. They are in a favored position to compete for the resources necessary to build and sustain their current position atop the higher education rating charts, as well their traditional ways of doing things.

As the competition for more limited resources and for the best faculty and students becomes more intense, these prestigious and prosperous institutions, may be able to shield themselves from the social forces exerted on the rest of the higher education enterprise. This cushion may allow these institutions to protect their traditional missions, quality, and character, but it may also isolate them from the major restructuring and transformation that will likely occur in the broader higher education enterprise, as new learning paradigms evolve to serve a radically different future. Hence, one might well question whether it is in the best long term interests of the leading universities–or the higher education enterprise more generally–for a few institutions to skim the cream off the top of the resources pool simply to maintain their traditional roles. Such a strategy could lead to the decoupling and increasing irrelevance of the AAU-class universities to the rest of higher education in America and throughout the world, thereby eroding their leadership roles.

The Changing Relationships with Diverse Constituencies

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; to industry and foundations; and to the full range of other private institutions in our society. The diversity—indeed, incompatibility—of the values, needs, and expectations of these various constituencies poses a major challenge to higher education. The future of most of our colleges and universities will be determined by their success in linking together the many concerns and values of these diverse groups and in responding effectively. Our colleges must act as independent and responsible critics of society, while at the same time strengthening their relationships with and proving their relevance to the various constituencies they serve.

As both the costs and benefits of a college degree increase, students and parents are displaying a more consumer-like attitude toward higher education. The federal government is simultaneously shifting from being a partner with the university, a patron of basic research, to becoming a procurer of research, just as it procures other goods and services. Business leaders, while still valuing higher education, are asking more pointedly why the university is unable to restructure itself to improve productivity and reduce costs like private enterprise. And the press has become particularly critical of higher education, now viewing the university with as much cynicism as it views government.

The university as we know it today is clearly the result of decades of public policies that focused on American higher education as critical to the nation's future in meeting needs such as national security, health care, and social mobility. As society develops a different set of needs, universities must evolve if they are to earn public support. They must re-establish their relevance to this new social agenda or run the risk of being marginalized and replaced by other social institutions. Clearly, responsive and responsible change will be necessary.

The Difficulty in Comprehending the Modern University

Unfortunately, most people—and most components of state and federal government—can picture the university only in terms of the part to which they can relate, (*e.g.*, research procurement, student financial aid, or political correctness). Few seem to see, understand, or appreciate the entirety of the university. Few seem to understand, or care, that shifting state and federal priorities, policies, or support aimed at one objective or area will inevitably have an impact on other roles of the university. For example, excessive cost-sharing requirements, or inadequate reimbursement of

research overhead costs, will inevitably cause the shifting of funds from other functions of the university such as education or public service.

In many ways, the increasing complexity and diversity of the modern university reflect the character of American and global society. To be sure, such intellectual and social diversity on our college campuses leads to fragmentation and the lack of a sense of unity of purpose on the part of students, faculty, and staff. However, the ideal of a "community of scholars," united by a sense of common values and purpose, has, in reality, never existed in American higher education. Rather, our universities have been energized and enlivened by the rich diversity of people and ideas interacting with one another, just as has American society more generally. While this diversity can pose complex challenges, particularly when attempting to build consensus within the university about directions or needed changes, or when relating to a broad array of external constituencies, it also should be recognized as one of the great strengths of higher education in America.

As we have noted, one of the great challenges to the contemporary university arises from a serious mismatch between public perception and institutional reality. To most of society—including parents, politicians, and the press—the nature of the university is best captured by the phrase "sending the kids to college." While it is true that the residential undergraduate education of traditional students is still an important part of higher education, it comprises only a small fraction of our activities. An example here is useful. When one analyzes the total budget of the University of Michigan, only about 10 percent is directly related to undergraduate education. Most of our budget, our people, and our resources are devoted to graduate and professional education, continuing education, research, and service (particularly health care). While other types of universities may not have such a high fraction of their effort going to research, service, and graduate education, many are primarily focused on serving nontraditional students.

Despite these hard facts, we continue to be portrayed and perceived as the nostalgic institutions of a time long past. The fundamental problem is the degree to which universities have allowed others to create this myth for the public, not to mention allowing others to set the agenda and determine the issues concerning higher education.

Intellectual Challenges

There are many who contend that the most significant challenges before higher education today are intellectual in nature. First, the debate over the importance of a liberal education is growing. Some suggest that without a knowledge of the great traditions and values of western civilization, students cannot hope to understand the world and their place in it.[16] Others maintain that the liberal arts today are only a very partial response to the responsibility of the contemporary university.[17] They contend that the liberal arts have lost much of their ability to exert a transforming and enriching influence on students, and should be replaced by a new paradigm of liberal learning through the professions themselves.

Second, there is the debate over the balance between the disciplines and interdisciplinary teaching and scholarship. Today, the academic disciplines tend to dominate the modern university—whether in the area of curriculum, administration, or control of resources. Students, scholars, and administrators all are compelled by the discipline-dominated, professional culture of the modern university to turn inward to their chosen fields.

This deification of the disciplines may be leading the academy toward intellectual stagnation, trapped in the sterile pursuits of increasingly specialized studies. In addition, the very strength of the academic and professional disciplines has created a strong centrifugal force which tends to push apart the various components of the university, weakening the sense of community. As Clark Kerr observed, the modern university has become in some ways simply a cluster of buildings loosely held together by a central heating system.[18]

The way in which we acquire, understand, and apply new knowledge is changing rapidly. With the explosion in multimedia technology and the "MTV generation" of students, we may be witnessing the passage of human society from a writing and reading culture to one based on oral and visual communication—in an ironic sense, returning to the traditions of the classical past.

We have entered a period of great intellectual change and ferment. The knowledge of the world is now available almost anywhere, anytime, to anyone through modern computer/communications networks and digital libraries. 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. We have simply seen too many instances in which a new concept has radically changed our traditional views of a field.

Diversity and Pluralism

In the years ahead, America faces the challenges associated with diversity and pluralism that will determine the strength and vitality of our nation. As both a microcosm and a leader of society at large, higher education has a responsibility to develop effective models of multicultural, pluralistic communities. In particular, we must find ways to increase the participation of those racial, ethnic, and cultural groups not adequately represented among our students, faculty, and staff. Our colleges must take action to compensate for the inequities faced by these groups in society.

Simply providing access and encouraging participation is not enough. We must face the challenge of building supportive environments that accept, embrace, and sustain diversity as essential to the quality of our missions of teaching, research, and service. We must achieve new levels of understanding, tolerance, and mutual fulfillment for peoples of diverse racial and cultural backgrounds if we are to play the leadership role expected of us.

These goals have been an important priority of universities for many years. However, events of the past several years suggest that the road ahead may become more difficult. Throughout society we see a backlash against earlier social commitments and programs. Both the courts and legislative bodies now challenge long-accepted programs such as affirmative action and equal opportunity. The polarization of our society by race, class, and nationality has become more intense, even as our nation and the world have become more linked together politically, economically, and culturally by modern communications and transportation technologies.

Our campuses, while certainly mirroring the divisions in the society they serve, have a responsibility to address these tensions, even if this requires us to swim against the stream of the national mood. It is imperative that higher education recognizes the importance of diversity and pluralism in its mission and makes a firm commitment to its achievement. As responsible institutions—indeed, as a source of leaders of our society—we have an important obligation to provide an excellent education for all peoples. We must also commit ourselves to the recruitment, support, retention, and success of underrepresented minority groups among our students, faculty, staff, and leadership. And we must develop on our campuses an environment of mutual understanding and sensitivity that not only tolerates diversity, but moreover actively seeks and embraces it as an essential objective of the institution. We must stimulate once again the involvement of the entire university community—students, faculty, and staff—in achieving a diverse campus.

In the larger picture, if we are to be successful, we must build new levels of understanding and support beyond the boundaries of our campus. We will need active support and encouragement from our alumni and friends. We will require special assistance from both the public and private sector, from leaders of government, business, and labor to assist us in moving toward our goals of diversity and in reestablishing the importance of these goals in American society. Along the way, we will need new levels of understanding, support, and patience from elected public officials and members of the press as we face the inevitable challenges and frustrations of this important effort.

The Increasing Relevance of the University

Throughout much of American history, universities were protected enclaves, respected well enough, but mostly unnoticed and allowed to carry on unchallenged and generally unfettered. What a contrast today, when the university finds itself defined as a key economic, political, social, and cultural institution. Beyond the traditional missions of teaching, research, and service, the university is now expected to provide the intellectual capacity necessary to build and sustain the strength and prosperity of our society. Through research, it produces the new knowledge necessary to the prosperity and well-being of society. It trains the teachers and scholars, the leaders, managers, and decision-makers necessary to apply this knowledge. And it provides the key to knowledge transfer through its graduates, through traditional scholarly mechanisms, such as publications, through public service, and through companies spun off from its research activities.

It is not surprising that as the university has become a key player in our society, it has also become the focus of much concern. We are victims of our own success. We have entered an era in which educated people and the ideas they produce have become the wealth of nations, and universities are clearly the prime producers of that wealth. This central role means that more people have a stake in higher education, and more people want to harness it to their own ends. We have become both more visible and more vulnerable as institutions. We attract more constituents and support, but we also attract more opponents. In the process, the American university has become, in the minds of many, just another arena for the exercise of political power, an arena for the conflict of special interests. We have become a prime target for media attention and exploitation. We are increasingly the focus of concern of both the powerful and the powerless. The more important question is whether we can survive this new attention with our missions, our freedoms, and our values intact.

Ironically, the university was far better understood and accepted when it played a far less relevant role in our society. As long as we remained in the familiar "Mr. Chips" role, providing a safe haven where families could send the kids to college, we were supported wholeheartedly by society. In some sense, many of our critics may be asking us to return to our earlier and far narrower roles, rather than continuing to provide the vast array of services of a modern corporation. They may be asking for a return to an earlier social contract, suggesting that the academy accept a certain gentile shabbiness as a condition for respect and understanding.

However, we cannot go back. Our knowledge-intensive world has become far too dependent upon the modern university. Indeed, if we were to return to the past, society would simply have to invent new social institutions to play our more expanded roles.

Themes of Change Particular to Public Higher Education

Many of these challenges of change are common to public and private institutions. But there are some unique in either nature or intensity to public higher education.

Politics-Driven versus Market-Driven

Many of the most powerful forces driving change in higher education come from the marketplace: new societal needs, the limited availability of resources, or the emergence of new competitors such as for-profit ventures. The broader higher education enterprise, and particularly private universities, are sensitive and responsive to these market forces.

Public universities often find themselves in a more conflicted position, because the most formidable forces controlling their destiny are political in nature–from state government, governing boards, or perhaps public opinion. Unfortunately, these bodies are not only usually highly reactive, but they also frequently constrain the institution or drive it away from strategic objectives that would better serve society as a whole and toward special interest agendas.

The Nature of Public Governing Boards

American higher education is unique in its use of lay boards to govern its institutions. In the case of private institutions, these are typically self-perpetuated by the board itself or elected by alumni. In public institutions, regents are generally either appointed by governors or elected in public elections, usually with highly political overtones.

Most governing boards of private institutions approach their role first and foremost as trustees, responsible for the welfare of their institutions. In contrast, politically selected board members for public institutions tend to view themselves more as governors or even legislators than trustees, responsible to particular political constituencies rather than more narrowly confined to the welfare of their institution. Instead of buffering the university from various political forces, they frequently bring their politics into the boardroom. Public boards tend to focus on narrow forms of accountability to the particular political constituencies represented by their various members, spending far too much of their time concentrating on administrative rather than policy issues.[19]

The political process involved in selecting public governing boards alienates many individuals with the experience and ability necessary to understand the complex nature of the modern university. Inexperienced boards too often become captivated by the illusion of the quick fix or by the intoxication of power. As a result, many public university presidents and higher education organizations see one of the most serious threats to public higher education today as the deterioration in quality of their governing boards, due in large measure to the powerful political forces swirling around these boards, shaping both their membership and their agendas.

The Breadth and Capacity of Public Universities

Public universities, whether at the campus or the system level, are generally characterized by a size and complexity far beyond that of most private institutions, in direct relation to their more complex constituency needs. For example, most flagship state universities have enrollments in excess of 30,000 students and offer programs covering the full spectrum of academic disciplines and professions. This magnitude gives the public university more resilience in facing the day-to-day challenges of higher education, but it also creates an inertia that inhibits dramatic change. In a sense, the modern public university is like a supertanker, which requires careful strategic navigation long before it approaches its destination. Unfortunately, neither the political environment nor the political character of most public governing boards tolerates such long-term strategic agendas.

The Uncontrolled Accretion of Risk

All of higher education shares the problem that it is far easier for a university to take on new missions and activities in response to societal demand than to shed missions as they become inappropriate or threaten the core teaching mission of the institution. This is a particularly difficult matter for public universities because of intense public and political pressures that require the institution to continue to accumulate missions, each with an associated risk, without a corresponding capacity to refine and focus activities to avoid risk.

University presidents sometimes joke that the academic programs at the core of the university are a fragile enterprise, delicately balanced between two great and usually opposing forces on the modern university campus: the Department of Athletics and the University Medical Center. These two large and growing activities of the contemporary university provide good examples of the types of risks associated with our multiple missions. They sometimes trap us between a rock and a hard place. The high visibility of intercollegiate athletics can sometimes distort the perception of the university and threaten its academic integrity. At the same time, the financial challenges faced by health-care delivery, education, and research can threaten the financial integrity of a university, particularly if it happens to own a hospital system.

Despite their differences in mission, financing, and intellectual content, both intercollegiate athletics and academic health centers have some commonalties. Both reflect the evolution of the modern university to serve societal needs (i.e., public entertainment and health care). Both involve values and principles quite different from those governing academic programs, and both have been buffeted by an unprecedented degree and pace of change. Both can also pose considerable threats to the university. Yet few public universities have been able to take the actions necessary to reduce the risk associated with these enterprises, such as downsizing them, spinning them off, or building firewalls to better isolate their risks from the rest of the institution.

There are many other examples of risk accumulation—e.g., equity interest in spinoff companies, real estate ventures, economic development—all exposing the university to considerable risk, and all subject to strong political forces.

Populism

Universities are not exempt from the forces of populism that rise from time to time to challenge many other aspects of our society—a widespread distrust of expertise, excellence, and privilege. Americans too often are suspicious of, even hostile to, excellence and high achievement, particularly intellectual achievement. We settle for the lowest common denominator rather than honoring and supporting achievement. Dr. William Hubbard, former dean of Medicine at Michigan and then CEO of Upjohn, used to point to one of the great character flaws of the Midwest as "our extraordinary intolerance of extreme excellence." Unfortunately, many universities, faculty, and university administrators have made themselves easy targets by their arrogance and elitism.

One lesson we should have learned during the 1980s is the importance of quality in everything we do and in everything we buy, sell, and produce. It is this culture of competence—a set of attitudes, expectations, and demands—that is often missing in America today. Ultimately, competence requires that people and institutions be held accountable for their performance; and high performance requires competition. Too often, however, we spend our time trying to protect ourselves from accountability and competition.

These character flaws resurface when it comes to key investments in our people, such as education and worker training. We seem determined to insist on bargain-basement prices, even if it means bargain-basement quality in the performance of our institutions or in our products and services. A few years back a senior state official in Michigan told one of us in a moment of candor that quality was a luxury that students had no right to expect from a public university. If they wanted quality, they could pay the extra price to go to a private university. Worth noting is that the individual who said this had gone to Harvard. In a sense, this was a contemporary version of "let them eat cake."

Deconstructionist Politics

Most of America's colleges and universities have suffered the consequences of ill-thought-out efforts by politicians to influence everything from what subjects can be taught, to who is fit to teach, and who should be allowed to study. Too often, such interference is a short-sighted effort to exploit public fears and passions of the moment for immediate political gain. The long-term cost to citizens is high because politically motivated intrusions into academic policy lead, in the long run, to educational mediocrity.

A good example is provided by the efforts in many states to dismantle affirmative actions programs in admissions, hiring, and financial aid decisions in public colleges and universities. This intensifying political pressure on our nation's great public universities is a threat to their unique historic role of providing a world-class educational opportunity to all students who have the will and ability to succeed. And, if politics is allowed to influence university admissions policies, what will be targeted next? Curriculum? Faculty hiring? Research?

The special interest politics of our times has a post-modernist, deconstructionist character that aims not simply to challenge, but at times actually to destroy our social institutions and commitments. This slash-and-burn approach offers little in the way of alternatives. It also has a decidedly anti-intellectual character. In the past, educational institutions were buffered from such attack politics, both by their governing boards and the media. Today, however, these groups now serve to focus and magnify political attacks on our campuses, rather than shielding us from them.

The Role of the Media

In earlier times, the relationship between the university and the press was one of mutual trust and respect. The many values common to the profession of journalism and to the academy helped journalists, faculty, and academic leaders build strong ties. The press understood the importance of the university, accepted its need for a degree of autonomy similar to its own freedoms, and frequently worked to build public understanding and support for higher education.

Today times have changed. The media seems largely ignorant of the nature and missions of the contemporary university, continuing to portray it much as it was during the pre-World War II era. At a time when all societal institutions have come under attack by the media, it is not surprising that universities should also face an increasingly hostile press. This is no doubt due in part to an increasingly adversarial approach taken by journalists toward all of society, embracing a certain distrust of everything and everyone as a necessary value of investigative journalism. Such antagonism is also fueled by the arrogance of many members of the academy, university leaders among them, in assuming that the university is somehow less accountable to society than other social institutions.

In recent years the press has gone beyond simply accusation and investigation to use its formidable powers to manipulate and control public institutions. Relying on powerful weapons such as sunshine laws and first amendment freedoms, the press has brought strong pressure to bear on public universities in an effort to control who,

what, and how they teach. In sharp contrast to earlier times when it helped to protect academic institutions from inappropriate intrusion in academic affairs by governments or private groups, today the press actually intensifies and focuses political pressures on the university.

Perhaps more dangerous are those editors who believe that the press should be used as a tool to achieve certain objectives, well beyond simply reporting the facts or contributing to the corporate bottom line. There has been an alarming tendency in recent years by the press to attempt to control social institutions through the powerful tools at their disposal. While we have grown accustomed to this type of social control through editorial pages, the more direct political manipulation, including threats and intimidation, is a new development. Threatening elected public officials with editorial retaliation if they oppose sunshine laws is one example. In public higher education we have seen efforts to control our affirmative-action policies, our athletics programs, and most recently, our presidential searches.

There is a certain self-righteous nature to this effort. Many editors argue that since a public university is owned by the people, the press has every right to exert control on behalf of the public. But, as we all know, the public is rarely represented by the press with any accuracy. For the editors of major papers to presume that they speak for the public when they attempt to control public institutions is dangerous, indeed. As the profession of journalism merges with the entertainment industry, it has traded off journalistic values and integrity for the sake of the quarterly earnings statement, and it does not have the charter or the expertise to attempt to manipulate or control public institutions.

The Capacity for Change

There is a significant difference in the capacity that public and private institutions have to respond to today's challenges of change as they struggle to adapt and to serve a changing world. The term "independent" used to describe private universities has considerable significance when it comes to the ability to change.

Private universities are generally more nimble, both because of their smaller size and the more limited number of constituencies that have to be consulted—and convinced—before change can occur. Whether driven by market pressures, resource constraints, or intellectual opportunity, private universities usually need to convince only trustees, campus communities (faculty, students, and staff), and perhaps alumni before moving ahead with a change agenda. Of course, this can be a formidable task, but it is a far cry from the broader political challenges facing public universities.

Public universities must always function in an intensely political environment. Their governing boards are generally political in nature and frequently view their primary responsibilities as being to various political constituencies rather than to the university itself. The university also operates within a complex political environment at the local, state, and federal level. In addition, the press is generally far more intrusive in the affairs of public universities, portraying itself as the guardian of the public interest.

As a result, actions that would be straightforward for private universities, such as enrollment adjustments, tuition increases, and program reductions or elimination, can be formidable for public institutions. As noted earlier, the actions taken by many public universities to adjust to eroding state support through tuition increases or program restructuring have triggered major political upheavals that have strongly resisted the change.[20] Although the pressures for change in higher education are great, many public universities may not be able to respond adequately because of political constraints.

Themes of Change Specific to the University of Michigan

During my tenure as president, the University of Michigan faced a number of unique challenges.

The Erosion of State Support

Over the past three decades, the percentage of the University's operating budget supported through state appropriation has dropped from 70 percent to 10 percent. There is no evidence that this trend will reverse itself. Because of the limited will and capacity to support higher education in a weakened economy facing competing social needs, the state will at best be able to support higher education at the level of a regional four-year college, not at the level of a world-class research university. Political pressures will make it increasingly difficult to put a priority on state support for a flagship institution, in turn driving a leveling process in which the appropriation per student is equalized across the state.

Intrusion on University Autonomy

During the 1980s we began to see signs of intrusion upon the traditional autonomy of the University by state government, federal government, the community, and the press. Examples include: state government's attempts to control tuition; the ratio of instate-to-outstate enrollments, programs, and facilities projects; the press's increasing efforts to control the University through use of the Open Meetings Act and the Freedom of Information Act; and city government's efforts to constrain University operations and assess it for city-provided services.

Because the University is one of the nation's leading research universities, it has frequently found itself a test case for the growing burden of federal regulation, audits, and other demands for accountability. This has been made even more serious by a shift in federal attitude toward universities from a partnership to a procurement-contractor relationship.

Political Issues

The University has always had an exceptionally active political climate on campus. As a result, it not only has attracted an unusually large number of special interest groups, but it also has drawn intense external political pressure on many issues. Coupled with the increasing hostility of the media toward higher education, this political tension, while no doubt "invigorating" to the learning environment, can also erode public understanding, trust, and confidence in the University. The recent wars over political correctness are an excellent case in point.

A Tradition of Change

Since change has always characterized higher education, perhaps we can look to other periods of social transformation for precedents. Harold Shapiro has noted that the precursors of change both a century ago and more recently following World War II gave little sense of just how profoundly higher education would change in the following years.[21] For example, consider the situation at the turn of the last century, and the changes that were to occur in the following decades:

1890

The Situation	Things Happening	30-Year Time Frame
• fewer refrigerators than cars • less than 25% of homes had indoor plumbing • less than 10% of citizens graduated from high school • still an agrarian society • university as an intellectually coherent community of shared values	• Industrual Revolution taking hold • colonial colleges awakening • land-grant colleges being mobilized • faculty leadership stirring • foundations for research university being laid	• massive growth in enrollments, degrees • evolution of open, merit-based colleges • teaching, research, service missions • UG, grad, prof level teaching • shift from transmission to search for knowledge • importance of government patronage

A similar chart can compare features of our society and higher education in the years immediately following World War II.

1945

The Situation	Things Happening	30-Year Time Frame
• universities emerging from depression and WWII • Ivys still elitist • few world-class public universities	• returning veterans • booming economy • role of university in national defense	• age profile of population and faculty • distribution of enrollment between publics and privates • importance of federal government financing • geographic distribution of students and institutions • spectrum of scientific and scholarly opportunities • public attitudes toward higher education

During each of these periods, the American university was transformed quite significantly in response to changing societal needs. New kinds of educational institutions appeared: for example, 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.

Many believe that we are now entering another period of similarly dramatic change. And, like earlier periods, we can expect the appearance and evolution of new forms of educational institutions to respond to the needs of a changing society.

1990

The Situation	Things Happening	30-Year Time Frame
• US universities the world's best financed, most respected • 1980s a period of stability: stable enrollments, modest growth in faculty, stable financial aid • expenditures per faculty and student rising • massive proliferation of research universities (with even more aspiring)	• chronic perceived shortage of resources • public concern • perceived unpredictability of resource flow • rigidity of disciplinary structure • difficulty in reaching agreement on evaluation standards • shift from UG to grad/prof education and research • short time frame between basic research and application • public concern about "what is going on" in the nation's universities	• cultural diversity? • globalization? • age of knowledge? • global change? • US < Europe, Asia? • cyberspace nets? • genetic engineering? • ethnic conflicts? • space colonization? • "progress" or "optimization"

Conclusion

While it is always hazardous to speculate about the future, we can predict one theme with some certainty: the challenge of change itself. We face a future in which permanence and stability become less important than flexibility and creativity, in which the only certainty will be the presence of continual change.

Clearly as society changes, institutions that serve society must also change. But here we face a particular dilemma. The pace and nature of the changes occurring in our world have become so rapid and profound that our social institutions—in government, education, and the private sector—are having difficulty even sensing the changes (although they certainly feel the consequences), much less understanding them sufficiently to respond and adapt. Our institutions, including universities and government agencies, which have been the traditional structures for intellectual pursuits, may soon be as obsolete and irrelevant to our future as the American corporation of the 1950s. We need to explore new structures that are capable of sensing and understanding the change, and that can engage in the strategic processes necessary to adapt or control it.

Just as with other institutions in our society, those universities that will thrive will be those that not only can respond to this future of change, but that also have the capacity to relish, stimulate, and manage change. Viewed from 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.

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Part II

Strategic Planning at Michigan

Part II Strategic Planning at Michigan

Many leaders in higher education believe that our changing environment requires a far more strategic approach to the evolution of our institutions. All too often universities tend to react to—or even resist—external pressures and opportunities rather than taking strong, decisive actions to determine and pursue their own goals. So too, they frequently become preoccupied with process rather than objectives, with "how" rather than "what." There is a growing conviction that to seize the opportunities, to face the responsibilities, and to meet the challenges facing higher education, our institutions should initiate planning processes capable of determining both a direction and a strategy capable of guiding them into the 21st Century.

While many academics are reluctant to accept either the necessity or the validity of formal planning activities, woe be to the institutions that turn aside from strategic efforts to determine their futures. The ability of universities to adapt successfully to the revolutionary challenges they face will depend a great deal on an institution's collective ability to learn and to continuously improve its core competencies. It is critical that higher education give thoughtful attention to the design of institutional processes for planning, management, and governance. Only a concerted effort to understand the challenges of the present and the possibilities for the future can enable institutions to thrive during a time of such change.

Chapter 4 *The Strategic Planning Process*

During the mid-1980s, the University of Michigan leadership sought to develop and then articulate a compelling vision of the University and its role and mission for the 21st Century. This effort was augmented by the development and implementation of a flexible and adaptive planning process. Key was the recognition that in a rapidly changing environment, it was important to implement a planning process that was not only capable of *adapting* to changing conditions, but to some degree also capable of *modifying* the changing environment in which the University must function.

The unusually large size, complexity, and decentralized culture of the University posed significant challenges to the development of an effective planning process. Some degree of centralized planning was necessary to develop institution-wide objectives, but it was also necessary to design a process that would engage the many different components of the University in their own planning efforts. It was essential to engage the University community and various constituencies beyond the campus in a joint effort to help shape and refine the strategic goals, objectives, and actions necessary to achieve the vision.

This chapter describes the implementation and evolution of this planning process.

Why Bother?

Strategic planning in higher education has had mixed success, particularly in institutions of the size, breadth, and complexity of comprehensive research universities. Even the word "strategic" sends shivers up the spine of some faculty members and triggers vitriolic attacks against "bureaucratic planners" from many others.

Yet, leading a university during a time of change without some formal planning process is a bit like navigating the Titanic through an iceberg flow without a rudder. Simply reacting to challenges and opportunities as they arise can eventually sink the ship. At Michigan, we had encountered our first iceberg with the loss of much of our state support during the early 1980s. Hence we believed it was time to develop a planning process capable of navigating the treacherous waters ahead.

In launching a planning process, we accepted several key assumptions. First, we recognized that the University of Michigan was a very complex system, responding to the cumulative effects of its history as well as to the dynamic boundary conditions of its interactions with the changing external world. Despite this complexity, we believed it critical that the University take responsibility for its own future, rather than having its future determined for it by external forces and pressures.

Second, we believed that the University of Michigan would face a period of unusual opportunity, responsibility, and challenge in the 1990s. During this pivotal decade, it could—indeed must—seize control of its own destiny by charting a course to take it into the next century.

Finally, we were convinced that the challenges facing higher education in the late twentieth century required a new paradigm for the university in America, and that the University of Michigan was in an excellent position to develop this model for the nation. This latter assumption is important. It grew out of a consideration of the history of higher education in America and the unusual nature of the contemporary challenges confronting the University.

What Is Strategic Planning?

The early objective of our planning effort could be stated in simple terms: to educate everyone in the University community, from the central administration to the deans to the faculty and staff, about where we were as an institution, where we came from, and where we were headed. We wanted to shift people's attention from tactics to strategy, from "how" to "what."

To address the question posed above, it is probably easier to define strategic planning by describing what it is not rather than what it is.[1]

- Strategic planning is *not* a process cast in stone and located in some staff group remote from decisions. It should be linked effectively with short-term operations, and strategies should be expressed in terms of operating criteria so that they can be related to budgets and decisions.

- Strategic planning is *not* a response to short-term pressures, problems, and challenges. It deals with the general, long-term direction in which the organization is aimed.

- Strategic planning is *not* an operational or functional short-term plan. It involves the integration of longer-term unit plans into a balanced strategic plan for the organization.

- Strategic planning is *not* a vague statement of "good things" one might like individually. It should consist of objectives arrived at by persons at the top of an organization who make a commitment to them.

- Strategic planning is *not* a statement of future actions that is erected and left alone. It is a statement that is progressively revised to express a reassessment based on information and experience assimilated during the year (i.e., it reflects "organizational learning").

- Strategic planning should *not* be a set of rigid statements that freeze an organization along a given path. It should provide a flexible framework that guides both formal and informal (intuitive) decision-making.

Because strategic planning should always be linked to operational decisions, some prefer to use the phrase "strategic management" rather than strategic planning. Here there is an important distinction to make. *Strategic planning* is deciding what should be done; or, in other words, choosing objectives ("What do we want to do?"); *tactics* are operational procedures for accomplishing objectives ("How do we go about doing it?"). Long-range planning is not the same as strategic planning. Long-range planning establishes quantitative goals and a specific plan. Strategic planning establishes qualitative goals and a philosophy.

The Strategic Planning Process

There are a variety of formal approaches to strategic planning. We were after a progressive, flexible, and adaptive process, capable of responding to a dynamic environment and an uncertain, "unknowable" future.

How is a strategic plan usually formulated? The process of strategic planning usually begins with the formulation of perceptions or scenarios of likely future external environments and constraints. Part of the skill is to ask the right questions concerning these scenarios—questions about operational, political, social, economic issues. Alternative scenarios must be examined and possible side effects appraised.[2]

Once a consensus is achieved concerning the likely future environment, the process moves on to the selection of objectives and strategies.

To summarize, a strategic planning process involves:

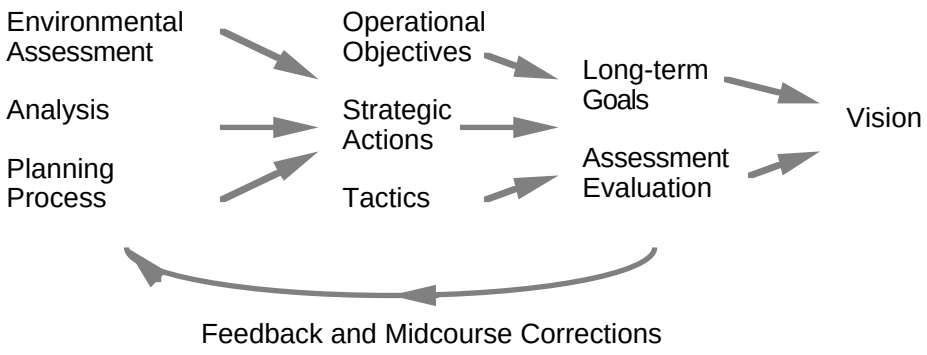
- Development of a strategic plan (and contingency plans)
- Development of procedures for implementing the plan, linking it to operational decisions as flexibly as possible
- Incentives to management at different levels
- Effective communication to persons at different levels
- Processes for periodic review of the plan, for assessing or monitoring the implementation of it, and for making necessary revisions in the process

While there are many ways to organize strategic planning, most fit into the following framework of steps:

1. Mission and Vision
2. Environmental Assessment
3. Goals
4. Strategic Actions
5. Tactical Implementation
6. Assessment and Evaluation

At Michigan we sought a planning process appropriate for an institution of vast scale, great diversity, and unusual complexity. With over 36,000 students on the Ann Arbor campus, 3,400 faculty, 14,000 staff, 17 schools and colleges, hundreds of institutes, centers, and programs, and an operating budget of almost $3 billion per year, the University of Michigan in Ann Arbor is one of the largest and most complex campuses in the world. Hence it was imperative to develop a planning process capable of dealing with such magnitude and intricacy.

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. Particularly 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. The objective is an “adaptive” planning process appropriate for a rapidly changing environment.

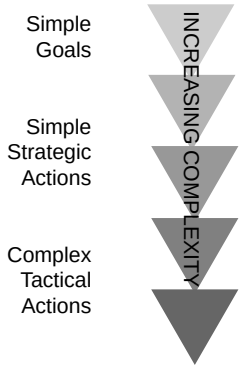


For this reason, the University adopted a variation of strategic planning that James Brian Quinn refers to as "logical incrementalism."[3] As with most strategic processes, one begins with a clear vision statement for the institution. Within the context of this vision, one then sets out intentionally broad and rather vague goals—goals such as "excellence," "diversity," and "community." The strategic approach is then to engage broad elements of the organization in efforts to refine and articulate these goals while developing strategic plans and operational objectives designed to achieve them. Key to the success of logical incrementalism approach is the ability to separate out only those plans, actions, and objectives that move the institution toward the proposed vision.

At one level, logical incrementalism is a "small-wins" strategy, relying on a series of small steps to move toward ambitious goals.[4] Viewed in a different light, it is a highly opportunistic strategy in that it prepares the organization to take far more aggressive actions when the circumstances arise. To some degree, it appears first to be a random walk, sometimes taking two steps forward and then one backwards. But the process is always guided by important institution goals, even if at first they seem general and abstract.

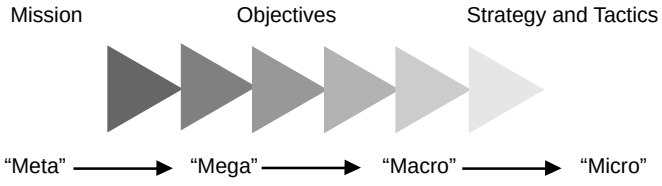
The planning process is evolutionary in the sense that it moves from broad goals and simple strategic actions to increasingly complex tactics.

Simple Goals and Actions for Complex Problems...



In a sense, it shifts from the "meta" to the "mega" to the "macro" to the "micro" viewpoint.

The Planning Process



At the University of Michigan, the planning process was designed to work simultaneously on various institutional levels, ranging from the University as a whole to various academic and administrative units. Coordinating these multiple planning processes was one of the great challenges and a top priority.

The Context

The strategic planning process was launched at the University of Michigan during the late 1980s, following a period of forced reductions and reallocations known as "the Five Year Plan." The serious decrease in state support that began in 1981 triggered a wave of immediate cutbacks and planned reductions that were carried out over a five-year period. Several of the University's programs were dramatically downsized after faculty scrutiny and debate. While the University's most prestigious and critical programs were maintained, this program of reduction and reallocation had a dampening effect on the spirit of collegiality that normally fortifies the working relationship among faculty and between faculty and University administration.

With the upturn in the state's economy, we sought to develop a planning sequel that would shift the University's stance from reactive to pro-active, that would view the external environment as challenging rather than threatening, and that would heal the wounds of the Five Year Plan. The emphasis of the new approach was to switch from tactics, or how to do things, to strategy, or the determination of what was worth doing. Strategic planning, with its emphasis on the dynamic interaction of the University's mission with a complex environment, seemed ideally suited for this change in approach.

We aimed to develop the strategic planning process concurrently on the central university planning level and the individual unit level. A central strategic planning team was formed to review essential themes and components of the University's mission, and the individual academic and administrative units were to have strategic retreats with the provost and his senior staff members. There were several desired outcomes of this approach:

1. To clarify the University's long-range goals within the context of the future national and international environment in which it would operate

2. To encourage such strategic planning and goal setting on the unit level

3. To update the central administration on the challenges and opportunities facing the individual units

4. To broaden individual unit-level understanding of the University context in which it operates

5. To adjust the allocation of incremental resources according to priorities established through the strategic planning process

The proposal for a strategic planning process was presented, discussed, and approved in an Executive Officer retreat in September, 1986. On September 24, as provost, the strategic process was presented to the Academic Affairs Advisory Council (AAAC), whose membership consists primarily of the deans of the schools and of colleges of the University and the provost's senior staff.

The small working group that had assisted the provost in defining the process prior to its approval was expanded and became the University's Strategic Planning Team. Its membership included the provost's senior staff members, the Graduate School Dean, the faculty chairs of the Senate Advisory Committee on University Affairs and the Budget Priorities Committee, and faculty members noted for their expertise in strategic planning.

The Strategic Planning Team was asked to address the following issues:

- Initiating an "environmental assessment" to guide the development of institutional objectives and priorities

- Developing the first "draft" of these institutional objectives and priorities for consideration by the Executive Officers

- Developing the detailed process for strategic discussions with University units

In January 1987, a set of three University-wide strategic initiatives was announced to the University community. The first of these, the Presidential Initiative Fund, was a five-year program designed to support interdisciplinary research proposals, funded in part through a $5 million grant made by the Kellogg Foundation. The other two initiatives focused on improvements in undergraduate education and on the recruitment and retention of minority students and faculty. Each was funded through a $1 million per year reallocation of General Fund dollars.

Five schools and colleges were selected to participate in strategic retreats during the winter and spring of 1987. Some of the units were chosen for their strong leadership and internal planning structures, others because the strategic retreat seemed to be a positive way to work through important internal developments. The senior staff in the Provost's Office developed a generic, comprehensive retreat agenda and format that could be adapted to each individual unit's needs. This agenda focused primarily on the future directions for the unit, resources available and needed to achieve the unit's objectives, and an evaluation plan by which progress could be monitored.

Pre-retreat negotiations were carried on between the Provost's Office and the individual deans or directors in order to reach mutual agreement about the issues to be covered during the retreats. Units were asked to provide a written statement about future goals and objectives, which would then form the basis for the retreat discussions. In addition, the dean was encouraged to furnish "white papers" to the Provost's Office prior to the retreat, which would help staff members understand the history of the individual unit, its national stature, and current issues in the field.

The Provost's Office developed a standard format for units to provide historical background data, including information on budgets, enrollments, and staff, all prior to the retreat. The unit retreats were scheduled for five-hour periods in the unit's facilities, which were later toured if space was a major theme of the retreat. Attendees included the head of the individual unit (either a dean or director), other representatives of the unit at the dean or director's discretion, the provost, Academic Affairs senior staff, and two faculty representatives from the University Budget Priorities Committee.

The first round of retreats, held in the spring of 1987, involved careful preparation and followup. Two pre-retreat, agenda-setting meetings were held between the unit head and senior Provost's Office staff to clarify agenda issues and prepare the unit for the retreat. At a third and final meeting, the provost outlined the areas of concern he wanted to address during the retreat so that there would be time for the dean to give some thought to these matters prior to the discussion. Post-retreat activities included Provost's Office summaries of the retreat and a follow-up meeting to bring closure to the process.

When President Harold Shapiro announced his acceptance of the presidency of Princeton in spring of 1987, the Office of the Provost faced the challenge of balancing additional duties associated with the presidential transition while maintaining the momentum of the strategic planning and retreat process. However, the uncertainty generated by the change in leadership rippled through the Provost's Office and the

strategic planning process. Would the new president want to continue the process? Was it appropriate to have information gained from the retreats translated into significant changes in resource allocation during the transition?

A very full schedule of retreats continued through fall and winter terms of 1987-88, with some modification of process. Our growing familiarity with both the retreat process and the individual units made some of the earlier pre-retreat activities unnecessary. The two agenda-setting meetings were condensed into one, and the formal staff briefing meeting was eliminated. Retreat follow-up meetings were put on indefinite hold pending a resolution to the presidential transition.

Throughout 1987-88 we continued to meet with an expanded version of the original Strategic Planning Team. The team size went from twelve members in 1986-87 to twenty-six members in 1987-88, gaining primarily deans and executive officers. While the role of the team continued to be that of guiding and developing the strategic leadership process, it added the function of serving as a sounding board for issues arising in "transition." The primary focus of the team's discussions was the reconceptualization of the University's "leadership mission" given the changing environment in which it was operating.

When I was selected as president of the University, the interim nature of the Provost's Office led to a temporary suspension of retreats. However, when Charles Vest was appointed as provost in January, 1989, the strategic retreat process was resumed. The Strategic Planning Team for 1988-89 was trimmed back to its original size of twelve members. Its composition included many of the original team members and reflected changes in executive leadership. As president, I continued to lead the regular discussions on the future of the University, while Provost Vest became responsible for the strategic retreat process.

Another Way to Look at the Strategic Process

During the early stages, the strategic process coincided with the organization and installation of a new University administration. The strategic approach first taken by the new administration involved four simultaneous activities:

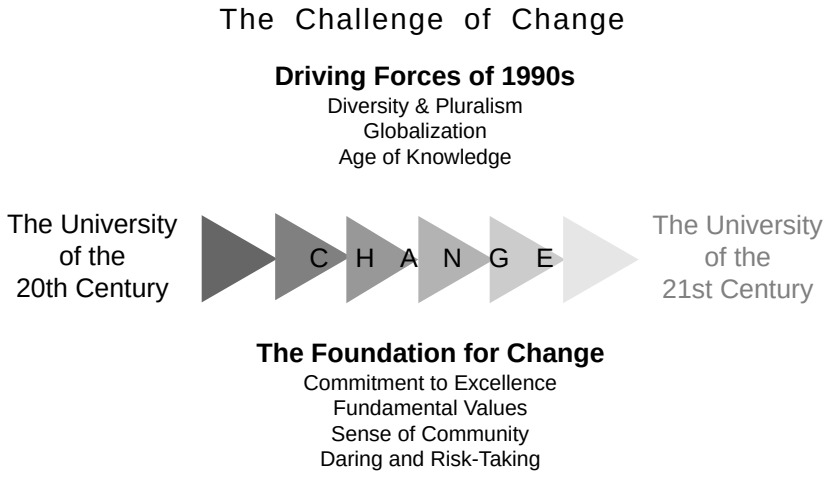
- Setting the themes
- Building the leadership teams
- Building the networks
- Implementing the plans, actions, and processes

These activities were all based upon and guided by the strategic planning activity conducted during the 1986-88 period.

Setting the Themes

The key themes of change identified and considered by the strategic planning process were first set out publicly in the Presidential Inaugural address of 1988 (see Appendix A):

- The increasing pluralism and diversity of the American people
- The globalization of America and the shrinking global village
- The Age of Knowledge



These themes were reinforced and expanded on many subsequent occasions, including commencement addresses, the State of the University Addresses, and other major speeches and interviews. They served as the rationale for the first major initiatives of the new administration: the Michigan Mandate, the establishment of a new senior position for international activities, and the major leadership role played by the University in building and managing national computer networks (e.g., NSFnet and the Internet).

In the second year of the effort, three new themes were added to the original list:

- 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 Institute 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 State Economic Study, and the redesigning of the University's technology transfer effort).

A few additional themes could be better classified as opportunities than challenges. These were the frontier themes traditionally addressed by research universities. For example, 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. The results include the Molecular Medicine Institute in the School of Medicine, the Ultrafast Optics Laboratory in Physics and Engineering, and the adaptive complex systems activity, affiliated with the Santa Fe Institute (the "Bach" group).

Efforts were also made to articulate the particular challenges facing higher education during the 1990s:

- The challenge of change
- The commitment to excellence
- The importance of fundamental values
- The building of a community of scholars
- The restoration of public understanding, trust, and support
- The acquisition and management of the resources necessary for excellence

These themes of challenge applied to most institutions. At the University of Michigan, we took the process one step further by defining unique strategic themes for our institution in the 1990s:

- Inventing the university of the 21st 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
- In general, "keeping our eye on the ball"

(The last theme, of course, acknowledged that consistency and persistence were essential to the success of any strategic effort).

These themes were carefully woven into communications activities, both on and off campus. They served as the rationale and foundation for a wide array of specific objectives and strategic actions—all aimed at moving the University toward the Vision 2000 goal of leadership.

The Leadership Teams

A significant amount of energy and effort was directed at attracting outstanding people into key leadership roles. These leaders were formed into a number of leadership teams.

The formal leadership teams of the University included:

- Executive Officers
- Academic Policy Group (Deans, Provost, President)
- Budget Priorities Committee
- The Senate Assembly and its executive body (SACUA)
- Regents

In addition, there were a number of ad hoc or informal planning groups formed by the President and Provost:

- Strategic Planning Groups
- Seminar on University Priorities (SOUP)
- Futures Group
- Change Group (Michigan Mandate)

There were a series of special events such as leadership retreats involving EOs, deans, SACUA, and student leaders, school and college teams including executive committees and chairs, and administrative unit planning teams—all of which played a key role in the planning effort.

Building the Networks

Key in any strategic process are the series of networks that link together participants in the process of moving the institution forward. At Michigan, we relied on several classes of networks. First, we strengthened internal networks, linking leadership, faculty, staff, and students:

- Leadership networks (EOs, Deans, Directors, Regents)
- Faculty (SACUA, Senate Assembly, College Executive Committees)
- Students (MSA, RHA, IFC, PanHell, College Student Governments)

Second, we worked to build networks external to the University:

- Presidential Advisory Council
- Michigan Business-Higher Education Roundtable
- Presidents' Council of State Universities in Michigan
- Alumni networks (e.g., Citizens' Council)
- National Associations (AAU, NASULGC, Big Ten)
- Communities (Ann Arbor, Detroit, Flint, Grand Rapids)

In addition, there were a number of important special constituencies with whom we needed to develop strong ties:

- Minority communities
- Media
- Labor
- Public opinion

Such a network building effort allows the propagation of information from various leadership planning groups to the University community more broadly that is crucial to the success of any strategic effort.

Strategic Thrusts

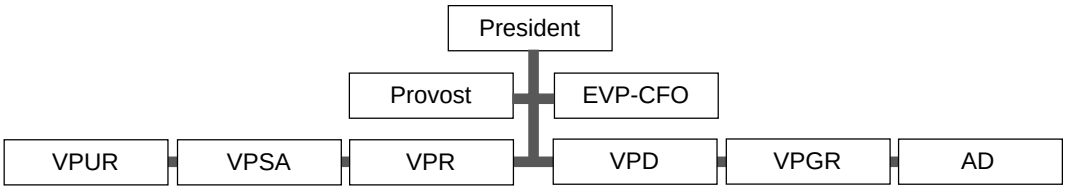
Over the course of the next several years, there were a number of specific strategic actions spawned by the strategic planning effort:

- The Michigan Mandate
- Information Technology
- University Initiative Fund
- Asset management strategy
- The Campaign for Michigan
- State relations
- Washington relations
- Communications
- Community relations
- Campus safety
- Student behavior
- Sense of community
- International strategies
- Resource acquisition and management strategies
- Graduate and professional education
- Enhancing the research environment
- Human resource development
- Intercollegiate athletics

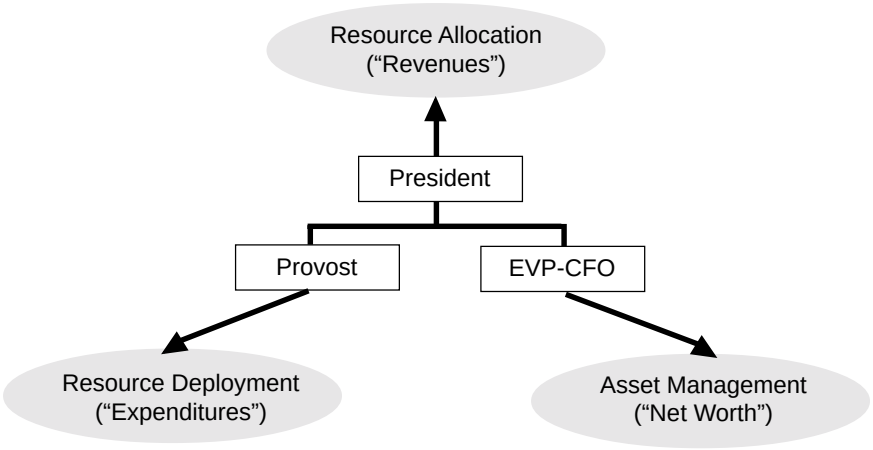
Many of these initiatives continue to evolve, reflecting the overlap of the phases of initiative launch, implementation, achievement and maintenance of the goals.

Responsibilities for the Strategic Process

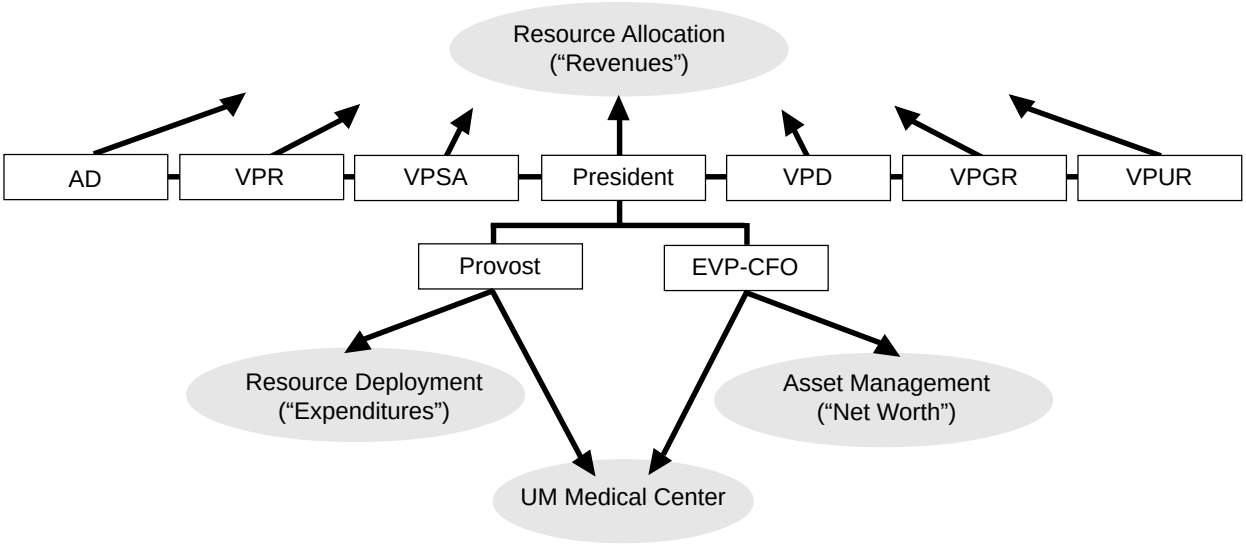
The executive officers of the University responsible for the UM-Ann Arbor campus were organized as follows:



Both the provost and EVP/CFO are catergorized as senior executive officers because they, along with the president, have primary responsibility for the resources of the University.



Of course, all executive officers, to some degree, share responsibility for generating the resources of the University, working closely with the president in the following activities:



The role of the executive officers goes far beyond resources, however. In the early 1990s, we held a series of retreats concerning the assignment of strategic planning functions and issues. The planning areas considered most appropriate for the University administration included:

1. Resources
    - Resource acquisition
    - Cost containment (and reduction)
    - Asset management
    - Capital facilities

2. External relations
    - Community relations
    - State relations
    - Federal relations
    - Higher education networks
    - Public relations
    - Media relations
    - Alumni relations
    - The Fund-Raising Campaign for the 1990s

3. The Michigan Mandate
    - Developing a multicultural community
    - Broadening the base (women, international scholars)
    - Program inventory and assessment

4. Globalization of the University
    - Academic programs
    - Institutional relationships

5. Preparation for an Age of Knowledge
    - Next generation of information technology
    - Knowledge-based institutions
    - Impact on teaching and scholarship

6. Changes in the University culture
    - A sense of community
    - Pride, loyalty, commitment to the University
    - Balancing rights with responsibilities
    - Entrepreneurship, risk-taking, fault-tolerance
    - Grass-roots optimism and empowerment
    - Transformation of adversity into opportunity

7. Mission and roles of a 21st Century university
   - Core missions (teaching and scholarship)
   - Other primary missions
   - Secondary missions

The planning areas considered most appropriate for faculty bodies such as the Senate Assembly included:

1. Faculty issues (rewards, tenure, retirement)
2. Undergraduate education (curriculum, student life)
3. Graduate education
4. Professional education
5. Changing nature of scholarship (interdisciplinary, venturesome)

The various academic and administrative units of the University were assigned responsibility for their own internal planning activities.

The Role of the President

A university president must fill many leadership roles.[5, 6] First among these is substantive leadership. A president is expected to develop, articulate, and implement visions of the university that sustain and enhance the quality of the institution. This must involve bold and creative long-range thinking about a broad array of intellectual, social, financial, political and resource issues that envelope the university. It is essential to keep the institution's focus on the future, but with a firm understanding of the present and an appreciation of the tradition and values of the past.

Equally important are a broad range of responsibilities that might best be summarized as symbolic leadership. As head of the university, the president must manage the complex array of relationships with both internal and external constituencies. On the campus, these include students, faculty, and staff. The myriad of external constituencies involve alumni and parents, local, state, and federal government, business and labor, foundations, the higher education community, the media, and the public at large. Needless to say, the diverse perspectives and often conflicting needs and expectations of these various groups make the management of relationships an extremely complex and time-consuming task.

A third leadership role of the president could be described as pastoral care. In a very real sense, the president frequently becomes a key source of guidance, energy, and emotional support for the entire institution. The president must keep this critical role in mind both when working directly with university colleagues and when working in broader university venues such as ceremonial events or communications.

Of course, there is an undeniable fact of life here. No president can possibly fulfill all the dimensions of this job. Hence, any president must first determine which aspects of the leadership role best utilize her or his talents. Then a team of executive officers and senior staff must be assembled that can extend and complement the activities of the president to deal with the full spectrum of the university leadership responsibilities.

Perhaps because of my background as a scientist, I tended to view my primary role as providing *strategic leadership*: namely, providing the vision, energy, and sense of excitement necessary to propel and guide the University into the next century. In this spirit, I viewed one of my most important responsibilities during the early years as asking the critical questions about the future of the University—as posing the challenges I saw before us.

A Time of Opportunity, Responsibility, and Challenge

The early activity of environmental scanning led us to conclude that the University of Michigan would face a period of unusual challenge, responsibility, and opportunity during the 1990s.

We continued to benefit from our reputation as the flagship of public higher education, the pace-setter among comprehensive public research universities. In terms of the quality of our human resources, we had never been in a better position. We employed a faculty of great intellectual strength and unusual breadth. We enrolled a student body of a quality that was unsurpassed by any public university in the nation. The roughly 400,000 degree holders from the University of Michigan represented an extensive network of leaders who could have extraordinary impact and influence on the future of their university.

We also enjoyed an unusual opportunity to attract financial resources. While state support had certainly not been as strong in recent years as it once was, we nevertheless were located in a relatively prosperous state, which certainly had the capacity to

better support, sustain, and enhance an institution of the quality of the University of Michigan. In the 1980s, we had learned how to play the game of attracting federal support far more effectively. Despite constraints on many national research programs, the University of Michigan's federally sponsored research had increased quite significantly, with good potential for further growth. Furthermore, we had benefited from an increase in support from the private sector, particularly from our alumni and friends, who had recognized the impact that their contributions could have. The Campaign for Michigan of the 1980s generated $160 million to sustain the institution; and the level of annual giving to the institution had increased to $60 million per year.

Perhaps our most important opportunity of all stemmed from the very nature of the institution's charter. Unlike most other public institutions, the University of Michigan had constitutional stature. That is, the Board of Regents of the University derived its power directly from the constitution of the State of Michigan and hence was on an equal footing with the state legislature, governor, and other state bodies. This provided the University with an unusual degree of autonomy: we could control our own destiny; we could set our own standards and expectations; and we could pursue our own goals and values.

In a sense, we enjoyed the autonomy—the control over our own destiny—of private institutions. And at the same time, we received the support of a public university. As a sidenote, it might be of interest that the $300 million we received each year in state support corresponds to the income received from an endowment of roughly $6 billion—comparable to the endowment of Harvard in 1990. As a result, the University of Michigan in many ways benefited from the best of both the public and private worlds of higher education. The opportunity to increase the achievements and distinction of the University significantly was certainly available.

With the opportunities came some very important *responsibilities*. The first responsibility of the University was to our students, the "raw material" entering our institution that represented the most valuable resource of our state and nation. We believed that we were enrolling not only the most outstanding students in the history of the University, but also perhaps the largest number of outstanding high school graduates of any university in the country. The extraordinary quality of these students required an extraordinary commitment; we had to be responsible stewards and provide the kind of education so richly deserved by these students.

We had a similar responsibility to our faculty. During the 1980s, we hired almost 1,000 new faculty in the University, drawn from the best institutions throughout the

world. These new faculty represented a valuable resource, and we needed to provide them with the opportunity to develop their talents to the fullest by providing them with the environment, support, and encouragement to push the limits of their abilities.

The University also had a particular responsibility to achieve the strong participation of underrepresented minority groups among its students, faculty, staff, and administrators. Fundamentally, the strength of our state and our nation was (and is) dependent upon the full participation of all citizens, regardless of racial, ethnic, or cultural background—and the University of Michigan needed to play a leadership role in this regard. We had to achieve new levels of understanding, tolerance, and mutual fulfillment for peoples of diverse backgrounds.

The final area of responsibility was to our state, our nation, and, indeed, to the world. The University of Michigan was, after all, a public institution, and as such, it had an important mission to respond to needs of our local community. Furthermore, the university had long served both the nation and the world through its instructional and research programs and needed to continue to do so.

If we were to grasp these opportunities while meeting our responsibilities, we had to face as well several important *challenges*. These challenges were not so much concerned with resources, state funding, or physical facilities. Rather, these challenges revolved around the very nature of what we believed the University was and what we wished it to be. I termed these the *challenges of excellence*.

The first challenge before the University involved our rededication to the achievement of excellence. It was time for Michigan to *pick up the pace a bit* by building a level of intensity and expectation that compelled us to settle for nothing less than the best in the performance of faculty, students, and programs. Whether we liked it or not, the University was engaged in a highly competitive race for the necessary resources. Other institutions that in years past were not regarded as our peers were now accelerating rapidly. It was the achievement of excellence that would set us apart—that would provide us with the visibility to attract the human and financial resources, the outstanding students and faculty, and the support from the public and private sectors so essential to the enterprise.

Second, we needed to commit ourselves to *focusing resources* if we were to achieve excellence. In years past, regular increases in public support had allowed the University to attempt to do a great many things, with a great many people—and to attempt to do them all very well. However, in the future of constrained resources

that we faced, we could no longer afford to be all things to all people. Quality had to take priority over the breadth and capacity of our programs and become our primary objective. To echo the words of Frederick Terman, Provost of Stanford during the 1960s and the father of Silicon Valley, we must strive to build "spires of excellence," not "plateaus" of uniform but necessarily lower quality across all disciplines.

Third, as we focused our resources to achieve excellence, we needed to keep in mind that our highest priority was *academic excellence*: outstanding teaching, research, and scholarship. The University of Michigan's reputation would not be built on the football field nor in the concert hall; it would be based on the quality of its activities in scholarship and instruction.

Fourth, the University needed to be responsive to *changing intellectual currents*. Academic leadership demands pursuing the paths of discovery that influence the evolution of intellectual disciplines. Increasingly we were finding that the most exciting work was occurring not within traditional disciplines, but rather at the interfaces between traditional disciplines, where there was a collision of ideas that could lead to new knowledge. All too often academic institutions tended to regard their role more as the keepers and transmitters of knowledge, rather than as the creators of new knowledge. They became trapped in tradition. At Michigan, we wanted to stimulate a transition to a change-oriented culture, in which creativity, initiative, and innovation were valued. We needed to do more than simply respond grudgingly to change: we needed to relish and stimulate it.

Fifth, the University faced the challenge of *diversity and pluralism*. Our ability to achieve excellence in teaching, scholarship, and service would be determined over time by the diversity of our campus community. We knew our responsibility to reach out to and to increase the participation of those racial, ethnic, and cultural groups not adequately represented among our students, faculty, and staff. Beyond this, we faced the challenge of building an environment of mutual understanding and respect that not only tolerated diversity, but sought out and embraced it as an essential objective of our University.

Finally, the University faced the challenge of *collegiality*: the need to pull together and unite our academic community behind common goals and values. It was an unfortunate fact that unusual strength in the disciplines could frequently create centrifugal forces that pulled people and programs apart. We needed instead to develop a process that drew together independently strong people in the pursuit of common objectives.

[1] Much of this section is drawn from a series of lectures by Dr. Allan Spivey, Professor of Business Administration and a key participant in our strategy planning activities.
[2] Peter Schwartz, *The Art of the Long View: Planning for the Future in an Uncertain World* (New York: Doubleday, 1996).
[3] James Brian Quinn, *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry* (New York, Free Press, 1992): 473.
[4] Karl E. Weick, "Small Wins: Redefining the Scale of Social Problems," *American Psychologist* Vol. 39, No. 1, (January, 1984): 40-49.
[5] W. G. Bowen and H. T. Shapiro, eds., *Universities and Their Leadership* (Princeton: Princeton University Press, 1998).
[6] Peter Flawn, *A Primer for University Presidents* (Austin: University of Texas Press, 1990).

Chapter 5 *The Planning Environment*

Key to any planning effort is an assessment of the planning environment. At Michigan, we brought together an array of groups to help us evaluate both the current and past state of the University as well as the internal and external environment issues that should be considered in planning activities. We recognized that all these factors were time-dependent. It was important to consider not only the current environments for planning, but also the historical context that led to these environments and the possible futures that might evolve. Furthermore, it was essential to recognize that the internal and external environments were tightly connected. Hence, external conditions that might first appear to be constraints could be altered through appropriate modifications of the internal environment and related activities.[1]

This latter point played a critical role in our planning process. Rather than view environmental factors as absolute constraints, we attempted to recast them as challenges or opportunities subject to modification. That is, we adopted the mindset that the University could influence its planning environment. To aid in this approach, we accepted the engineering premise that any complex system can be designed in such a way as to be less sensitive to initial and/or boundary conditions. (In the language of systems engineering, a system can be designed with sufficiently short time constants or decay lengths so that it evolves rapidly into an asymptotic state where the constraints imposed by initial and boundary conditions are no longer controlling.)

We realized that we would rarely be faced with a zero-sum game. The University was not really a closed system but rather an open system coupled to an external environment. Hence, we believed that we always would have the opportunity to overcome any constraints imposed either by the current state of the University or by internal and external environmental factors, if we were sufficiently clever and determined.

Initial Conditions

An institution cannot escape reckoning with its history, especially when it comes to developing a planning process. For example, we needed to look at the availability and deployment of resources—both human and physical, tangible and intangible—as the outcome of dynamic processes occurring over time. It was important always to consider the evolutionary path that had brought the University to its current situation.

If we were to take a pragmatic view of the University of Michigan at the midpoint of the 20th Century, we could identify the following characteristics:

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

But this model had already changed considerably during the 1970s and 1980s. First, the University of Michigan no longer enjoyed an unusual level of state support relative to other public universities. Indeed, it had fallen below the national average for state appropriations per student. Second, in contrast to the mid-20th Century, there were now many other public universities with an equally serious commitment to scholarship.

To respond to these changes, the University had taken a number of steps during the 1970s and 1980 towards these ends:

- To decrease its dependence on state appropriation by increasing tuition levels
- To rely increasingly on out-of-state (nonresident) students as a source of student body quality and tuition revenue
- To emphasize those programs with greater potential for alternative sources of funding (e.g., business administration, medicine, and engineering)
- To sustain its excellence in the professional schools where the University had a somewhat larger comparative advantage
- To attempt to reduce the scope and breadth of institutional activities

Nowhere in this effort did we attempt to reconceptualize what this new environment meant for the future of our University. We optimized the details, but we did not alter our fundamental model of the University in any significant way.

Internal Environment

The analysis of the internal planning environment was extensive, involving many groups over an extended period of time. Because this book covers these topics in other chapters, I will simply list the topics considered in this environmental assessment in an outline form:

I. Structural Characteristics
    A. Size, capacity, and scale
    B. Breadth, comprehensiveness, and diversity
        1. UM's attempt to span all academic and professional disciplines
        2. UM's character as a "comprehensive" research university
    C. Organization
        1. Administration
        2. Schools, colleges, centers, institutes, programs, etc.
        3. Regional campuses (Dearborn and Flint)
    D. Quality
        1. University level
        2. Unit level
    E. Balance and tensions
        1. Intellectual core vs. applied areas
        2. Academic disciplines vs. professions
        3. Education vs. research vs. service
        4. Quality vs. breadth vs. capacity
        5. Undergraduate vs. graduate vs. professional education
        6. State vs. national vs. international focus
        7. Disciplines vs. multi-, cross-, inter-disciplinary activities
        8. Individual excellence vs. collegiality and community
        9. Tradition vs. change
        10. Risk vs. conservatism
        11. Egalitarianism vs. elitism
        12. Comfort vs. intensity
        13. Competition vs. cooperation
        14. Spires vs. plains vs. valleys vs. pits

F. Geography
    1. Midwest ethic
    2. Ann Arbor
    3. Weather ("good, grey Michigan")

II. Tradition ("Corporate History")
A. "Flagship of public higher education"
B. Comprehensive research university
C. Unusually strong public support
D. Commitment to excellence in scholarship
E. Internal and external images
F. Extracurricular environment
    1. Social life (e.g., Greeks, bars, restaurants)
    2. "Big-Time athletics"
    3. Cultural opportunities (e.g., music, theater)
G. The Michigan "Niche"

III. Resources
A. Financial
    1. Instruction
    2. Research
    3. Auxiliary activities
    4. Financial flexibility (reserve capacity)
B. Physical plant
    1. Extent
    2. Condition
C. Human resources
    1. Faculty
        a. Quality
        b. Faculty tenure and age profiles
    2. Students
        a. Quality
        b. Heterogeneity, mix
        c. Demographics
        d. Other characteristics (ambition, attitude, involvement)
    3. Staff
        a. Quality
        b. Employee relationships
    4. Other constituencies

D. Unique assets
    1. Autonomy
    2. Information technology environment
E. Distribution and balance of resources
F. Utilization of resources
    1. Costs of quality education and scholarship at UM
    2. Comparison to peer institutions
    3. Productivity, efficiency

IV. Leadership Style and Decision Process
A. Autonomy
B. Decentralization
C. Governance
    1. Regents
    2. University administration
    3. Faculty governance
    4. Executive committee structure
D. Decision-making process

V. Momentum, Stability, Resistance to Change
A. Commitments
    1. Internal
    2. External
    3. Dynamic Nature
B. Momentum
    1. The "sleeping giant" question
    2. The "spires of excellence" question
C. Capacity to do new things
    1. Resources
    2. Ability to adapt to (or initiate) change
    3. Faculty, students, staff
D. Resistance to change
    1. Stable vs. high-risk environment
    2. Shadow of the Five-Year Plan
        a. Fear of discontinuance
        b. Recognition of ongoing need to focus resources

VI. Cultural Factors
- A. Midwestern Ethic
- B. Intensity of environment
  1. Laid-back culture
  2. Need for "high voltage" electricity
  3. Number of "movers and shakers"
  4. Market sense
  5. "Intellectual politics"
- C. Attitudes toward "extreme excellence"
  1. Depth of UM commitment to excellence?
  2. The plague of "5-ism" (We are rarely at the top; we always seem to be 5th in national rankings.)
  3. Potential intolerance of extreme excellence

External Environment

Presented in a similar fashion, the factors considered in the assessment of the external planning environment included:

I. Relationships
- A. Peer Institutions
- B. Constituencies
  1. Students
  2. Parents
  3. Alumni
- C. Comparisons

II. Geography
- A. Ann Arbor
- B. Michigan
  1. Economic base, prosperity
  2. Propensity for higher education
- C. Midwest
- D. United States
- E. World and increasing internationalization
- F. Universe

III. Human Resource Pools
- A. Students
  - 1. Demographic "crunch"
  - 2. Quality of K-12
    - a. Preparedness
    - b. K-12 quality
  - 3. Socioeconomic characteristics
  - 4. Nontraditional students
- B. Faculty
  - 1. Quality vs. quantity of faculty resource pool
  - 2. Pending "demographic crunch"
- C. Staff
- D. Alumni
  - 1. Socioeconomic characteristics
  - 2. Influence
  - 3. Involvement and loyalty

IV. Financial Resource Availability
- A. State support (General Fund, Capital Outlay, etc.)
- B. Federal support (R&D, financial aid, porkbarrel)
- C. Private support
- D. Tuition and fees
- E. Auxiliary funds
- F. Time profiles
  - 1. Resource availability
  - 2. Costs of education quality (UM vs. peers)

V. Image and Attitudes
- A. Images
  - 1. State
  - 2. Nation
  - 3. Alumni
  - 4. Peers
  - 5. Students, parents
- B. Attitudes toward higher education
  - 1. Political entities (state, federal)
  - 2. Public entities
  - 3. Alumni
  - 4. Students, parents

VI. Constituents
- A. Public
  - 1. State
  - 2. Nation
- B. Alumni
  - 1. Wealth
  - 2. Influence
  - 3. Number
  - 4. Interest and involvement
  - 5. Geographical distribution
  - 6. National visibility
  - 7. Subway alumni
- C. State government
- D. Federal government
- E. Business and industry
- F. International constituencies

VII. Politics and Law
- A. Political environment
  - 1. State government
    - a. Autonomy
    - b. State system of higher education
  - 2. Federal government
  - 3. City government
  - 4. Key constituencies
  - 5. Interest groups
- B. Legal parameters
  - 1. Legislation
  - 2. Litigation
  - 3. Tenure
  - 4. Mandatory retirement
  - 5. Sunshine laws

VIII. Changing Nature of Education and Scholarship
- A. Role (and viability) of comprehensive research university
  - 1. Evolution of consortia, sharing of research facilities
  - 2. Relationship to national laboratories and industry
  - 3. Relationship to nontraditional educational institutions
- B. Nontraditional education
  - 1. Changing career models
  - 2. Lifetime education
  - 3. Changing work models

C. Technology
    1. Communication
    2. Computers
    3. AI/Expert systems
D. Marketplace for "products"
    1. Graduates
    2. Research
    3. Service

Future Uncertainties

The environmental scanning process also identified a number of uncertainties:

- Costs of quality education and scholarship
- Financial resources
- Human resources: faculty and student pools
- Societal attitudes
- Political and legal environment
- Role of comprehensive research university in America
- Marketplace for "products": graduates, scholarship, service
- Technology
- Peer relationships

Planning Issues

One of the important outcomes of this phase of the planning process was the identification of a number of key planning issues:

1. Change and Renewal
    - Changing nature of education, scholarship, and service
    - Resistance to change (change as threatening)
    - Management of change (change as empowering)

2. Resources
    - Human (faculty, students, staff)
        * Faculty issues: quality, recruiting, retention, rewards, retirements
        * Student Issues: quality, recruiting, retention, curriculum, education
    - Financial (funding, facilities)
        * Resource acquisition: public support, private support, tuition, auxiliaries
    - Leadership and administration
        * Centralization vs. decentralization
        * Disciplinary vs. interdisciplinary
        * Academic vs. administrative vs. auxiliary

3. Diversity, Pluralism
    - Racial, gender, cultural, ethnic
    - Economic
    - Intellectual

4. Tensions
    - Education, research, service
    - Undergraduate, graduate, professional
    - Quality, breadth, size
    - Diversity, comity, shared values
    - Competition, cooperation
    - Public, private
    - Constituencies (values, needs, expectations)
    - Commitment (discipline, unit, institution)
    - Perception vs. reality ("what we think we are" vs. "what we really are")

Planning Questions

Because we felt it was important to engage the university community in the planning process, we developed a set of questions to serve as the basis for a broader dialog:

Question 1: What is the fundamental role of the university in modern society? What is our core value to society? If the issue is to get back to fundamentals, to reorganize the institution according to our basic values, then how and where do we begin?

Question 2: How does one preserve the public character of an increasingly privately financed university? How does a "state-related" university adequately represent the varied interests of its majority shareholders (e.g., students, parents, patients, federal agencies, private donors)? Can one sustain an institution the size and breadth of the University of Michigan on self-generated revenues (e.g., tuition, federal grants and contracts, private gifts, auxiliary revenues) alone?

Question 3: Should we intensify our commitment to undergraduate education? How do we address the growing national concern that we have lost our balance and direction when it comes to undergraduate education?

Question 4: What is the proper balance between disciplinary and interdisciplinary activity? How can we encourage more people to work in truly innovative areas without unduly jeopardizing their academic careers? How can we stimulate a greater risk-taking intellectual culture in which people are encouraged to take bold initiatives?

Question 5: We have an unparalleled opportunity to shape the academy for the future through this generation of graduate students. How should we meet this responsibility? Is the Ph.D. degree the appropriate training for the broadly educated, change-tolerant faculty needed by today's universities?

Question 6: In the 1990s and early 21st Century, we would be facing a major number of faculty retirements, thereby providing us the opportunity to bring new, young faculty into the University. How should we select new faculty for brilliance and creativity? Do our present traditions and practices in faculty selection allow us to select genius? How do we assess and enhance teaching ability? How do we evaluate and reward service activities? Indeed, what is the appropriate form of service in the research university?

Question 7: How do we respond to the fact that our state may have the capacity (or will) during the 1990s and beyond to support the University only at the level of a state college system and not at the level of a world-class public university?

Question 8: How good should we strive to make our programs? To compete with the top publics, or with the top publics and privates? To be ranked among the top 10, or to be ranked #1?

Question 9: How do we enable the University to respond and flourish during a period of very rapid change?

Question 10: How do we best protect the University's capacity to control its own destiny?

Question 11: Should the University be a leader? If so, then where should it lead?

Question 12: Should our balance of missions shift among teaching, research, and service? Among undergraduate, graduate, and professional education? Among service to state, nation, and world?

The State Environment

A fundamental component of our scanning exercise was an evaluation of the environment for higher education in the state of Michigan. We all knew that the 1980s had been a period of great difficulty for our state. Industries of great importance to our nation such as steel, automobiles, and electronics had fallen victim to intense competition from abroad. Plants had closed. We still had many people chronically unemployed or underemployed.

During the 1980s Michigan's per capita income had dropped from well above the national average to slightly below this norm. Beyond that, our state had slipped over the decade to the bottom ranks in the nation for public support of education, the fraction of our tax dollars returned from Washington, the burdensome and inequitable nature of our tax system, and the climate for small business development. Michigan still ranked poorly in other key areas of concern such as unemployment, mortality from serious disease, high school dropouts, and the fraction of our citizens incarcerated.

More specifically, the worrisome statistics for Michigan during the 1980s included:

- 30th in per capita income
- 37th in child well being
- 39th in housing affordability
- 41st in overall employment
- 8th in business climate
- 48th in high school graduation rates
- 50th in return of federal tax dollars

Furthermore, in categories where high rankings only hurt, we stood:

- 14th in teenage unemployment rate
- 13th in incarceration rate (and rising rapidly)
- 13th in percentage of children in poverty
- 12th in property tax burden
- 10th in infant mortality
- 4th in public aid recipients
- 1st in mortality from major disease

The situation was particularly alarming for Michigan's children:

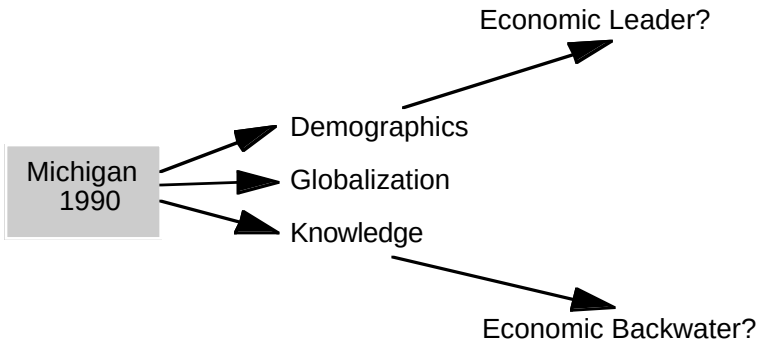
- One-third of Michigan's children lived in poverty
- One-sixth lived on public assistance
- In Wayne County, one-third of all infants lived in foster care, casualties of the drug culture that had taken over our cities

A bleak picture to be sure. And, this tragic litany of statistics represented only the symptoms of the broader dimensions of Michigan's failing fiscal health.

The decline in the quality of life in our state reflected a fundamental structural change that was occurring in the economic base—a change that began in the late 1970s and was likely to continue for several more decades. In the past our industrial base and our economy had relied on the fortunes of a few large companies—in fact, one large industry. For most people, there was never any reason to be particularly entrepreneurial or to worry about anything more than occasional uptakes and downturns in the economy. Only during the last decade had many of us begun to understand that the old economy would never return, that even if our traditional industries became more successful, the huge economic base upon which all of our policies were formed would never return.

Michigan was midway through a several-decade-long transition from a state dominated by a single industry and a few large companies to one dependent upon tens of thousands of small, dynamic companies competing in a broad spectrum of world markets. We were experiencing a shift from low-skill, high-pay jobs to high-skill, high-pay jobs (or, tragically, low-skill, "no" pay jobs); from a transportation-industry state to an information-industry state; and from the Industrial Age to the Age of Knowledge, in which educated people and ideas had become the key strategic commodities determining economic prosperity, national security, and quality of life.

We had come to a critical turning point. One path would lead us toward economic leadership once again, with a strong, prosperous economy producing jobs and improving our quality of life. But if we failed to make the investments and sacrifices today necessary for strength and prosperity tomorrow, the second path would lead our state to a position of economic weakness and poverty in the century ahead.



Education, broadly defined, would be a pivotal issue in determining which of these two alternative futures would be Michigan's. Previous economic transformations were closely associated with major public investment in infrastructures such as railroads, electric networks, and highways. But in the coming economic transition, the key infrastructure would be an educated population. The dominant issue of the l990s and beyond would be the investment in the skills and knowledge of our people, the education of our youth.

Restructuring

Michigan was not well positioned to make this difficult transition because over the years, our state tax policy, regulatory policy, social services, public investment strategy, and politics had evolved primarily to serve big business, big labor, big government—and, in reality, a single industry. This old alliance—big business, big labor, and big government—was becoming irrelevant to our future, but we were still expending resources to prop it up.

We were held hostage by outdated tax and regulatory policies and a disturbing lack of understanding of what knowledge could do in creating economic growth. In this state, we simply were not increasing our base of knowledge quickly enough, nor were we investing adequately in funding knowledge creation.

Michigan faced the challenge of restructuring itself to create, attract, and support the tens of thousands of new companies on which our future would depend. We had to create an economic environment capable of enabling them to function in a rapidly changing, frighteningly competitive, and knowledge-intensive world marketplace. In this respect, Michigan's task was similar to that faced by industrial corporations, by government, and by universities themselves. We all had to restructure ourselves to serve the future rather than simply perpetuate the past.

Michigan's problems were not partisan. Nor were they political. Our problems could not be laid at foreign doors. Michigan's problems were structural. Our political and economic systems were no longer capable of producing the revenues needed to meet demand. This fundamental structural inadequacy had forced us to meet our urgent current needs, to protect invaluable resources such as our schools, and to balance our current budget, by shifting burdens to future budgets, where they would become even more painful.

Knowledge-Driven Economic Development

In an Age of Knowledge, new knowledge itself was going to be necessary to create new jobs. Increasing the competitiveness of existing industry, while perhaps retaining market share and sustaining profits, would *not* retain jobs (in fact, a key to increased productivity is often doing things with fewer people). Efforts such as total quality management, shorter cycle times, and just-in-time inventory methods would not create new jobs but, at best, only preserve some existing jobs.

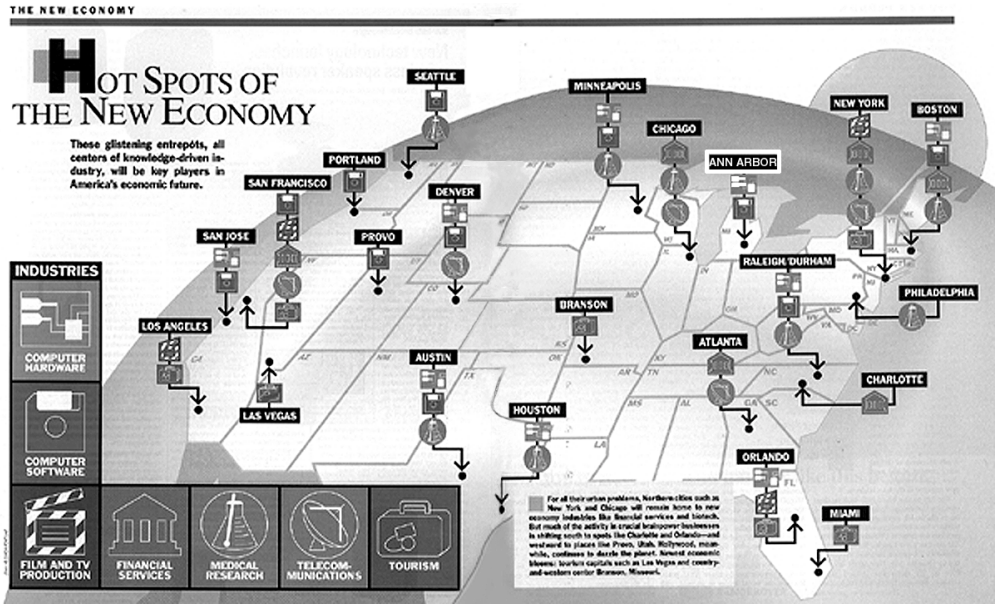
New jobs in Michigan were not going to be spawned by existing industry, but instead they would be created by entirely new activities: for example, genetic medicine, biotechnology, information technology and computer networking, optics, lasers, ultra-high-speed technology, and automated manufacturing. It was also clear that two of the most powerful economic engines in Michigan might turn out to be our two research universities: the University of Michigan and Michigan State University.

There are three important ingredients in technology-based economic development: (1) technological innovation; (2) technical manpower; and (3) entrepreneurs. Research universities produce all three. Through their on-campus research, they generate the creativity and ideas necessary for innovation. Through their faculty efforts, they attract the necessary "risk capital" with massive federal R&D support. Through their education programs, they produce the scientists, engineers, and entrepreneurs to implement new knowledge. And they then serve as the key to

knowledge transfer, both through traditional mechanisms, such as graduates and publications, as well as through more direct contributions such as faculty/staff entrepreneurs, the formation of start-up companies, and strategic partnerships.

There was ample evidence demonstrating the influence of world-class research universities on their surrounding communities. We needed only look at MIT's impact on the Boston area, Stanford and UC-Berkeley's impact on Northern California, Caltech's impact on Southern California, and the University of Texas' impact on Austin. The important lesson we drew from these examples was that only world-class research universities were capable of major impact. A university must be able to play in the big leagues, to compete head-to-head with institutions such as MIT, Stanford, and Berkeley, if it is to attract the outstanding faculty and students and massive resources necessary for technological leadership.

As evidence of this trend, the centerfold in the June 27, 1994, issue of *Fortune* featured a map of the United States that pinpointed what *Fortune* referred to as "those glistening entrepots, all centers of knowledge-driven industry." Ann Arbor was the only city identified between the East Coast and Chicago—highlighted because of our leadership in the computer hardware and software industries and health sciences research. Ann Arbor's greatest asset was the University of Michigan,



ranked as the leading research university in the nation—indeed the world. The $450 million the University received through competitive federal grants and contracts might be viewed as "venture capital" for the state as it entered a knowledge-driven future.

Clouds on the Horizon

There were dark clouds on the horizon however. There was evidence that we as a people and as a state had not yet recognized either the nature or the magnitude of the investments we needed to make to achieve prosperity in the intensely competitive global community. While we gave the "age of knowledge" lip service, in reality, many of us still clung to the past, wanting to return to the agricultural and manufacturing economies that once made us prosperous.

Numerous studies had suggested that Michigan was seriously underinvesting in its "knowledge infrastructure" by as much as 30 to 40 percent, relative to other states.[2] The problems in K-12 education were apparent. Unfortunately, what was also apparent was our inability to agree on the actions and policies needed to improve the quality of our schools and to achieve adequate and equitable financing.

The situation was somewhat different, yet no less acute, for higher education in our state. While the quality of Michigan higher education was still very high, the long-term prognosis was poor if we continued down the path that we had been pursuing in recent years. During the 1970s and 1980s, the state of Michigan had dropped from the position of a national leader in its public support of higher education (ranked sixth in 1965) to among the lowest in the nation. In the U.S., Michigan ranked:

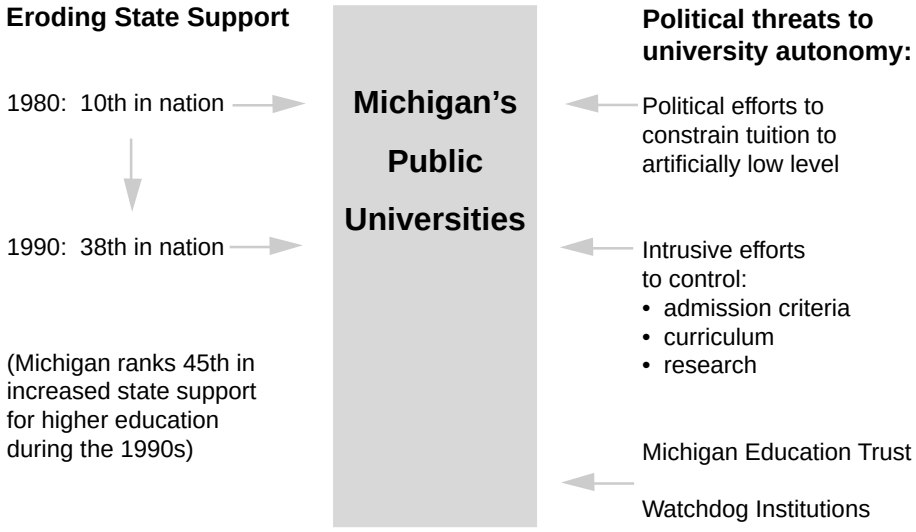
- 33rd in appropriations per student
- 37th in appropriations as a percentage of personal income
- 35th in appropriations as a percent of tax revenue

All these figures showed us significantly below the national average in our support, and it was clear that we were continuing to slip even further behind with each passing year. Furthermore, Michigan was nearly unique among all states in its inability to meet the desperate need of its campuses for capital facilities, then approaching almost a decade without significant investment in new academic

projects.

No matter how one approached it, Michigan ranked among the lowest in the nation in its support of public higher education. As a highly industrialized state undergoing a dramatic change to a knowledge-based economy, Michigan was critically dependent upon quality higher education for well-educated citizens, for engineers, scientists, and other professionals, and for creative ideas that would fuel economic growth and create new jobs. Yet Michigan had fallen into the bottom ranks of industrialized states in its support of these critical resources. We were being outspent by thirty to forty percent in state support per student, not simply by prosperous states such as California, but by neighbors such as Indiana and Ohio. They understood what we had yet to grasp: the world was changing rapidly, and we had to prepare ourselves for tough competition.

Until the 1990s, we had been able to sustain the quality of public higher education in Michigan despite the catastrophic loss of state support because of our traditional autonomy. This autonomy allowed Michigan's universities to take strong internal actions: reallocating resources, redefining priorities, and increasing tuition levels to compensate partially for reduced public support. But in recent years, even this autonomy had been threatened by efforts by the governor and legislature to control both who we could enroll and what we could charge for our services.



A second-rate system of higher education?

The Particular Challenge Faced by the University of Michigan

As the state's flagship institution, the University of Michigan was at particular risk in the acquisition of adequate state support.[3] Due in part to the intensely political dynamics of the legislative appropriation process, and in part to the absence of any guiding public policy in higher education, the University had been consistently given the lowest priority in state funding for over a decade. As we approached the 1990s, the specifics showed:

- The University of Michigan-Ann Arbor had ranked last, 15th among the state's 15 public campuses, in nine of the past ten years in its increase in state appropriations.

- The combination of low priority within the legislative appropriation process and the general erosion in state support of higher education in Michigan had led to a situation in which state appropriations to the University had exceeded the inflation rate in only four of the previous ten years.

- Over the past two decades, the University of Michigan ranked last among Michigan's public universities in its growth in state appropriations.

- The University of Michigan's share of state capital outlay support for academic facilities ranked last over the past two decades.

- During the 1970s and 1980s, the state had provided funding for only two new academic facilities on the Ann Arbor campus—and then only at a 50 percent participation rate.

- Over the past two decades, the University of Michigan's peer public institutions (Big Ten, Pac Ten, ACC) had been benefiting from an average capital outlay of $25 million to $50 million per year for facilities, while Michigan had received less than $4 million per year over this period.

As with the state's other public universities, the constitutional autonomy of the University had been the key factor in enabling it to sustain the quality of its programs and its capacity to serve the state in the face of eroding state support. In this effort, the University had taken extraordinary internal management actions: focusing limited resources only on the very highest priorities, intensifying efforts to attract

resources from the federal government and the private sector, and increasing tuition and fees.

The impact of these efforts on the University's portfolio of resources was that state appropriations became a dwindling proportion of the University's operating funds. For example, by fiscal year 1990, state appropriations had slipped to less than 43 percent of the University's General Fund (unrestricted) operating funds and less than 15 percent of its total funding.

As we became more self-sufficient through our strategy of internal prioritization and the development of alternative sources of support, efforts in Lansing threatened the University's autonomy in the areas of tuition, nonresident enrollment, and even curriculum and faculty hiring criteria. It seemed clear that such legislation, if successful in the face of inadequate state appropriations, would cause serious and permanent damage to the University.

The National Environment

There were similar causes for concern in the national environment for higher education during the 1980s:[4]

- The decline of U.S. competitiveness
- Inadequate public investments in infrastructure and R&D
- The capital deficiency in our financial institutions
- Our losing fight against drugs and crime
- The blight of our cities, the plight of the homeless
- Our damaged environment
- Political stalemate
- A growing gap between rich and poor
- The poverty and plight of the very young

Economic Competitiveness

For most of our history, the political and geographical isolation of the United States, coupled with its abundance of resources and technological leadership, ensured our control of our own destiny as well as steady improvements in the quality of life. By the 1980s, it was clear that a truly domestic U.S. economy had ceased to exist. It was no longer relevant to speak of the American economy, or the Michigan economy for that matter. Our economy, our industry, and our companies were international in

scope, spanning the globe and intensely interdependent upon other nations and other peoples.

This dependence was reflected in the changes in the United States' trade deficit during the 1980s, as the nation shifted from the world's largest creditor to its largest debtor. While during the past decade our productivity had increased somewhat, it did so at a slower rate than any of the other G-7 nations. In fact, the growth rate of productivity in the United States during this period was roughly 5 percent, compared to a growth rate of 15 percent for Germany and France and 20 percent for Japan.

Compounding this was the fact that the United States ranked dead last among the industrialized nations in investment as a percentage of GNP. For three decades, the United States had been investing a smaller percentage of its GNP in plant and equipment than any other major industrialized nation.

Real weekly wage earnings and wages had been declining since 1972. By 1990, the U.S. standard of living showed its first real decline in eight years. No other G-7 country suffered such a decline. And comparatively, over the past two decades, the U.S. standard of living had risen more slowly than that of any other G-7 country, showing only a 33 percent increase in real terms during these two decades.

Savings versus Consumption

There were serious concerns about our nation's will to invest in the future. For example, although the decade of the 1980s evidenced an unusually long economic expansion, we failed to make any real commitment to the future by refusing to make adequate investments in either physical or human capital.

As mentioned earlier, during the 1980s, the United States invested less in plant and equipment as a share of real GNP than any other G-7 economy. By the early 1990s, Japan was investing more in *absolute* terms in new manufacturing capacity than the United States. Our nation's gross real investment in manufacturing declined throughout the 1980s; during that time, the most increased investment occurred in other areas such as finance, insurance, and commercial real estate. It was already clear that our investment in manufacturing had sunk far too low to sustain our competitiveness. As one striking example, the average age of U.S. manufacturing plants and equipment by then exceeded eleven years. Furthermore, U.S. gross fixed capital formation's share of GNP was at 70 percent—down with the United Kingdom—as compared with Japan at 26 percent and Germany at 22 percent.

Net savings as a share of GNP had been dropping at a fast rate in this country since 1980. For example, savings had dropped from 9 percent in 1970 to 3 percent in 1990.

At the same time, personal consumption as a share of GNP had risen steadily throughout the past two decades.

Fundamental to these statistics was the cost of capital in the United States, which was roughly three times the cost of capital in Japan and Germany. This was important because the key impact of lower cost capital was that it allowed a far longer time horizon.

The Fortunate Few

The 1980s witnessed an almost unprecedented accumulation of wealth among the richest people in the country. The net worth of the Fortune 500, for example, tripled during the decade. Unfortunately, the investments of this wealthier America did not trickle down to the rest of the American population; instead, they trickled out across the globe to wherever the best returns could be had. The capital of the American wealthy rapidly left the United States in the form of factories, equipment, and laboratory space in foreign lands financed by American-owned companies. While wealthy Americans reaped high returns from world-wide investments, the rest of American society enjoyed few of the beneficial consequences.

It was also clear that America's highest earners increasingly felt justified in paying only what was necessary to ensure that their own particular needs were satisfied. The wealthy were beginning to withdraw their dollars from the support of the public places and institutions shared by all and instead directing their savings to their own private services—to the places and institutions that entertain, inspire, cure, and educate wealthy Americans. Corporate philanthropy was following a similar pattern. Business donations to education and charitable causes tapered off markedly during the l980s. In fact, most of the corporate contributions were far smaller than the amounts corporations receive from states and communities in forms of subsidies or tax abatements.

Of all industrialized nations, the United States of the 1980s had the largest gap in income between the richest and the poorest fifth of the population. The failure of the rich to invest back in society—the absence of stewardship—characterized our time. One frightening statistic showed that while families with incomes of $10,000 or less contributed 5.5 percent to charity, those with incomes over $100,000 gave less than 3 percent. In a sense, during the 1980s we created an oligarchy, a very small handful of immensely privileged people who had it very good, who planned to continue to have it very good, and who apparently did not care at all that many of our

citizens were struggling to survive.

The Dilemma of the States

One of the major shell games of our time had been the federal government's passing of responsibility for essential services to states without transferring funds to pay for them. In the late 1970s, Washington provided 25 percent of state and local revenues; by 1990, it provided less than 17 percent. Unfortunately, that did not inhibit the federal government from transferring to states major responsibilities in areas such as social welfare and health care. For example, while the federal government set the general guidelines for Medicaid, it provided less than 56 percent of the costs to cover these commitments. The states had to pay the rest, and as a result, these costs were zooming upward with no end in sight. A second cost transfer occurred in education, the largest item in the budget of most states in the 1980s. In 1980, the federal share of educational support was 9.2 percent; by 1990, it had fallen to 6.3 percent.

In addition, federal policies forced the states to make major commitments to the expansion of their corrections activity.[5] With all of these cost transfers, the states were unable to make adequate investments in areas of traditional responsibilities such as modernizing infrastructure, improving schools, and making public services more effective. Instead they had to respond to the shift of costs and responsibilities from the federal government, in whatever area they occurred.

Education

It was clear that our educational system was seriously malfunctioning. Our public schools (K-12) were producing a generation of young people ill equipped to deal with the complicated and challenging future. Functional illiteracy in our nation ranged from 20 to 30 percent. A staggering 25 percent of students failed to complete high school; and of those who completed high school, the vast majority were ill prepared for the international marketplace. In fact, it was estimated that we were educating only 15 to 20 percent of high school graduates to an intellectual level capable of functioning well in the everyday world.

Our students scored at the bottom of all advanced nations in science and mathematics achievement. Studies showed that only 5 percent of high school graduates who entered college were ready for science and mathematics instruction. This was important because the valued currency in the age of knowledge would be science, mathematics, and technology, and most American students were simply not developing these skills. Indeed, many were not even learning the basics: reading, writing,

critical thinking, languages, history, literature, and the arts.

The Myopia of Special Interest Groups

Contemporary politics has long involved special interest groups asking government to protect—to guarantee—their economic interests. By the 1990s, what had emerged in place of a rational and effective public policy process was a fragmented social dictatorship driven by special interest groups. This tendency was accentuated by the extraordinary proliferation of lawyers in our society, which tended to intensify the conflicts among interests at great cost to our nation. Our institutions found themselves taxed both in their capacity to reconcile competing interests and by the unwillingness of special interest groups to accept any compromise.

Civic Virtue

By 1990, it began to look like government, educational and private-sector institutions were going to become as obsolete for the 21st Century as the 1950s corporation became in the new world economy. Perhaps nowhere was this more obvious—or more disturbing—than in government itself. For some time, the polls had been indicating that the American people were way ahead of most of their political leaders, both in understanding that we had fundamental problems and in being willing to make sacrifices to fix them. Most fundamentally, the American political process at the highest national level had failed to identify the critical nature of the transition through which the nation and the world were passing. Both political parties remained trapped in the past, fighting old battles that simply missed the point. The issue was not more or less taxes, nor was it more or less government, or more or less entitlement programs. The issue was whether we had the capacity, the will, the determination, and the vision to face the profound changes occurring in our society and to prepare for this future.

Perhaps one of the most serious questions we faced was whether we as a nation still had the ability to govern ourselves, to respond to the challenges of the future. Had government lost the capacity for long-term commitments and strategies? It was ironic that the federal budget—one of the key policy documents determining our future—continued to focus on “entitlements” rather than “investments.” In areas such as welfare, health care, and defense, we were paying staggering interest costs on the federal debt, leaving us unable to invest in education or rebuild our infrastructure for the future.

Concluding Remarks

While many academics are reluctant to accept the necessity or the validity of formal planning activities, we became convinced that those institutions that turned aside from strategic efforts to determine their futures would be at great risk. The ability of a university to adapt successfully to the revolutionary challenges it faced would depend a great deal on the institution's collective ability to learn and to continuously improve its core activities. It was critical that higher education give thoughtful attention to the design of institutional processes for planning, management, and governance. Only a concerted effort to understand the important traditions of the past, the challenges of the present, and the possibilities for the future would enable institutions to thrive during a time of such change.

Those institutions that could step up to this process of change would likely thrive. Those that buried their heads in the sand, that rigidly defended the status quo or even worse, some idyllic vision of a past which never existed, were at very great risk. Those institutions that were micromanaged, either from within by faculty politics or governing boards, or from without by government or public opinion, stood little chance of flourishing during a time of great change.

To be sure, both the character and needs of our nation had changed dramatically over the past two centuries since the founding of the first public universities. Yet the major principles that undergirded these important institutions remained as valid today as they were at earlier times—a bond between the society and its universities to educate, to discover, and to serve. While the details of the social contract might change, its fundamental character remained intact.

Certainly the need for higher education would be of increasing importance in our knowledge-driven future. Certainly, too, it had become increasingly clear that our cured paradigms for the university, its teaching and research, its service to society, its financing, all must change rapidly and perhaps radically. Hence the real question was not whether higher education would be transformed, but rather *how* . . . and by *whom*. If the university was capable of transforming itself to respond to the needs of a culture of learning, then what was currently perceived as the challenge of change might, in fact, become the opportunity for a renaissance in higher education in the

years ahead.

[1] Peter Schwartz, *The Art of the Long View: Planning for the Future in an Uncertain World* (New York: Doubleday, 1996).
[2] Mario C. Martinez and Thad Nodine, *Michigan: Fiscal Stability and Constitutional Autonomy* (San Jose: California Higher Education Policy Center, 1997): 36.
[3] Gilbert R. Whitaker, *Enhancing Quality in an Era of Resource Constraints*, Report of the Task Force on Costs in Higher Education, The University of Michigan, (March, 1990).
[4] M. Callen and J. E. Finney, eds., *Public and Private Financing of Higher Education: Shaping Public Policy for the Future* (Phoenix: Oryx Press, 1997).
[5] *From Classrooms to Cellblocks: A National Perspective* (Washington, D.C.: Justice Policy Institute, 1997).

Chapter 6 *Early Planning Activities*

To some the question was simple: How should the University of Michigan respond to the challenges, responsibilities, and opportunities it would face in the 1990s?

Yet we felt this was the wrong question to ask. The University should not simply "respond," as it had all too often in the past. Rather it should seize the initiative by taking strong actions to determine its own destiny. Over the years, most universities have tended to *respond* to external pressures, opportunities, and needs. We were blown in one direction or another by winds from beyond the campus. It was now time that we take a firm grasp of the tiller to steer the University in a direction appropriate for the future.

Hence, the first challenge was to decide *what* we wanted the University to become. "The university of the state of Michigan"? "The best public university in the nation"? "A world university"? The challenge to develop a "bumper-sticker" slogan for the University may sound trite, but we first had to articulate the unique characteristics of the institution that would allow us to move toward particular objectives. We needed to develop a compelling statement of our special role and mission for the state, the nation, and the world.

The Beginning

Where to begin? How would we seize the initiative to chart the course of the University as it prepared to move into the 21st Century? How would we draw together our community of faculty and students, staff and administrators, alumni and friends to grapple with this difficult task?

We began by instituting a process through which the University community at large could ask the most important, although difficult, questions: What kind of an institution was the University of Michigan? What kind of an institution did we wish to become? What were our values and goals, our priorities and objectives?

Working first with small groups of faculty, students, and administrators, we tackled these fundamental issues. We then propagated this dialog to involve larger and larger elements of the University community.

We launched a similar process at the unit level within the University—at the level of schools and colleges, centers and institutes, administrative and auxiliary units. Over the course of several years we met at length with our units to learn about their needs, concerns, and goals, and to work with them in achieving their objectives.

As we began our dialog with small groups of faculty, students, and administrators, it soon became apparent that these discussions rapidly converged on the themes of *excellence* and *leadership* as foundations for the planning effort. These themes were woven together in the earliest attempt to define an appropriate mission and vision for the University. In the remainder of this section, I will summarize the conclusions of this early planning effort.

Academic institutions have traditionally framed their missions around the trinity of teaching, research, and service. In this spirit, the University of Michigan had sought to achieve distinction through the quality of education provided to its students; through the scholarly activities of its faculty as they sought to create, refine, preserve, and disseminate knowledge; and through the service it provided to society through the application of this knowledge.

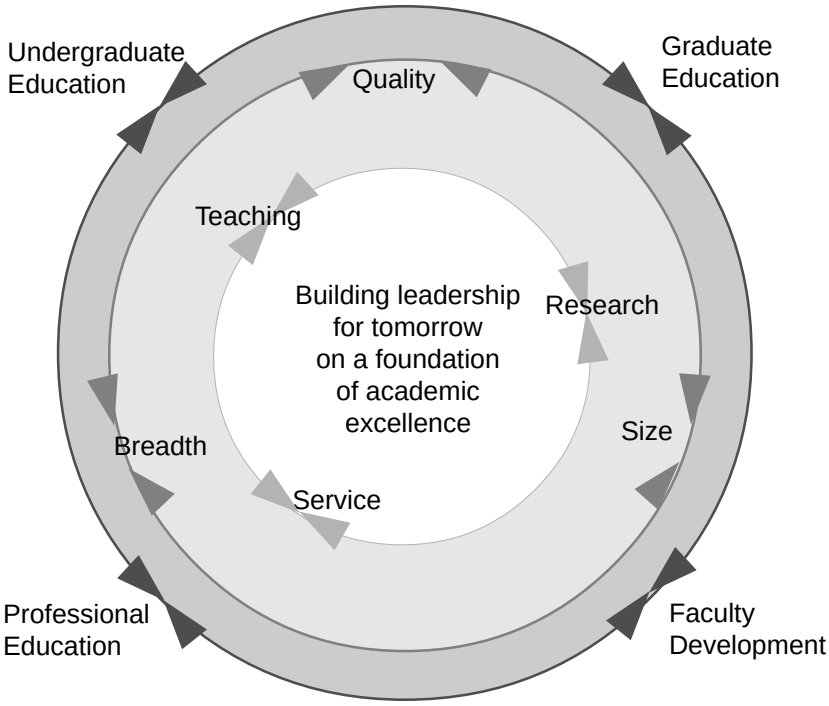
As the University prepared to move into the 21st Century, our early planning groups proposed that it refine this traditional mission by focusing on the development and achievement of leadership, both as an institution and through the personal development of its students, faculty, and staff. More specifically, they suggested that the University should select as its primary theme *the building of leadership for tomorrow on a foundation of academic excellence.*

Throughout its history, the University has been viewed as a flagship of public higher education, a leader among public universities. Its graduates, faculty, and staff have assumed leadership roles across a broad array of societal endeavors throughout the state, the nation, and the world.

The early planning effort suggested that the University build on this heritage by placing even greater emphasis on the development of leadership. The exceptional quality of the students and faculty attracted to the University, the rich diversity and comprehensiveness of its academic programs, and the outstanding environment it could provide for teaching and research offered a unique opportunity to focus on this mission. A leadership role would not only enhance the University's social impact, in a manner consistent with its responsibilities as a public institution; it would also lay the foundation for ensuring the long-term strength and distinction of the institution.

Our early planning effort concluded that the University's focus on the development and achievement of leadership should be based upon an unrelenting commitment to *academic excellence*—to education, scholarship, and research of the highest quality. The central task of a university is to create an environment where the quality of mind and its performance are always the primary concern. By stressing academic excellence, we sought to develop those intellectual qualities most critical to leadership: a disciplined use of reason, enlivened by daring and the courage to experiment, tempered by respect for what one can learn from others.

The objective of developing leaders among our students and faculty would provide a unique character to our traditional endeavors of teaching, research, and service, linking them in a highly interdependent fashion. It demanded that the University achieve a balance in the quality, breadth, and scale of its programs—albeit with the primary stress on excellence—because an emphasis on all three characteristics was necessary to provide a suitable environment for the development of leaders across the broad spectrum of societal roles. This overarching goal would also serve to couple undergraduate, graduate, and professional education with faculty and staff development. It would rebuild a greater sense of common purpose, of shared community values, at a time when strong commitments to the disciplines were pulling faculty apart.



The theme we proposed, building leadership for tomorrow on a foundation of academic excellence, responded to the unusual opportunities, responsibilities, and challenges confronting the University, just as it resonated with our long tradition of excellence. The focus on leadership provided an exciting and appropriate direction for the University as it prepared to move into the 21st Century.

The Mission of Leadership

The selection of leadership as a guiding mission deserves further discussion. Since its origins in medieval Europe, one of the greatest achievements of the university in western culture has been the training and development of leaders through the discipline of the mind. University graduates have exercised intellectual and professional leadership in all western societies, just as certain universities are themselves widely acknowledged as educational leaders.[1]

In the United States today, a small subset of institutions clearly has achieved a level of intellectual distinction that sets them apart. These universities have all sustained, through their faculty and students, a commitment to the primacy of academic values, of high intellectual standards, and of the disciplined but unprejudiced pursuit of critical inquiry. They enjoy a recognized tradition of quality that becomes self-generating and encourages new ventures.

These institutions enjoy extraordinary resources, human and material: students, faculty and staff; libraries, laboratories and museums; physical facilities, grounds and buildings. These resources are not easily created at any one time, but their presence leads to the expectation that there can and will be still more. In periods of exceptional greatness, these universities have benefited from fruitful relationships with larger communities outside the university: in early times,with religious organizations and their sense of mission; with blossoming regional cultures in New England, the Midwest, or California; with the development of major cities like New York or Chicago; with government and its programs; with the professions, with businesses, and with industries that have special needs. For all these reasons, these institutions have attracted outstanding men and women, who, as leaders in education, have placed their stamp upon the institution in ways that have affected major disciplines, and sometimes entire universities, across the land.

The University of Michigan clearly qualifies for inclusion in the group of institutional leaders in higher education. Under Presidents Tappan and Angell, Michigan

was among the first American universities to adopt the European models of rigorous seminars and advanced scholarship; subsequently, the tradition of high intellectual standards in the Arts and Sciences has been maintained and strengthened. Michigan was also among the first universities to develop strong professional schools (the Medical School, for example, had established its distinction even before the Civil War); in many of the professions, the University is clearly among the national leaders today. But perhaps most significant of all is the one characteristic that makes Michigan both distinctive and distinguished: it was the first public university to match in quality the private institutions, which it exceeded in the diversity and comprehensiveness of its academic mission.

Hence, the leadership theme was not only appropriate within the historical tradition of great universities, but it was also a natural continuation of the heritage and traditional mission of the University of Michigan. By placing greater emphasis on preparing our students for leadership roles in society, we would be stimulated to improve the quality of the educational experience provided in our instructional programs at all levels: undergraduate, graduate, and professional. To achieve leadership in scholarship and research, we would need to provide our faculty and students with the appropriate resources, encouragement, incentives, and opportunities. As a result, we would enhance the University's ability to address the needs of society, in a manner consistent with our responsibilities as a public institution.

Many specific characteristics of the University seemed well-suited to the leadership theme. We had traditionally relied on building our faculty through the development of junior scholars rather than hiring established scholars into senior tenured ranks. Our role as a public institution provided an unusual opportunity to develop the service activities so necessary for the development of leaders. This public role was accentuated by the extensive interactions with societal institutions that many of our professional programs had developed. The long tradition of a mature, activist student body and faculty, coupled with our commitment to equal access and opportunity, also were important factors in creating the experiences necessary for the development of leaders.

In summary, then, it was our conclusion that the mission of leadership would maximize the impact of the University, by developing our students and faculty, enhancing our service to society, and ensuring the long-term strength of the institution. Indeed, we contended that the future strength and distinction of the University would depend on the quality and success of our graduates and faculty.

Implications of the Leadership Theme

We had always had a commitment to excellence in the quality of experiences we provided to undergraduates, graduate and professional students, but we had never interrelated these in the intimate manner proposed under the leadership theme. Nor had we—at least in recent times—placed the degree of emphasis on the quality of the undergraduate experience proposed for this new mission.

The Link Between Quality, Breadth, and Scale

The leadership theme bound together the sometimes conflicting objectives of quality, breadth, and scale, requiring that all three be regarded as critical.

The quality of our activities was the most fundamental determinant of our ability to develop and maintain leadership. However, a comprehensive and diverse array of intellectual, social, and cultural experiences was also important for the development of leaders. And, the scale of our programs would not only contribute to the richness and quality of the University (e.g., the size and quality of central resources such as libraries, computing networks, and athletic facilities), but it also would determine our potential impact on society.

Rather than viewing the quality, breadth, and scale of the University as competing objectives—or possibly even as constraints on what we could accomplish within a world of limited resources—we suggested instead that these characteristics, when linked together satisfactorily, could provide an unusual opportunity. By building leadership in an environment that demanded commitment to all three characteristics, with a particular stress on academic excellence, we could distinguish the University from other institutions which tended to focus on only one of these factors.

For example, highly selective private institutions sometimes sacrificed breadth and size in an effort to achieve absolute excellence in a small number of fields. This resulted in institutions highly focused in an intellectual sense, which while certainly distinguished, were nevertheless unable to provide the rich array of opportunities and diverse experiences of "multiversities" such as Michigan. At the other end of the spectrum, the University could also set itself apart from many other large, comprehensive universities by the degree to which it chose to focus its resources on academic quality.

Spires of Excellence

We believed that the development of leaders would require us to build "spires" of excellence in key fields, rather than try to achieve a uniform level of lesser quality across all of our activities. Only by attempting to be the best in these fields could we develop in our students, faculty, and staff the necessary intensity and commitment to excellence. Furthermore, only by competing with the best could we establish appropriate levels of expectation and achievement.

It must be stressed here that we did not propose a goal of focusing the resources of the University to build a few isolated spires of excellence in the manner of smaller private universities. Rather, we believed that within each of our academic units—our schools, departments, centers, and institutes—we should seek to build a number of spires of focused excellence. In other words, the general level of quality in each of our academic units would be achieved through the development of a series of sharply focused peaks of excellence within the units. Thus even for those programs to which we were unable to provide the resources to be absolutely first rate, we would expect to achieve some peaks of extraordinary excellence through the focusing of resources. We would continue to make every effort to avoid mediocrity, but constrained resources suggested that we would have some areas that were very good as opposed to excellent.

The particular mission of leadership we proposed for the University could be viewed as positioning Michigan as the complement to other more focused ("spire-dominated") private institutions. Indeed, Michigan might selectively develop key relationships with several of these institutions to provide our students and faculty with access to their highly focused peaks of excellence. Conversely, we might be able to provide their students and faculty with access to the rich diversity and comprehensiveness of our programs, as well as to our unique resources.

The Intellectual Character of Teaching, Research, and Service

The theme of leadership influenced the focus of emphasis within our traditional endeavors of education, scholarship, and service. For example, it required that the University become even more committed to the concept of a liberal education for its students. The development of leaders among our students demanded challenging intellectual experiences, both in formal instruction and in the extracurricular environment.

In order to develop leaders among our faculty, at least some fraction of our scholarship needed to be shifted to venturesome intellectual activities at the cutting edge of inquiry. Some of our faculty should be encouraged to work in seminal, cross-disciplinary areas where extraordinary insight and intellectual breadth can lead to the creation of entirely new fields of knowledge.

The University would continue to have important service roles. Leadership required that such activities be justified as important experiences for our students and faculty, as models to be propagated to other institutions, and as sources of important questions for basic investigation. In a sense, the leadership goal would drive and determine the nature of our service activities.

Undergraduate, Graduate, and Professional Education

If we were to focus on the development of leadership through the education of our students, the University must consider carefully the quality of the experience it provided at all levels: undergraduate, graduate, and professional.

Of particular importance in this regard was a major effort to better understand and improve the undergraduate experience at the University. Not only was this task appropriate within the context of the leadership theme; it was also demanded by the extraordinary quality of the students enrolling in the institution. As an added factor, a university-wide focus on the quality of the undergraduate experience had the potential for recalling faculty to our common mission.

We lived in an increasingly complex, changing, and fragmented world. Undergraduates had been channeling their energies into pre-professional and more narrowly vocational directions. High-level commissions and government officials were increasingly critical of our system of higher education. The challenge was to cultivate among undergraduates a greater willingness to explore and to discover; to assist undergraduates to develop critical, disciplined, and inquiring minds, tempered by broad human sympathies and strong moral values.

For Michigan, the challenge was greater. On the one hand, the strength of our professional schools and the strong research and scholarly orientation of our faculties could not be compromised. On the other hand, we needed to generate a fresh commitment to cultivating a spirit of liberal learning among our undergraduates and among our faculties, to encouraging major efforts to improve the quality of teaching and learning. The University had to provide resources to ensure that these efforts

could go forward in an atmosphere of continuous experimentation—of intelligent trial and error. Broad faculty participation would be essential, and the unprejudiced testing of alternative ideas could be expected to generate vigorous debate. This was as it should be, since the stakes were high: the preparation of our undergraduates not merely to function in our complex society, but, as leaders, to shape that society's future directions.

Similarly, the leadership theme required a major re-examination of the role of graduate studies and professional education within the University. We needed to understand better how these programs responded to the needs of both students and society and how they related to our undergraduate instruction.

Goals, Priorities, and Objectives

There were several obvious "pre-conditions" for the achievement of the leadership goal:

1. We needed to attract the most outstanding students and faculty to the University. This required both a high degree of selectivity and diversity. In this sense, it implied a strong commitment to quality as well as to broad representation among students and faculty.

2. We needed to commit ourselves to focusing resources to achieve excellence. This implied not only a recognition of the fact that in a world of limited resources, we needed to focus to achieve quality, but also an understanding of the importance of the visibility created by such excellence in attracting the external resources necessary to sustain quality.

Specific objectives of the leadership theme could be identified with each of the major areas of human resource development:

3. The leadership theme demanded that we emphasize the quality of the undergraduate experience, both from the aspect of traditional academic objectives as well as more broadly from the perspective of developing leaders of society. While this would require a critical re-examination of the undergraduate curriculum and a re-commitment to the importance of a liberal education, it also suggested more was needed. For example, we might seek leadership experiences for our students by developing special research and teaching assistantships for

talented undergraduates. Faculty/student relationships would play a critical role, as would student organizations and the involvement of students in University affairs. The extra-academic environment, including social, cultural, athletic, and residential activities would become important components of the undergraduate experience.

4. Similarly, our graduate and professional programs needed to be carefully re-examined to identify actions to enhance their quality. Here one must examine not only formal instruction, but also research and clinical experiences. Financial aid would obviously be a critical factor for study, as would the link to the undergraduate programs of the University.

5. The leadership theme also suggested that we place more emphasis on the quality of the environment we provided for the intellectual development of our faculty. Certainly this included vigorous efforts to provide them with the freedom and absence of constraints to do exciting work. However it demanded more effort to encourage and support venturesome scholarship, particularly in interdisciplinary areas. Faculty development was closely related to the quality of the student body. It would also be important that in these efforts we strike an appropriate balance between individual achievement and collegiality, that we strive to integrate junior faculty more effectively into the University community of scholars.

Finally, we believed the leadership theme suggested objectives related to the "Michigan culture" itself:

6. To provide an environment for the development of individual leadership, the institution itself needed to achieve and sustain a leadership role. To this end, we believed that we needed to rededicate ourselves to the achievement of excellence, to being the best. In the past Michigan had all too often been characterized by a sense of "5th-ism"; that is, striving to be very good but usually falling short of the top. We believed that leadership would demand a new level of expectation for both individual and institutional achievement. Furthermore, it would demand more of a change-oriented, risk-taking culture that encourages students and faculty to push to the limits of their own ability and creativity. And key in this effort would be a need to strengthen the sense of community and collegiality on the campus.

Leadership: A Mission for the 21st Century

We believed the mission of leadership provided both an exciting and appropriate direction for the University as it prepared to move into the 21st Century. This theme would reinforce our continuing commitment to Michigan's special distinctiveness and strength: the power of focused quality, which it shared with the most selective private institutions, and the diversity, openness, and breadth of academic offerings, which it shared with the best large public universities.

Given the quality, size, and scale of the University of Michigan, it was wholly unreasonable to expect the President, the Provost, or other officers to attempt to redirect or reorder the priorities of the institution from the top down. Instead, institutional leadership could focus on helping to generate the debate and providing the resources for continuous experimentation. The achievement of the mission would require communal effort; it would rest with faculty groups in and across the schools and colleges, with students inside and outside their formal organizations, and with professional and non-professional personnel throughout the academic and administrative units of the University. The result would be a closer integration of academic disciplines, the professions, and the arts into a more self-confident intellectual community, a community in which the human mind would be brought boldly to bear on the largest and most enduring questions that confront us. Building this kind of leadership for tomorrow, upon a foundation of intellectual excellence, would lead to a new perspective on the traditional functions of teaching, research, and service: as integrated activities of an inquiring and responsible community.

Propagating the Process

Large, complex, and tradition-bound institutions such as universities generally move with glacial speed. We wanted to provide a dramatic demonstration of our strategic leadership theme. To this end, we established the *University Initiatives Fund*.

Our goal was to launch a series of institution-wide initiatives aimed at sustaining and enhancing the vitality of the University, initiatives that would better align the institution with a course appropriate for its future. To fund these initiatives, we implemented a plan in which one percent of the base General Fund budget of the University would be reallocated for each of several years through a University Initiatives Fund into several strategic thrusts. That is, institution-wide strategic initiatives would be funded by slicing one percent off the top of our budget each

year. We would thereby be reallocating major resources of the University—building to roughly $15 million per year in base funding over a three-year period—to nurture initiatives that reflected some of our highest priorities.

Although the planning process would eventually involve the entire University community in the selection of institution-wide priorities and initiatives, we felt it important to begin the process by moving forward with three initiatives based on priorities so compelling as to require immediate action: undergraduate education, innovative scholarship, and the diversity of the University community.

The Undergraduate Initiatives Fund: This program provided an ongoing source of support, up to $1 million per year, for a wide range of experiments designed to improve the quality of undergraduate education. We were looking for good ideas, especially those that promised to bring greater focus and coherence to the undergraduate experience. In addition, the University was prepared to make base commitments from other sources to support successful ventures capable of having a significant impact on the education of undergraduates.

The Presidential Initiatives Fund: Through this program, we invested $1 million per year to stimulate innovative, interdisciplinary, and venturesome scholarship. For the first five years, the program was funded by a grant from the Kellogg Foundation. In subsequent years, we intended to fund it from University resources.

Diversity and Pluralism: In recognition that one of the greatest strengths—and responsibilities—of the University was its racial, cultural, and ethnic diversity, we selected as the third of our major initiatives the investment of major resources in programs aimed at strengthening the diversity of our students and faculty. Of highest priority were programs dedicated to the recruitment and retention of students and faculty members from underrepresented minorities. Again, this initiative was funded with $1 million per year in base budget at the outset, although we anticipated that this investment would increase substantially as new programs were developed. It should be noted that this base increase was in addition to the very substantial resources already devoted to this effort.

A common thread of grassroots involvement ran through each of these initiatives. All three involved an effort to seek proposals—ideas and participation in defining programs—from our faculty, students, and staff to address the University's highest priorities: education, scholarship, and the attainment of a rich cultural and racial diversity in our University community. We sought to invest resources in ways that would motivate our most creative people to become involved and committed.

A Plan to Respond to the Challenge of Leadership

Following these early planning efforts, the University launched a more comprehensive process aimed at developing institutional goals and priorities that could be used to guide resource allocation and management decisions. As noted earlier, we sought a flexible process which clearly recognized and responded to the complexity and diversity of the University. Our goal was to utilize this planning process to develop a clear image of what the institution wished to accomplish in the years ahead—an "institutional strategy"—and then to communicate this to the University community within the context of resource allocation policies and strong incentives which would encourage leadership at all levels of the institution to move toward these objectives.

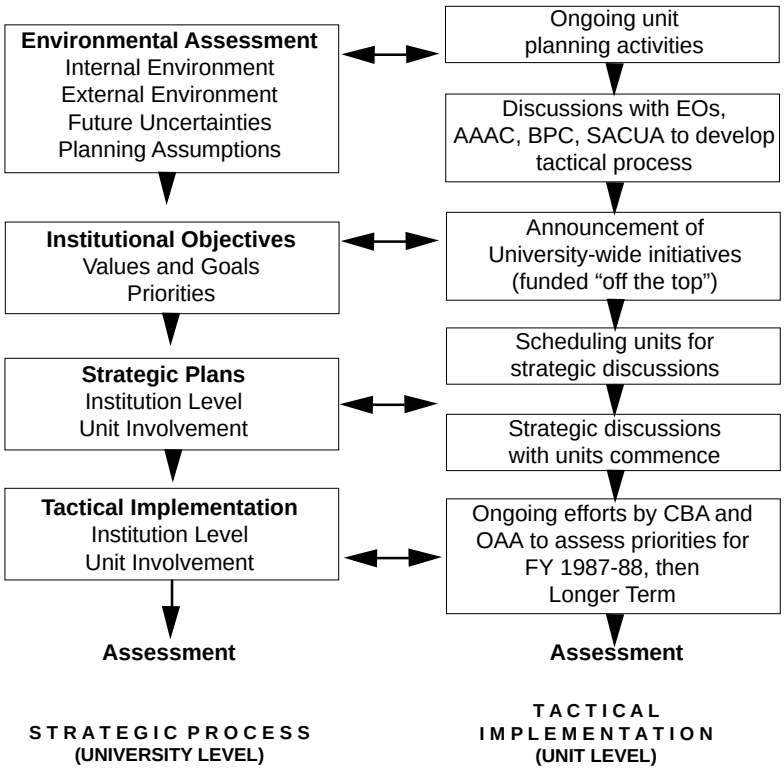
To summarize, our goal consisted of two components:

1. To develop, implement, and sustain a flexible planning process that would identify University objectives and priorities, assess (and perhaps modify) the dynamic environment in which the University must operate, and develop both strategic and tactical plans for achieving these objectives.

2. To link this planning process to resource allocation and management decisions at all levels of the University.

In this effort, we felt it important to emphasize first a strategic process to decide *what* we should be doing—i.e., choosing our objectives and priorities. This would be accompanied by a tactical process to determine *how* to go about doing it—i.e., developing operational procedures for accomplishing objectives. It was our concern that all too frequently there was a tendency to dwell more on process than objectives, on tactics rather than strategy. We sought a planning process that would emphasis the importance of strategic leadership.

To this end, we implemented two concurrent and parallel processes: 1) a strategic planning process conducted at the University level; and 2) a tactical implementation process involving all academic, administrative, and auxiliary units of the University. The following diagram illustrates these two processes and stresses three key features:



First, the strategic and tactical processes would be conducted *concurrently*. Because the strategic process was an ongoing University effort to develop, articulate, and occasionally modify its objectives over time, it was appropriate to pursue the process of tactical implementation simultaneously. And many units already had planning activities in place.

Second, the two processes would be tightly coupled and *interactive*. The early phases of strategic planning at the institution level would influence the context of unit level planning activities as resource allocation and management decisions. Conversely, interaction with units through the tactical process would help us to refine the strategic process.

Third, both processes would be highly *iterative* in nature. Each step would be viewed as a learning process with the power to influence not just subsequent stages of the process, but to feed back information to revise and sharpen the results of earlier stages.

The Strategic Process at the University Level

The inauguration of the strategic process at the University level can be dated back to the Executive Officer Retreat in September, 1986, and the endorsement of the general process by this group. Our early goal was to proceed through the first several steps of the process.

1. To conduct an environmental assessment by identifying key characteristics in the University's internal and external environments that could influence its choice and pursuit of strategic objectives, and then to develop a set of planning assumptions to provide a context for this strategic process.

2. To begin the process of identifying general institutional values, goals, and priorities, recognizing that these would evolve as more of the University community was drawn into the strategic process and as more experience was gained.

3. To develop a strategic plan designed to move toward these objectives. This stage of the strategic process would overlay and determine the nature of the tactical process involving planning, resource allocation, and resource management at the unit level.

4. To take the first steps toward tactical implementation of this plan.

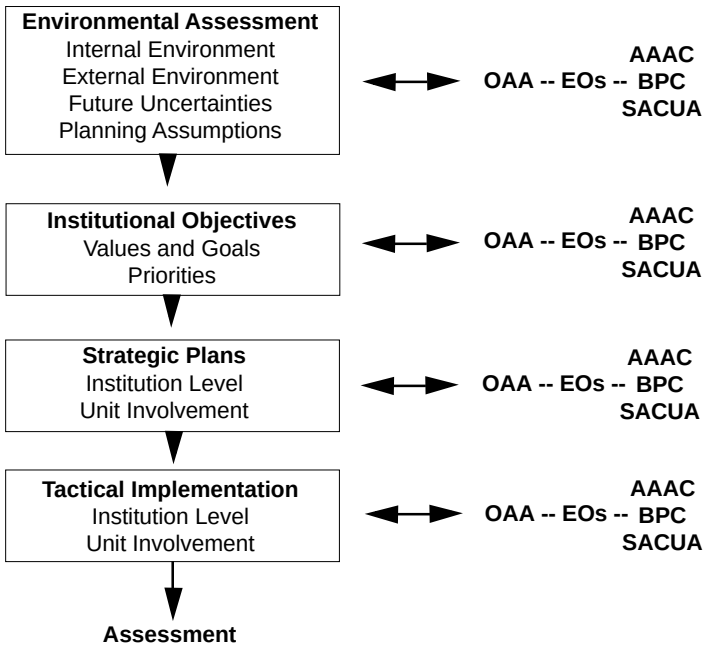
It was important to recognize that our approach to both the strategic and tactical processes was influenced by several related objectives:

- To stimulate the University—in particular, the Executive Officers, deans, and faculty— to deal more with strategic issues than tactical concerns.

- To improve the quality of resource allocation and management decisions by providing a strategic context.

- To use the strategic process to draw the University community together in a common effort to identify shared values and goals for the institution.

We viewed the strategic process of determining goals and priorities as a series of steps, each one of which would involve a broader range of participation across the University community. Key at each stage would be close interactions among the Office of Academic Affairs, executive officers, the Academic Affairs Advisory Council (AAAC), the Budget Priorities Committee, the Senate Advisory Committee on University Affairs (SACUA), and various student groups.



UNIVERSITY STRATEGIC PROCESS

To begin this process, we formed a Planning Team within the Office of Academic Affairs which met on the average of one evening each week throughout 1986. Throughout the process, this group received extensive input from the president, executive officers, and various faculty members. The goal of the Planning Team was to provide the executive officers by November with a framework for discussing the first three steps of the strategic process: 1) environmental assessment; 2) goal definition; and 3) development of a strategic plan. It was our intent to release information about the planning activity in a gradual and natural manner as more groups were drawn into the process during the 1986-87 academic year.

After a number of meetings, the Planning Team concluded that the most effective way to bring the executive officers and other groups into the process was to provide them with a concrete example of a possible University "mission statement." This would be accompanied by a discussion of the considerations that might lead to such a goal as well as examples of operational objectives. As we noted earlier in this chapter, the "proto" mission or goal was stated as: *Building leadership for tomorrow on a foundation of academic excellence.*

The Tactical Process at the Unit Level

Strategic planning involved a less formal process at the unit level, working as much as possible within existing mechanisms and allowing units considerable flexibility in their response. We wanted to avoid any sense of uncertainty among units that might paralyze ongoing activities, while taking advantage of the aggressive "strategic" processes already underway in many of our units.

We also believed it important to portray this strategic process, and the resource allocation and management strategies associated with it, as a means to respond to *opportunity* rather than a crisis from *resource limitations*. We framed the "strategic leadership" process as an effort to better align resource allocation and management with key University priorities so as to decouple it from the earlier "Five-Year Plan."

The tactical process developed by the Planning Team for implementation of the strategic plan consisted of several components.

1. We announced over the next several years a series of new University-wide initiatives in key areas. Examples included:

    - Improving the quality of the undergraduate experience
    - Cross-, multi-, and inter-disciplinary (venturesome) activities
    - Mechanisms to encourage units to focus resources to build spires of excellence
    - Task Force on professional education at the University
    - Research incentives
    - Graduate student financial aid
    - Diversity

Every effort was made to select initiatives that would not only be exciting and appropriate to our strategic mission, but that would also receive broad support by the entire University community. These initiatives would be funded at the central level "off the top" of the General Fund budget. Resources would be made available to those units or faculty presenting the best plans or proposals.

2. We approached the interaction with units in a very low-key fashion by taking maximum advantage of ongoing planning activities already underway. Most units were encouraged to move ahead with their present plans with as little interference as possible (albeit within the normal budget review and allocation process). Those units facing unusual challenges, opportunities, or needs received the most direct attention.

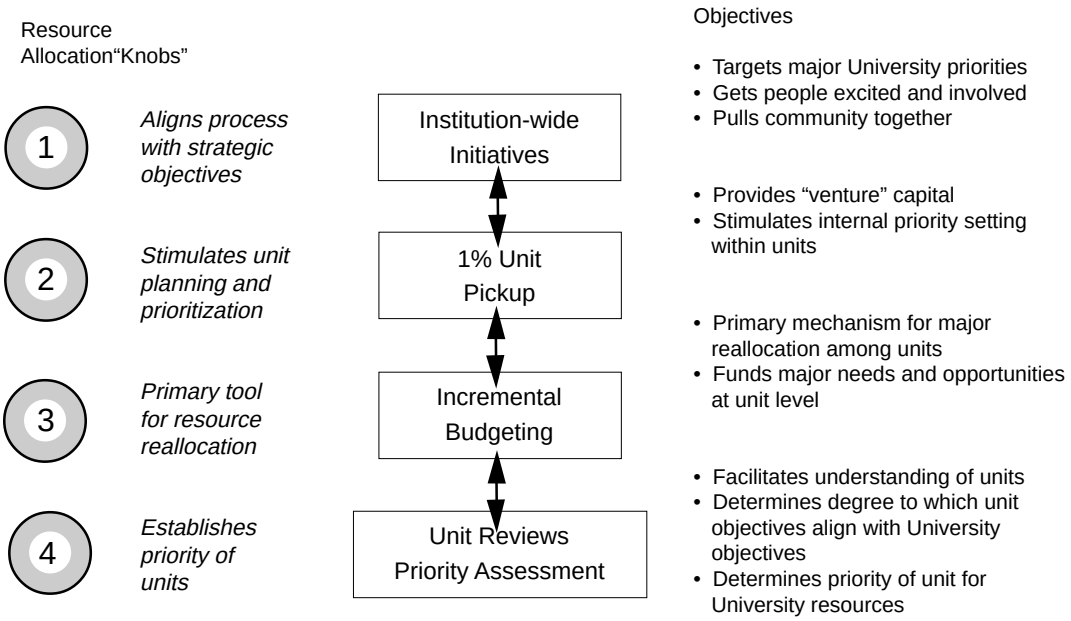
3. We continued our present process of differential allocation of resources "at the margin" to University priorities (e.g., incremental budgeting). However, as in the previous two years, all units (academic and administrative) were asked to plan on picking up one percent of their General Fund base budget increase for each of the next three years through internal reallocation. That is, the General Fund allocation to each unit would be determined on a base adjusted to 99 percent of the previous year's level.

4. We arranged a series of discussions in a "retreat" format with all units (academic, administrative, and auxiliary) over the next three years to better understand their needs, objectives, and priorities. These discussions were conducted from an "all-resource" perspective, which took into account all funds, facilities, and human resources. From preliminary discussions with deans and directors, we anticipated that the units participating in such reviews in the first year, 1986-87, would be "volunteers" and would represent a broad cross section of needs and opportunities.

Implications for Resource Allocation and Management

In this process, we were proposing a hierarchy of resource management tools that could be used to focus resources on key University priorities and to stimulate units to develop their own strategic plans and priorities. At the highest level, we utilized the major University-wide initiatives to move aggressively toward objectives that had broad impact across most programs. By funding these initiatives off the top of the General Fund, we demonstrated in a convincing fashion the University's commitment to focus its resources on key priorities. These initiatives had the additional objective of creating a sense of excitement and involvement across the campus, pulling together the University community behind common goals.

At the next level of resource allocation, we asked units of the University to plan on picking up 1 percent of their General Fund budget growth for each of the next three years through internal reallocation. That is, we set minimum salary and non-salary budget growth targets for each unit, but then funded the unit at 1 percent less than these targets. This action not only provided the resources necessary to fund the University-wide initiatives, but it also stimulated the units to become more engaged in internal planning activities aimed at focusing resources at highest priorities.



RESOURCE ALLOCATION HIERARCHY

At the third level, we continued the practice of differential funding at the margin by deploying incremental resources to the highest priorities. This allowed major reallocation among units on a more natural scale without the selective program reduction process employed during the Five-Year Plan. Note that through this process, all units had the ability to "appeal" for a waiver of the one percent reallocation requirement.

The most critical component of the resource allocation hierarchy was at the fourth level, where we developed a strategic process to establish the long-term budget priority for units. Through "strategic discussions," we evaluated the objectives and needs of units within the context of University objectives and priorities. These discussions assisted in establishing the priority of the unit for University resources over the long term, and in a sense, drove the entire resource allocation process.

While this four-level hierarchy did not rely on selective program reduction as an important mechanism in resource allocation, it did not rule out the possibility that at some point such action would be necessary. One of the outcomes of the strategic discussions and subsequent analysis by the executive officers could have been a decision to consider dramatically downsizing or even eliminating a unit. However, such an action would not have followed directly from the mechanisms we proposed, but rather from a program discontinuance/reduction review triggered by the strategic discussion process.

The Evolution of the Strategic Planning Process

Below we have summarized some of the key stages of the University strategic planning process over the past several years in the table below:

1986-87:

- Executive Officer Retreats—decision to move ahead
- Strategic Planning Team meetings
- Strategic Leadership Plan
- Strategic Initiative Fund
- Academic and administrative unit retreats

1987-89:

- Key strategic themes of change
  - demographics—>the Michigan Mandate
  - internationalization—>AVP efforts
  - knowledge—> networking, ITD
  - restructuring revenues and expenditures
- External relations strategy

1990-92

- Strengthening leadership teams
- The Reality Test
- Ten-Point Plan for the 1990s
- M-Quality
- Restructuring Student Environment
- Futures Group

1993-96

- The Refined Goals
- Strategic Assessment
- The Michigan Metrics Project
- Beyond 2000

It is useful to review briefly some of the features of these earlier efforts.

The Early Effort (1986-87)

A variety of leadership vision statements were considered by the various planning groups:

- "A heritage of leadership"
- "Building leadership for tomorrow on a foundation of academic excellence"
- "Developing the new paradigm for the university in 21st Century America"
- "A heritage and a destiny of leadership"

Extensive consideration was given to analyzing the University's various strengths for such a leadership goal, including:

- Our heritage of leadership as the flagship of public higher education
- Our unusual combination of quality, breadth, and size
- A well-balanced resource portfolio (state, federal, tuition, gifts…)
- The quality of students, faculty, staff
- Our unusual ability to control our own destiny
- Our liberal spirit, tradition of activism, progressive vision
- Our unique ability to take risks to achieve leadership
- Other unique characteristics (athletics, cultural opportunities, size of alumni body)

A wide range of specific opportunities for leadership were considered, including:

- Development of a new paradigm for a liberal undergraduate education within the environment provided by a great research university
- The Michigan Mandate: a model of a multicultural university
- An "electronic university"—a model of a knowledge-based organization
- A "world university"
- Our unusual strength and breadth in the health sciences
- Interdisciplinary structures (ISR, HHMRI, Humanities…)
- Cultural opportunities (performing and visual arts)
- Nurturing a liberal spirit among our students and faculty
- Basic and applied society sciences (including new models of outreach)

The early strategic planning effort proceeded from several underlying principles:

- Placing the highest premium on focusing resources to achieve excellence.

- Recognition that excellence is people-driven…and that our goal should be to attract and retain the best people, provide them with the resources and opportunities to push to the limits of their abilities, and then get out of their way. We should let our best people push the intellectual thrusts and determine the pace of the University.

- The importance of an entrepreneurial environment…
  …which stresses excellence and achievement…
  …which removes all constraints from talented people…
  …which lets our most creative people "go for it"…

Based on these principles, we set the following general goals

1. *To pick up the pace…*

To pick up the pace of the University, to build a level of intensity and expectation to settle for nothing less than the best in the performance of our faculty, students, and programs. National leadership requires a sustained commitment to excellence and a disdain for mediocrity.

2. *To focus resources to build spires of excellence…*

To break away from the tendency to attempt to be all things to all people, and instead to focus our resources on building spires of excellence. In a world of limited resources, the quest for quality must dominate the breadth and capacity of our programs.

3. *To establish academic excellence as our highest priority…*

To re-establish the core academic programs of the University as its highest priorities. While the strength of the professional schools and colleges play critical roles in determining the reputation of a university, over the long term these programs will inevitably draw their strength from the academic core.

4. *To develop a "change-oriented" culture in the University…*

To make the University better adaptive to change; to instill in faculty, students, and staff a relish and enthusiasm for change.

5. *To give highest priority to bold, new initiatives…*

To achieve the objective of leadership, we should focus wherever possible on exciting new initiatives. The best institutions are those which always seek to do something new, not just to maintain traditions. To simulate, encourage, and support more high-risk scholarship on the "exponential" part of the knowledge curve.

Consistent with these goals, we chose the following set of tactical actions:

- To move toward an "every tub on its own bottom" management style in which authority and responsibility were decentralized to the lowest possible level—albeit with strong central themes and information flow.

- To develop a "strategically driven" resource allocation process in which all resource allocation and management decisions were developed within the context of clear strategic priorities and objectives…both at the institution and the unit level.

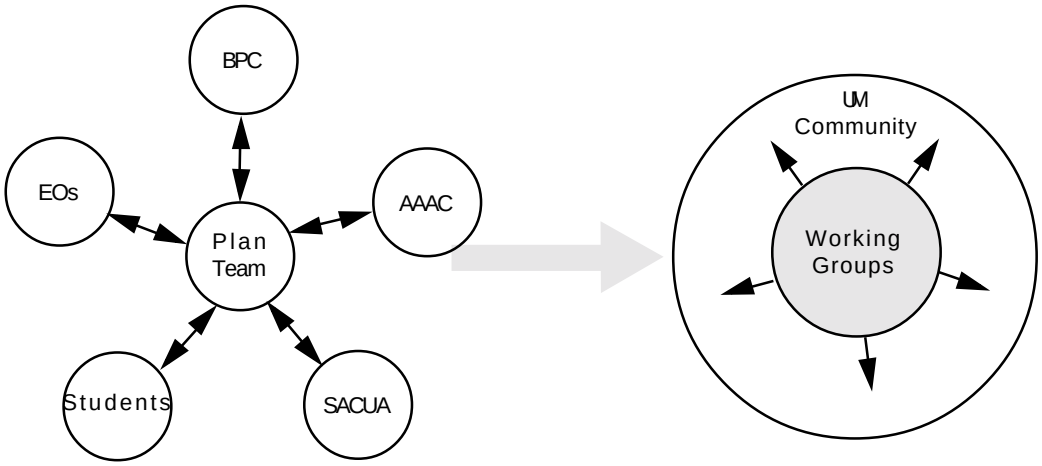
- To stimulate a strategic planning process at all levels of the University capable of guiding tactical decisions such as resource allocation.

- To develop and implement policies designed to alter or ameliorate constraints as they arise.

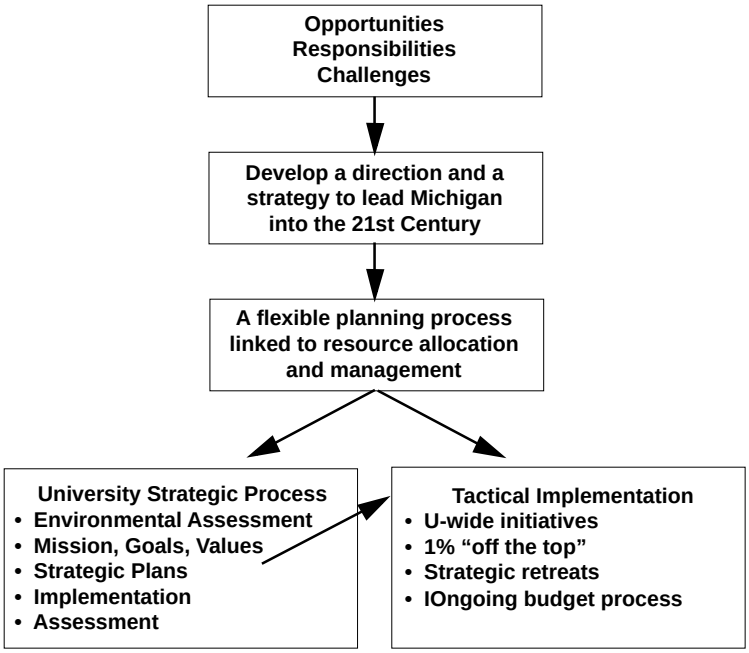
- To develop stronger management at all levels of the University.

- To develop new organizational structures which stimulated change and better allowed adaptation in a dynamic environment.

In this early stage of the process, the hope was that we could trigger a process involving progressively larger groups of faculty, students, and staff aimed at grappling with the difficult task of identifying and articulating a mission for the University as it prepared to enter the 21st Century.



We referred to the effort during this early phase as the *Strategic Leadership Process*. It was characterized by a flow diagram as follows:



A critical component here was the Strategic Initiative Process, in which one percent of the General Fund of the University was allocated into a special fund, the Strategic Initiative Fund, to support key strategic thrusts. Such projects had to be: 1) broadly supported strategic priorities of the University, 2) be University-wide, 3) have strong grassroots involvement, and 4) be one-time (flexible) projects. For example, during the first two years of the program the following initiatives were supported through the corresponding reallocation of base funding:

FY87-88 University Initiatives:
- Undergraduate Initiatives Fund ($1 million)
- Presidential Initiatives Fund ($1 million)
- Diversity Initiatives ($1 million)
- Graduate Education ($800 thousand)
- Sciences ($600 thousand).

FY88-89 University Initiatives:
- Target of Opportunity Minority Faculty Fund ($1 million)
- Special Faculty Salary Program ($2 million)
- Sciences ($500 thousand)
- Classroom Renovation Project ($1 million)

A number of other strategic initiatives were taken during this early phase of the strategic planning process:

- Strategic Initiative Fund
- Strategic Planning Team
- Strategic Retreats
- Undergraduate Initiatives
- The Michigan Mandate
- Steps toward Creating an Entrepreneurial Environment
- Capital Facilities Plan
- Information Technology Plan
- Management Incentives Plan
- Public Service Plan
- Community Initiatives
- Communications/Public Relations Plan
- Resource Allocation and Management
- Graduate Education
- Development Plan
- Medical Center Plan
- Admissions/Financial Aid/ Academic Services
- Resource Analysis and Strategy

The Ten-Goal Plan

The planning effort sharpened in 1990 with a push to develop a list of ten goals for the decade of the 1990s. In this effort, we sought goals that were as quantitative and measurable as possible so that we could assess progress (e.g., "increase private giving plus endowment income to a level equal to our state appropriation"). We hoped such goals would help us implement a system of "management by objectives" in which people would be evaluated in terms of their success in moving toward the goals. The specific goals chosen were as follows:

1. To protect and enhance the University's autonomy.

The single most important characteristic of the University is its capacity to control its own destiny. This had recently been threatened by the state government, the federal government, the media, and public attitudes. Hence our first priority for the 1990s would be to secure this autonomy. Possible "measures" of progress included: a) developing the capacity to control instate tuition and outstate enrollments without political interference; and b) achieving a balance of funding sources able to withstand major changes (e.g., a 25 percent decline) in any single funding source.

2. To strengthen the University leadership.

Clearly the quality of the leadership of the University was critical to its future. Hence, we sought to evaluate the quality of leadership throughout the University, from executive officers to deans to chairs and directors, and to attract the most capable leaders to Michigan.

3. To build private support to a level comparable to state appropriation.

For this goal, our measurable objectives (in 1990 dollars) included: a) increasing annual gifts received from $95 million (1990-91) to $200 million in 2000-2001; and b) increasing the endowment from $500 million (1991) to $2 billion (2001).

4. To achieve the objectives of the Michigan Mandate.

The Michigan Mandate called for: student representation; faculty, staff, leadership representation; building a "Multicultural UNIversity"; and moving ahead with a similar effort on women's issues. Some measures of progress included: a) representation targets; b) signs of integration rather than separation; and c) pipeline goals.

5. *To affirm and sustain the University's character as a public institution even as it was receiving more private support.*

Some measures of progress included: a) adjusting instate tuition to more accurately reflect the true costs of education and the declining state subsidy; b) achieving a better balance of instate/outstate/foreign enrollments; c) moving toward decentralization in management (cost/revenue center strategies); d) launching public/private experiments (Business Administration, Law, Medicine).

6. *To restructure the University to better utilize available resources for the highest possible quality teaching and research.*

Toward this goal we hoped to achieve: a) better (and fairer) resource allocation; b) implementation of Total Quality Management efforts; c) right sizing (e.g., rearranging academic units into more efficient organizations).

7. *To enhance the quality of UM as a comprehensive research university.*

Every unit would attempt to achieve and be tested against the highest possible standard. Those that failed to meet that standard would face either investment or divestiture ("up or other"). The measures that would be tested included: faculty reputation, student achievement, surveys (particularly the upcoming NRC graduate survey), and visiting committee evaluations.

8. *To attract, nurture, and achieve the extraordinary.*

We sought to attract and sustain students and faculty of true genius throughout the community. And we hoped to encourage all units to build "peaks of excellence"—to identify areas with the capacity for true national leadership and then to reallocate resources to build and sustain such extraordinary excellence.

9. *To position UM as a "world university."*

We considered shifting our perspective of the University from a state or national university to a world university. This would involve several focused efforts: a) providing opportunities for international experience for all undergraduates and faculty; b) increasing international enrollment; c) establishing strong relationships with a few great foreign universities; d) increasing financial support from international donors.

10. To develop more compelling images of what we are and wish to become—and of what we are not.

To achieve this goal, we needed to promote the aspects of our vision: a) an image of UM of as a leading world university; b) an image of the university as a process and a concept rather than a place or an institution; c) a willingness by "customers" (students, parents, government agencies) to pay full costs for our services; d) the expectation that a degree helps one create a job, but does not guarantee a job; e) the idea of the undergraduate experience as an experiment with a variety of lives ("a library of virtual realities"); f) an image of the university as a "rain forest," preserving the "cultural diversity" for our future—but also threatened with decimation by a misunderstanding public.

While these ten overarching goals took precedence in this phase of the planning process, we also considered a variety of other goals:

- Achieving dramatic improvement in the quality of the undergraduate experience (e.g., the Gateway Campus)
- Building a sense of community on campus that fosters a greater sense of pride, loyalty, commitment to the University on the part of students, faculty, and staff;
- Bringing the breadth and capacity of the University into line with realistic estimates of available resources
- Becoming a pathfinder in defining, developing, and applying information technology in a knowledge-based organization (e.g., collaboratories, telecommuting)
- Shifting from solitary learning to collaborative learning experiences
- Broadening financial aid to include outstate students and merit aid
- Getting rid of the image of "good, gray Michigan" with some compelling architecture
- Shifting more of our educational efforts to adult lifetime education, with an upperclass/graduate/professional focus
- Establishing "skunkworks" operations and "University within a University" concepts
- Presenting the university as a place that affirms and renews, not that just undermines belief and criticizes
- Exploring more specific roles and connectivity for all of our various shareholders, including alumni, friends, industrial leaders, and political leaders "on the organization chart"

Many of these additional goals were examined and implemented in subsequent planning activities.

The 26 Goal Plan

It is instructive to note how our institutional goals evolved in a fashion consistent with the logical incrementalism approach to strategic planning:

1986:	Themes
	Teams
	Networks
	Planning
1987-88:	Pace
	Spires
	Excellence
	Change-orientation
	New Initiatives
1990-92:	Autonomy
	Leadership
	Private Support
	Michigan Mandate
	Public/Private
	Cost Containment
	Spires
	Quality
	World University
	Image Goals

In 1993 we took the next step in the strategic process by further refining our goals, always consistent with the leadership vision, but more amenable to measurement. We also developed more precise metrics capable of giving us an accurate assessment of our progress toward Vision 2000.

The goals we proposed were grouped into three categories: leadership goals, resource goals, and trailbreaking 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 make UM the university of choice for women leaders
8. To develop a new paradigm for undergraduate education
9. To enhance the quality of the student living/learning environment

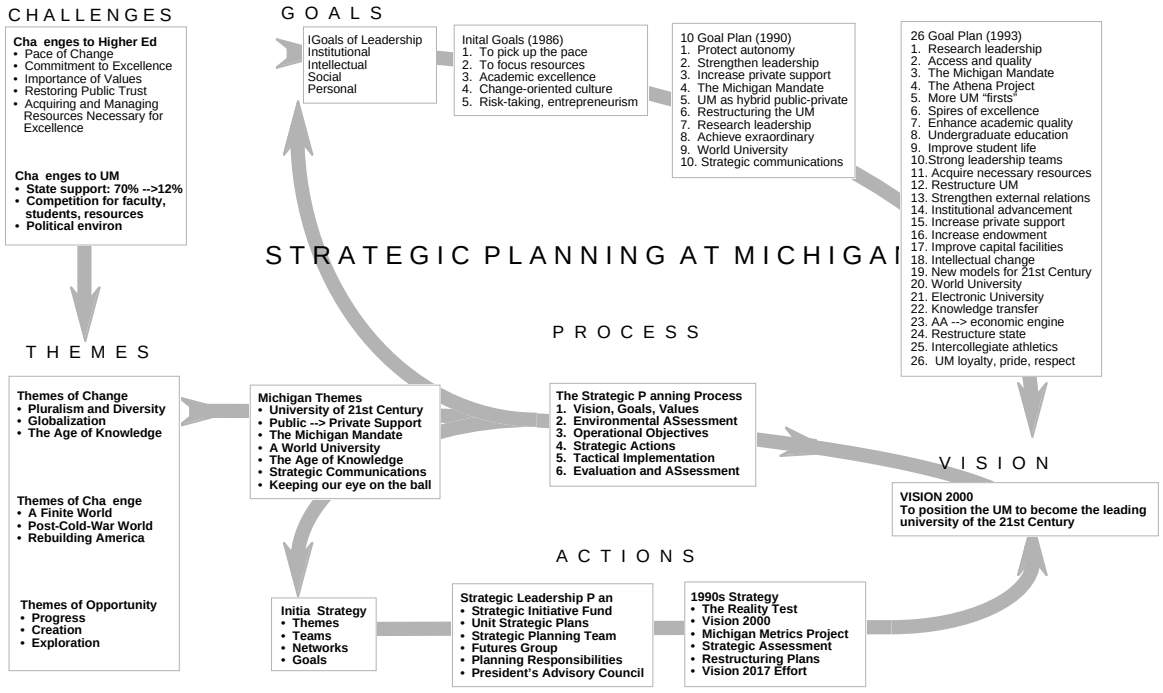
Resource Goals

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, federal, public)
14. To enhance the quality of institutional advancement activities
15. To increase private support to exceed the state appropriation by the year 2000
16. To increase endowment to $2 billion by the year 2000
17. To dramatically improve the quality of UM facilities

Trailbreaking Goals

18. To restructure the University to better respond to intellectual change
19. To explore new models for the University of the 21st Century
20. To position UM as a "world university"
21. To position UM as an "electronic university" of the 21st 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!

The strategic planning process leading to the setting of these goals and the development and execution of plans to achieve them is summarized in the following diagram:



This complex strategy was captured and articulated in the Vision 2000 strategy, discussed in Part IV.

[1] Much of this section is taken from an early draft developed by John D'Arms, then Dean of the Rackham School of Graduate Studies.

Part III

Planning Issues and Early Action

Part III Planning Issues and Early Actions

Much of our early strategic planning effort involved understanding better the key issues facing higher education and the environment in which institutional change would occur. We recognized that the University was embedded in its own special history. Hence we had to recognize that the availability and deployment of resources—both human and physical, tangible and intangible—are the outcomes of dynamic processes taking place over time, and often over rather extensive periods of time. We needed to understand better the nature of the path that brought the University to its current situation, since it would be difficulty to operate outside the bounds of our institutional history.

To provide background for the subsequent positioning and transformation strategies, in this section we will review some of the key planning issues in several areas critical to the University:

- *Undergraduate education*
- *Graduate and professional education*
- *Research and scholarship*
- *Public service*
- *Academic medicine and health care*
- *Financing the University*
- *The cost, price, and value of a college education*
- *External relations*
- *Preparing for the digital age*

We will also describe some of the early actions we took to address these issues.

Chapter 7 *Undergraduate Education*

Mention higher education and most people think about "going to college"—that is, undergraduate education as the core mission of the university. It is certainly true that undergraduate students outnumber graduate and professional students on most of our campuses. Furthermore, an undergraduate education frequently is a formative experience in one's life, because it generally coincides with both emotional and intellectual maturation. Yet much of the evolution of the American university—and the University of Michigan, in particular—during the decades following World War II was focused on activities such as research and graduate education, professional education and service, extension and continuing education, and auxiliary enterprises such as intercollegiate athletics and private fund-raising. A quick glance at the balance sheet for any major university reveals that the majority of its resources, whether financial or personnel, is not directed at undergraduate education. At Michigan, only about 15 percent of our budget is devoted to this activity, and only one-third of our faculty teach undergraduates.

Today, however, there are signs that the pendulum is beginning to swing back once again. Across the nation, colleges and universities are focusing their attention on the nature and the quality of undergraduate education. Perhaps they are responding to criticism about inadequate attention to the undergraduate experience. It could also be that the increasing costs of a college education and its value in a knowledge-intensive society have stimulated more attention from parents and public officials. Demographic shifts have been a factor, first as our nation dipped through the down-side of the post-war baby boom, and now as some regions of our nation face substantial growth in the population of college-age students. The cyclic nature of these concerns, has brought undergraduate education once again to the top of our agenda, as it does every decade or so.

A personal experience early in my presidency focused my own thoughts on the role of undergraduate education at a comprehensive research university. As I was beginning my tour of duty in the central administration in the mid-1980s, I attended a conference at Harvard where Ernie Boyer introduced the Carnegie Foundation report on the undergraduate experience. Only a very small handful of the participants were from public research universities such as Michigan, and on several occa-

sions, I was cornered in the halls and asked by my colleagues, "Why is Michigan here? You people aren't concerned with undergraduate education, are you?"

It was this perception— or rather, misperception—of the role of the public university in undergraduate education that disturbed me more than any of the other issues raised by Dr. Boyer and his colleagues. Even our own undergraduates feel this way. In our admissions surveys, we found that both those students who chose to come to Michigan and those who chose to go elsewhere believed that undergraduate education was a low priority of the University. This sentiment resurfaces in the popular surveys ranking American universities, such as that conducted annually by U.S. News and World Report. Both the press and the public still do not appreciate the fact that public universities not only educate the majority of undergraduates each year, but they do so with attention to quality, broad access, and cost-effectiveness.

Separating Myth from Reality

The Nature of Contemporary Undergraduate Education

Perhaps because college is such a formative experience in most of our lives, we tend to view contemporary undergraduate education through the rose-colored glasses of nostalgia. The traditional image of undergraduate education depicts college students as young adults, roughly between eighteen and twenty-two years of age, enrolled in degree programs either in academic majors such as history or science or in professional programs such as engineering and business. They learn by going to classes, listening to lectures by professors, studying in libraries, writing papers, and taking examinations. These students are thought to live in either campus-based residence halls or fraternities and sororities, to participate actively in social and athletic activities, and to be preparing themselves for "good jobs" while searching for mates.

Little wonder then that the range of concerns about undergraduate education can be disturbing. Have faculty really abandoned the classroom for their personal research agendas, subjecting students to unprepared teaching assistants, many of whom cannot speak English? Are students on our campuses out of control, over-indulging in alcohol, drugs, and political activism? Are our young undergraduates subjected to indoctrination in the latest fads of political correctness and intolerance? And, perhaps of most concern, has a quality college education become so expensive that it is now priced out of reach of all but the privileged few—unless you are fortunate enough to be subsidized by a government-sponsored financial aid program?

As with many issues in higher education these days, there is far more myth than reality in both the traditional images of and the concerns about undergraduate education. First, let us consider the "typical" undergraduate student. Most are well into their twenties—in fact, one-quarter are over the age of thirty. They are not attending college to get away from home or grow up, but rather to get the degree that is becoming the key to a decent job in our knowledge-driven society. Over half of these students are women, and almost one-quarter are from an array of minority groups—although within a few decades, we will all be from minority groups in an increasingly multicultural America.

Because living in university-provided housing or Greek houses can be expensive, not to mention disruptive for family life and employment, the majority of undergraduates these days prefer to live in their own homes and commute to campus for their education. A great many students attend local community colleges for the first two years to save the hard-earned dollars for a four-year college or university. In fact, roughly 40 percent of today's college students cannot afford either the time or the funds to attend college full-time, and instead accumulate the education and the college credits necessary for a degree on a part-time basis, attending evening courses. Needless to say, most of today's undergraduates take far longer than four years to complete their degree—five years or more being typical.

Most of these students see a college education as critical to their future quality of life—the key to a good job, financial security, and well-being. Most have definite career objectives, majoring in professional or pre-professional programs such as engineering, business, pre-med, or pre-law. While they may have strong academic abilities and interests in the liberal arts, both financial and family responsibilities motivate a far more utilitarian approach to their education.

Undergraduate Education in the Public University

When one thinks of distinguished private institutions such as Harvard and Yale, one usually thinks first of Harvard College and Yale College, their superb undergraduate colleges, because these are perceived as both the focus and intellectual soul of private higher education. But what does one think of first when someone mentions Michigan or Wisconsin? Football, perhaps? Fraternity and sorority life? Student protests?

Many tend to think first of the commitments that public universities have made to the professions, to their schools of law and medicine, engineering and agriculture. Some may focus on the responsibilities of these institutions to serve the public or

their important research programs. But few would think first about their commitment to undergraduate education.

Rather, the image of undergraduate education in large public universities is one of thousands of students wandering randomly in and out of large lecture courses, taught by foreign teaching assistants, possibly on their way from their fraternity or sorority house to the football stadium. Undergraduate students in these institutions are thought to be identified only by their I.D. number until the time of their graduation, when they are asked to stand and be recognized along with thousands of their fellow graduates.

The fact is that well over half of the students on the campuses of major public universities are undergraduates. At Michigan, we enroll over 18,000 undergraduates in our liberal arts college, which makes it the largest commitment to liberal arts education at any university in the nation. By almost any measure, the undergraduates on our campuses today are our strongest students—just as they are at other highly selective institutions such as Harvard, Yale, and Stanford. Our average entering students rank among the top three percent of high school graduates, and over 1,000 of our entering freshmen will have graduated in the top one percent of high school graduates. In terms of both quantity and quality, the significant fraction of our efforts are, or at least should be, focused on undergraduate education.

Studies confirm that the largest source of professionals, of scholars, and of leaders in our society remains large, comprehensive, public research universities. At Michigan, we have led the nation for many years in the number of our undergraduates who go on to professional careers such as teaching, law, engineering, and medicine. But this should not be too surprising, given that the impact of our programs is generally dependent on both the quality and number of our graduates.

The Good Old Days

There is another myth about modern undergraduate education, perhaps also stemming from our nostalgia college years: the belief that the quality of undergraduate education has deteriorated dramatically in recent years. Believers call for a return to the golden years of undergraduate education decades ago when students were serious, faculty were dedicated, and a liberal education reigned supreme.

It has become fashionable to sling arrows at the undergraduate experience in American colleges and universities. Allan Bloom first launched the assault in the late 1980s in his best-selling book *The Closing of the American Mind*, in which he proclaimed that

the American university had succumbed to relativism and abandoned its purpose and principles. In attempting to embrace openness and freedom, the university had allowed "radical subjectivity of all belief about good and evil" to dominate its curriculum. Bloom suggested that the university, by consenting to play an active, participant role in society, had become inundated and saturated with the backlog of society's problems. The classical curriculum, once aimed at providing students with the knowledge of classic philosophy and literature necessary to become aware of the order of nature and one's place in it, had been replaced by a "democracy of disciplines" that offered no university-wide agreement about what a student should study.[1]

Others soon joined Bloom's criticism of undergraduate education with provocative book titles such as *The Moral Collapse of the University*, *Tenured Radicals*, *Killing the Spirit*, and *Profscam*.[2] A few representative quotes illustrate the strident nature of their attacks on the academy:

> *"Higher education is underaccountable and underproductive . . . in a sickening tailspin, a national disgrace."*
>
> *"Undergraduate education has been accused of winding down toward mediocrity with a curriculum described as chaotic, a disaster area, or rotten to the core. "*
>
> *"The professors—working steadily and systematically—have destroyed the university as a center of learning and have desolated higher education, which no longer is higher or much of an education."*

Like Bloom, most of these authors suggested that the contemporary university had drifted away from an earlier ideal of undergraduate education. As is so frequently the case, reality took a back seat to polemics.

Throughout the history of American higher education, the actual experience of students and faculty has been dramatically different from the grand plans of educators.[3] In the early colonies, undergraduate education was essentially professional education for the clergy and government service. It involved a kind of intellectual indoctrination, passing on yesterday's wisdom to tomorrow's leaders using a rhetorical tradition of rote learning. This only began to change with the emergence of the public university—particularly the land-grant university—which provided a broader spectrum of professional training and a new level of access to higher education.

Throughout much of the early 20th Century, most undergraduates did not take the academic curriculum of their educational experience seriously, perceiving it as "an education, barren of ideas."[4] Most learned far more from extracurricular activities. A college education was not viewed as a serious intellectual affair; it was the era of the "gentleman's C."

The undergraduate experience became more rigorous following World War II, perhaps due to the impact of the returning veterans—adult students who took their college education far more seriously. The GI Bill reflected a qualitatively new attitude towards the benefits of higher education. In addition, as the population of baby-boomers began to swell, there was increased competition for admission to elite institutions, thereby placing more public attention on academic quality. The growth of the research university at that time also served to enhance the quality of the undergraduate experience through the increased scholarly requirements on faculty and the synergy of teaching with research.

Despite this trend, undergraduate education today is in need of substantial improvement. While vastly improved over previous eras, undergraduate education has not improved as quickly or responded as successfully to society's needs as have faculty efforts in research. Although undergraduate education in America overall has probably never been better, the changing needs of our society and expectations of our students demand that we make an even greater effort to improve it.

Are Our Universities Ignoring Undergraduate Education?

For some time now, there has been a resurgence of efforts to re-examine and improve undergraduate education at the research university. One might explain this by saying that curriculum reform is cyclic, and the pendulum is now swinging back after the deconstruction of undergraduate education stemming from student unrest in the 1960s. Clearly market forces are also at work. In many parts of the nation, we experienced a major decline in the number of college-age students during the 1990s as we coasted down the backside of the post-war baby boom. There is nothing like a demographic crunch to stimulate educational institutions to improve their product.

There also could be a higher purpose behind these actions. Many universities have seen a decided increase in the quality of entering students. Perhaps our renewed focus on undergraduate education is evidence of our efforts to be a more responsible steward of these extraordinary human resources. Then too it might reflect our efforts to respond to the complex needs of modern society.

In another light, the focus on undergraduate education could be part of a long needed rebalancing of the priorities of our institutions.[5] For several decades following World War II, most of our large universities focused their attention on building strong programs in the professions—developing high-quality schools of law, medicine, business, engineering, agriculture, and so forth. Perhaps this push resulted from a sense of public responsibility. Or perhaps it was due to the demand for these programs by both students and employers. Whatever the reason, most large educational institutions have invested the lion's share of resources for many years in the professions, at the expense of the quality of our undergraduate programs.

Yet, as our colleagues in elite private institutions have known for so long, the cornerstone of any distinguished academic institution is its undergraduate college. The intellectual disciplines derived from college programs form the academic heart, the intellectual core of our institutions, and over a period of time will determine both the distinction of the institution as well as the strength of its other endeavors in the professions, in research, and in service.

At many colleges and universities, steps have been taken to improve undergraduate education. Faculty incentive and reward structures, including the evaluation for tenure, are being reshaped to place more emphasis on teaching. Administrators are working to make the undergraduate curriculum more coherent in the face of the fragmentation and specialization that now characterize the academic disciplines. Investments are being made to improve the quality of the learning environment—classroom, libraries, and laboratories—as well as to provide better counseling and guidance. More systematic attention is being given to important learning experiences outside of the classroom, such as undergraduate research, community service, and residential living-learning communities.

While this attention to undergraduates is admirable, it is almost all aimed at improving the undergraduate experience within the traditional learning paradigms. Most efforts focus on improving teaching and learning within the context of a four-year degree program, consisting of a curriculum of roughly 120 credit hours (corresponding to forty semester courses) in one of the traditional majors. Although a variety of learning activities are considered, including research, community service, and residential learning, the primary focus is on improving the classroom experience as the dominant pedagogical tool of undergraduate education. Unlike the 1960s, there are relatively few efforts to explore significantly different forms of undergraduate education.

Clearly what is happening on our campuses today is far from a revolution in undergraduate education. In fact, many argue that we do not need a revolution, because, by and large, our universities are already doing a very good job at educating undergraduate students. They suggest that what we need instead is a renewal of our commitment to quality in undergraduate education, stimulated by our sense of responsibility to our students and society and by our aspirations for excellence.

On the other side are those who believe that present efforts to improve undergraduate education through the existing model, while certainly well-intentioned, cannot respond adequately to the needs and nature of our students or to our changing world. The challenge before us is to create a new paradigm of undergraduate education for a new century.

What We Are . . . and What We Are Not!

What is unique about undergraduate education at universities such as Michigan? What is the "market niche" of comprehensive research universities? We all share a serious commitment to scholarship as well as a commitment to unusual breadth across an array of academic disciplines, professional schools, and social and cultural activities. We have all achieved a high degree of diversity in our students, faculty, and staff. Our campuses demonstrate an unusual degree of participation of faculty and students in the university decision process. And we all share in a notably strong commitment to the quality of our students, our faculty, and our programs.

The strength of our institutions depends in large part upon our efforts to achieve an optimum blend of quality, breadth, and scale. We attempt to do a great many things, to involve and benefit a great many people, and to do it all well. We also strive to balance teaching, research, and service, as well as undergraduate education, graduate education, professional education, and faculty scholarship and development. It is important to note that we do not view achieving such balance as a conflict among competing goals. Rather we view it as an opportunity to exploit important creative tensions.

It is this blend of missions that provides the research university with such a unique environment for undergraduate education. We are not, nor should we try to imitate, a small liberal arts college, with a faculty chosen primarily for their teaching skills and with a curriculum limited both by design and resources. Rather, we are large, comprehensive universities, spanning almost every intellectual discipline and profes-

sion. We have the capacity to attract and sustain many of the world's leading scholars. We provide intellectual resources unmatched elsewhere in our society, whether in the size of our library and museum collections, or in sophistication of our laboratory facilities, or in the exotic new tools of our intellectual trades (ranging from supercomputers, to the complex equipment required for solid-state electronics and recombinant DNA research, to the expensive instrumentation used for positron emission tomography in our medical centers).

All these features can and should allow research universities to play a unique role in undergraduate education:

1. We should provide our undergraduates with an experience that draws on the vast intellectual resources of the modern research university: its scholars, its libraries and museums, its laboratories, its professional schools, and its remarkable diversity of people, ideas, and endeavors.

2. 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 scholars, and only by also drawing into the classrooms faculty with a strong commitment to scholarship can we stimulate our students to develop the research skills essential to life in an age of rapidly expanding knowledge.

3. 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.

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

5. We must accept our mission to educate the leaders of American society. If past experience is any guide, most of the leaders of this nation will continue to be produced by our great research universities.

Improving Undergraduate Education Within the Traditional Paradigm

The Purpose of Undergraduate Education

What is the aim of undergraduate education? Perhaps we should aim toward the lofty goals of Emerson:

> *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 on flame.*[6]

Or perhaps we should consider the aspirations of Henry Philip Tappan, first president of the University of Michigan:

> *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 professors 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, of religion, or of the state.*[7]

To achieve either goal, we need a new spirit of liberal learning, one that strives not just to impart the facts but to encourage and support our students to develop a philosophy of life.

At a much less idealistic level, the purpose of a college education for most students and parents is to earn the college degree necessary for a good job and personal economic security. Many of today's students approach their college education with definite career goals in mind. They enroll with plans to become doctors or engineers or lawyers or teachers. While many will change their minds during their undergraduate years, almost all will emerge with specific career goals still uppermost in mind.

Modern employers reinforce this utilitarian approach. The recruiters they send to campuses are looking for very specific skills. Perhaps they seek a particular undergraduate major or Internet navigation skills. Or perhaps they seek some evidence that the student can communicate well and work comfortably in a diverse environ-

ment. Students are extremely sensitive to these signals from the employment marketplace, and the experiences of other students with job interviews and placements can impact their own educational plans.

In this way, the university is caught between opposing forces: the desire to respond to the more pragmatic goals of students and employers while providing the broader liberal education important for good citizenship and a meaningful life. And in a world of ever-changing needs, the university should always be striving to prepare students for a lifetime of learning. The old saying that the purpose of a college education is not to prepare students for their first job but rather their last job still has a ring of truth.

The Undergraduate Curriculum

The raging debate over the character and content of the undergraduate curriculum pits several philosophies of instruction against each other:[8]

- The Great-Books Approach: The goal of this approach is to transmit a defined body of knowledge to students, as captured in the great works of human thought. As Bloom puts it, "Philosophy and liberal studies, in general, require the most careful attention to great books. This is because these are expressions of teachers such as we are not likely to encounter in person, because in them we find the arguments for what we take for granted without reflection, and because they are the sources of forgotten alternatives."[9]

- Methods of Understanding and Inquiry: This approach stresses an acquaintance with the principal ways by which the human mind apprehends the world—that is, methods of understanding and inquiring about literature, art, moral philosophy, history, economy, and society, as well as natural sciences. This philosophy of liberal learning views undergraduate education as a foundation to provide students access to many fields they can pursue later in life.

- Distribution and Breadth: The aim of this approach is to achieve breadth by requiring students to take a certain number of courses in each of several diverse categories such as the social sciences, natural sciences, humanities, and arts. This philosophy assumes that different disciplines have separate and valuable ways of apprehending the world and that requiring students to sample a wide variety will suffice to broaden their minds.

Of course, in practice most undergraduate programs combine aspects of all three methods. Most would agree that the undergraduate curriculum should seek a common set of goals such as those articulated by Rhodes.[10]

1. The ability to read, write, and speak with clarity, precision, and grace, and to understand and articulate not only the facts, but the nuances and shades of meaning.

2. The habit of disciplined inquiry and the ability to delve deeply, systematically, and thoroughly into new subject areas.

3. The understanding of times and cultures other than our own.

4. An appreciation of nonverbal and non-quantitative expression, including those of the creative and performing arts.

5. An in-depth study of one chosen area to develop an appreciation of the methods, boundaries, relationships, limitations, and significance of a specific discipline.

6. Through a wide-ranging perspective of the world at large, the development of a sense of the context—physical, biological, social, historical, and ethical—in which students will live their lives.[11]

The organization of the university, its faculty, and the undergraduate curriculum into highly specialized disciplines and programs poses challenges to the pursuit of these goals. The past century has seen the rapid growth of specialization within the academy. Faculty have been encouraged to focus on their own learning and scholarship in increasingly narrow and numerous specialties and subspecialties—from 19th century Japanese economics to plant physiology, from deconstructing poetry to analyzing first amendment law. This excessive specialization has propagated into the contemporary undergraduate curriculum, as any cursory scan of a college course catalog will reveal, and it has overwhelmed efforts to develop a coherent character to undergraduate education. Shapiro states it well when he observes:

> *There is a growing sense that the competitive demands of specialized scholarship and other developments have placed an irreparable rift between graduate and undergraduate education and may have impaired the capacity of research universities both to remain centers of modern scholarship and to fulfill their broader educational functions. The real problem is that teaching and research may be too closely related. At the root of our unmet challenge in undergraduate education is the failure to distinguish between the transmission*

> *of knowledge and the development of a capacity for inquiry, discovery, and continued learning. The predicament is that the faculty is transmitting what they know—and love—with little awareness of what the student needs to learn.*[12]

The traditional curriculum, with its division of knowledge into scholarly disciplines and its practice of teaching by means of lecture and text, is ill-suited to today's student and tomorrow's society. While the attainment of specific knowledge and skills may be valuable in preparing students for citizenship or rewarding lives, it no longer seems appropriate to impose rigid constraints in the form of curricular requirements.

With today's increasingly diverse student body, there is a need for new learning environments that can accommodate differences in learning styles, interests, and backgrounds. We should not confuse the goal of learning with that of mastering a given body of knowledge, even within a specific major or concentration. Today's students require a curriculum—indeed, an educational experience—that is more personalized to their particular educational goals and background.

This will pose new challenges for the faculty, because they will have to develop the capacity to consider each student as an individual, with distinct goals, needs, and abilities. But this "humanizing" of the mass education process that has too long characterized undergraduate education is overdue.

Teaching, Research, and Service

Today we see an unprecedented shift in education from the dominant focus on knowledge delivery or transmission teaching to a focus on student learning. The learning associated with a university education occurs through many activities, some formal such as classroom instruction and some informal such as student interactions and extracurricular activities. Interestingly, in longitudinal studies of their graduates, several universities asked alumni to rank the value of their various experiences while undergraduates. The alumni consistently tended to rank as most valuable their interactions with faculty and other students (the community theme again). Lowest in value was the actual content learned in formal courses.[13]

This view is reinforced by surveys of CEOs of major American corporations who, when asked what they seek in today's college graduates, tended to respond: the ability to communicate, the willingness to continue to learn, the capacity to value and manage diversity, and the desire to drive change. Again, particular curricular content was not high on the list.[14]

There is a certain irony here. The contemporary university provides one of the most remarkable learning environments in our society—an extraordinary array of diverse people with diverse ideas supported by an exceptionally rich collection of intellectual and cultural resources. Yet we tend to focus most of our efforts to improve undergraduate education on traditional academic programs, on the classroom and the curriculum. In the process, we may have overlooked the most important learning experiences at the university.

Think about it from another perspective. When asked to identify the missions of the university, we generally respond with the time-tested triad: teaching, research, and service. Undergraduate education, however, is usually thought of only from the perspective of the first of these missions— teaching. Clearly, we should broaden our concept of the undergraduate experience to include student involvement in other aspects of university life.

For example, at a research university, every undergraduate should have the opportunity—or perhaps even be required—to participate in original research or creative work under the direct supervision of an experienced faculty member. The few students who have been fortunate enough to benefit from such a research experience usually point to it as one of the most important aspects of their undergraduate education; unfortunately, most receive their education only through the more standard curriculum. Interestingly enough, many faculty members who have supervised undergraduate research projects also find it to be an exhilarating role, because undergraduate students are frequently more questioning and enthusiastic than graduate students!

There is ample evidence to suggest that students' learning also benefits significantly from participating in community or professional service. Such activities provide students with experience in working with others and applying knowledge learned in formal academic programs to community needs. Many students arrive on campus with little conception of broader community values and the experience of doing something for others can be invaluable.

In fact, major studies suggest that knowledge is created, sustained, and transformed in "communities of practice."[15] Learning constitutes a form of membership that evolves as the individual engages in the practices and activities of the community, which becomes the living repository of knowledge. While there are numerous opportunities for volunteer community service at all universities, a more structured approach would better align these experiences with the goals of an undergraduate education. Such community or professional service might even be considered as a requirement for an undergraduate degree.

The undergraduate experience must be reconsidered from a far broader perspective, encompassing the multiple missions of the university. All too frequently each of the missions of the university is associated with a different component: a liberal education and teaching with the undergraduate program, research with the graduate school, and public service with professional schools. In reality, all components of the university should be involved in all of its missions—particularly in undergraduate education.

A Liberal Education

A concept still quite relevant to undergraduate education but usually misunderstood is that of a liberal education. Today educators and others use the term to refer to everything from an education based on "the great books" to a broad but superficial survey of all of the liberal arts. According to Harold Shapiro, a liberal education involves: "The need to better understand ourselves and our times, to discover and understand the great traditions and deeds of those who came before us, the need to free our minds and our hearts from unexamined commitments, in order to consider new possibilities that might enhance both our own lives and build our sympathetic understanding of others quite different from us; the need to prepare all thoughtful citizens for an independent and responsible life of choice that appreciates the connectedness of things and peoples."[16]

Shapiro also points out that over the past two millennia since the concept was first introduced by the Greeks, the definition of a liberal education has changed dramatically. For the Greeks and Romans, a liberal education had a disciplinary intent: grammar, rhetoric, logic, arithmetic, geometry, music, and astronomy. As time passed, more objectives were added such as the freeing of the individual from previous ideas, the disinterested search for truth, the pursuit of alternative ideas, the development and integrity of the individual, and the power of reason. Shapiro suggests that the only continuing themes have been the achievement of important educational objectives that are complementary to those of a purely technical education and the creation of a certain type of citizen.

To be sure, the notion of a liberal education for the 21st Century will be different than that of our times. Yet, as difficult as it is to define and as challenging as it is to achieve, perhaps the elusive goal of liberal learning remains the preparation of students for a lifetime of learning and a world of change.

The Michigan Initiatives

During the late 1980s, the larger undergraduate programs in the liberal arts college, engineering, and business administration at Michigan completed major blue-ribbon studies re-examining the undergraduate curriculum. These resulted in a number of important steps aimed at improving the undergraduate experience.

However, we recognized that an institution-wide effort was necessary. During the late 1980s we launched a series of initiatives aimed at sustaining and enhancing the vitality of our undergraduate programs. To fund these, we created the Undergraduate Initiatives Fund, setting aside over $1 million per year to support this cause. Many of the initiatives were determined through an open competition in which students, faculty, and staff competed for funds. We were interested in stimulating a wide range of experiments designed to improve the quality of undergraduate education. We were looking for good ideas, and we were prepared to make the base commitments to support successful ventures.

The common thread throughout these initiatives was grassroots involvement. We sought proposals, ideas, and participation in defining programs from our faculty, students, and staff. We sought to invest resources in a way that would motivate our most creative people to become involved and to become committed.

The first awards in this program created an interesting portfolio of new initiatives. We supported the development of a new series of core curriculum courses in the liberal arts. Our instruction in science and mathematics for the first two undergraduate years underwent major revisions. We implemented new initiatives aimed at better integrating the arts such as theater, dance, and music into the undergraduate curriculum. We addressed major pedagogical needs such as teaching assistant training. We took substantive action to improve counseling and sensitivity to pluralism in the University. And we funded a number of student proposals, ranging from undergraduate colloquia to faculty fellow programs in the residence halls, to on-line counseling and information services on our campus computer network, to an alternative career center.

The major areas of attention during the first round of awards included:

- Promoting critical thinking and writing skills
- Creating a new spirit of liberal learning
- Promoting acceptance of pluralism and diversity
- Promoting improved faculty-student interactions

The second phase of our effort moved from an open solicitation of proposals to working directly with the schools and colleges. The areas of particular focus shifted to:

- The unique nature of undergraduate education in the research university
- Linkages to the graduate disciplines and professions
- Enriching the intellectual life of undergraduate students
- The role of the sciences in a liberal education

We took many other steps to raise undergraduate education to a higher priority within the University. For example, we established a series of named professorships, the Thurnau Professors, to honor faculty with extraordinary achievements in undergraduate education. We launched a series of renovation and new construction projects to improve the quality of instructional space on campus, including renovation of the Undergraduate Library and a spectacular central facility, the Angell-Haven Center, for computer access (including over 400 workstations). As part of this effort, we committed a $500,000 per year base budget line to renovate over time every classroom on the Central Campus. We restructured our full range of student services to merge them more effectively into the academic life of the university. And we also instituted a commission to study ways of better integrating academic programming into the residence hall environment.

Student Life

Michigan has long attracted an activist student body. Michigan students have historically driven much of the agenda of the University. Beyond that, they frequently have contributed to the social conscience of the nation—for example, through the Vietnam teach-ins, Earth Day, and the Black Action Movement.

This tradition of activism, while serving as a source of great energy and excitement, also has had its drawbacks—particularly when the issues and agendas were not sufficiently compelling. As the mood of the nation shifted away from confrontation and dissent in the 1980s, the majority of Michigan's student body become more conservative and detached from the agendas of various special-interest groups. As a result, those remaining activist elements of the student body became increasingly focused on narrow special-interest agendas, even as the silent majority of students became more passive and focused instead on personal issues such as grades, social life, athletics, and job prospects! This was reflected in student government, in

which only the more activist—indeed, radical—students cared passionately enough about particular issues to expend the energy to run for elected office. It was also reflected, unfortunately, in the attitude of administrators and faculty toward such student activism: that it should be treated with benign neglect until it burst into flames that required a fire drill.

This was further complicated by another hangover of the 1960s: the large number of staff in the student services area who had been members of this generation of protest and who harbored as much distrust and disrespect for "the establishment" as did the more activist students themselves. It was not uncommon to find that many staff, themselves, were pot-stirring among the activist students, encouraging them to protest on various special-interest agendas.

Key in changing the Michigan student culture, caught between those still trapped in the 1960s and those who had rejected student activism as irrelevant to their personal concerns, was the appointment of Dr. Maureen Hartford as Vice President for Student Affairs in 1992. Hartford came with extensive experience at other universities. More significantly, she came with a deep respect, concern, and love for students that was immediately obvious to those on the search committee that recommended her appointment. During her first week on campus, she checked into the South Quad residence hall to spend several nights with students, learning more about their lives. She rapidly gained the respect of even the most activist students. Over time, she managed to stimulate a similar degree of respect for student concerns within the administration and the faculty. After a few months, it was clear that a sea change had occurred in the student culture, and there was a rapid growth of interest in student government among our academically strongest students.

The issues stimulating student activism in the late 1980s were common to most other campuses: military research on campus, gay rights, racism. Michigan had one additional issue that would have seemed absurd on other college campuses: the absence of any policy for student discipline and campus safety. One of the legacies of the volatile days of the 1970s was the elimination of a code of student conduct, which had been intended only as a temporary lapse pending the development and adoption of a new code. But student government was given veto power over the process, and it had consistently exercised this to prevent the development or adoption of a new disciplinary policy. As a result, the University had gone for almost fifteen years without any of the student disciplinary policies standard at every other college or university in the nation. The only option available for student disciplinary action was to utilize an obscure Regents Bylaw that gave the president the authority to intervene personally to handle any incident. Although the University administra-

tion knew it was at some risk in the absence of such a student code—and, indeed, not in compliance with federal laws that required such policies to govern areas such as substance abuse—each time an effort was made to develop a code, it was blocked by activist students.

Another issue of great concern to many students provided opportunities for protest both for those students and others who resented any authority: campus safety. For most of the University's history, Ann Arbor was a relatively simple and safe residential community. But as Southeastern Michigan evolved in the post-war era to a "metroplex" with intricate freeway networks linking communities together, Ann Arbor acquired a more urban character, with all of the safety concerns plaguing any large city. While many aspects of campus safety could be addressed through straightforward and noncontroversial actions, such as improving lighting or security locks on residence hall entrances, there was one issue unique to the University that proved to be more volatile: the absence of a campus police force. Unlike every other large university in America, the University had never developed its own campus police and instead relied on community police and sheriff deputies. This had caused some difficulties in the activist days of the 1960s when local police had adopted a highly confrontational approach to student unrest. Throughout the 1980s, it became more and more evident that local law enforcement authorities would never regard the University as their top priority. Their responsiveness to campus crime and other safety concerns was increasingly intermittent and unreliable. Further, most other universities had found that the training and sensitivity required by police dealing with students was far more likely to be present in a campus-based police organization than in any community police force.

The issues of a code of student conduct and of a campus police came into focus in 1992 when a University task force on campus safety strongly recommended that both be established. Although surveys indicated that most students supported both steps, a number of student groups—including student government—rapidly put together a coalition to protest: "No cops, no codes, no guns." As the University took formal action to establish the campus police, a series of protests occurred, including one on a particularly warm day in late fall in which students camped out on the lawn of the President's House to "bury student rights"!

Like most protests resisting administrative efforts to bring the University in line with the rest of higher education, these rapidly faded as the campus police organization was established and as they demonstrated that they not only could reduce crime on campus, but that they also were far more sensitive to student needs and concerns than the local Ann Arbor police. Indeed, several years later students again pro-

tested—this time to demand more campus police in preference to the use of community police.

We took a series of actions to improve campus safety, beyond the formation of a campus police organization. Major investments were made to improve campus lighting and landscaping. Special programs were launched such as the Sexual Assault Prevention and Awareness Center, the Night Owl transportation service, a Safewalk escort service in which students served as nighttime security escorts, and the Task Force on Violence Against Women. Broad programs were undertaken to address the concerns of substance abuse on campus, with particular attention focused on alcohol consumption. The University also tackled the hazards of smoking by making most of the campus a smoke-free zone, including all public spaces (even Michigan Stadium!), and by developing programs to help members of the campus community stop smoking.

There was also a major change in Greek life during the 1990s. Since the 1960s, the University had generally kept arm's-length distance from fraternities and sororities, even though over 6,000 undergraduates each year chose these as their residential community. This reluctance to become involved stemmed, in part, from the University's concern about its liability should it become too closely linked with Greek life. Such benign neglect was abandoned in the late 1980s, when the University—and the Ann Arbor community—became increasingly concerned about a series of fraternity incidents involving drinking and sexual harassment. The University concluded that it had a major responsibility both to its students and the Ann Arbor community to take more responsibility for the Greeks.

We launched an effort on this front by calling for a special meeting with the presidents of all of the University's fraternities in which we challenged them to address the growing concerns about their behavior. We appealed to their pride, arguing that if they valued Michigan's heritage of leadership, they would strengthen their own capacity to discipline renegade members through organizations such as the Interfratenity Council. We then backed this strong challenge for self-discipline with a policy that the University would act with whatever force was necessary to protect the student body and the surrounding community.

This challenge was picked up by fraternity leaders, and it gave rise to a new spirit of responsible behavior—and discipline. Policies were adopted forbidding drinking during rush and imposing strong sanctions for entertaining minors from the Ann Arbor community in the houses. After the arrival of Vice President Hartford, the University took further steps by hiring a staff member to serve as liaison with the

Greeks. This should not suggest that incidents did not occur in the Greeks. Indeed, several fraternities suffered from such a pattern of poor behavior that their national organizations agreed to withdraw their charter and they were removed from campus. But the overall nature of Greek life was one of far greater responsibility and self-discipline.

Michigan undergraduate life also faced the demographic challenges of the 1980s, specifically that number of high school graduates in Michigan dropped by over 25 percent, as the post-war baby boom subsided. This led to a decline in the number of Michigan applicants to the University, but increased numbers of out-of-state applicants more than offset this decline to the point where almost 20,000 students were applying for the 5,000 positions in the incoming freshman class. While some of this increase in out-state applications was no doubt due to the ease of filing multiple applications with personal computers, it was also due to the fact that Michigan had become a "hot school," a popular choice for students across the country because of its unusual combination of academic quality, attractive social life, excitement (athletics, politics, arts), and name recognition. Hence, contrary to the University's worries about the impact of the demographic slide following the baby boom, student quality continued to improve throughout the 1980s and 1990s, with each class demonstrating academic credentials even stronger than the previous class. This increase in student quality helped verify the strategy of the Michigan Mandate, given that the University was clearly becoming academically better as it became more diverse. Indeed, student surveys suggested that many students chose to attend Michigan because they sought the experience of a highly diverse institution.

Shifts in the Undergraduate Paradigm

Despite the great diversity in American colleges and universities, in learning environments, and in curricular content, most of us have a quite well-specified notion of what constitutes an undergraduate education. Stated simply, it consists primarily of four years of study, divided into thirty semester hours a year, five courses per semester. These courses are selected to meet either the requirements of particular area of concentration or major (e.g., psychology or physics or philosophy) or from more general survey courses designed to broaden one's education. Most of these courses are taught in a lecture format, augmented by occasional seminars, discussion sections, and laboratories. A classroom form of pedagogy dominates learning at the undergraduate level. A professor teaches a class of students, who in turn respond by reading assigned texts, writing papers, solving problems or performing experiments,

and taking examinations. To be sure, the student might also take advantage of faculty office hours for a more intimate relationship, but this is rare in most universities.

The classroom paradigm, however, is a fairly recent form of pedagogy in the millennium-long history of the university. A more common form of learning through the centuries has occurred through a one-on-one teaching relationship, an apprenticeship. Both the neophyte scholar and craftsman learn 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 most undergraduate education.

The Digital Generation

The classroom paradigm is being challenged today, not so much by the faculty, who have by and large optimized their teaching effort and their time commitments to a lecture format, but by our students. As I will discuss in more detail in a later chapter, today's students are quite different from earlier generations. They are citizens of the digital age. They have spent their early lives surrounded by robust, visual, interactive media—not the passive broadcast media, radio and television, of our youth, but rather Nintendo, home computers, the Internet, MUDs and MOOs, and virtual reality. They learn by experimentation and participation, not by listening or reading passively. And they embrace interactivity, including the right to shape and participate in their learning.

For a time, today's students may tolerate the linear, sequential, lecture paradigm of the traditional college curriculum. They still read what we assign, write the required term papers, and pass our exams. But this is decidedly not how they learn. They learn in a highly nonlinear way, by skipping from beginning to end and then back again, by building peer groups of learners, and by developing sophisticated learning networks. In a very real sense, they build their own learning environments that enable interactive, collaborative learning, whether we recognize this or not.

The tolerance of tomorrow's student for the traditional classroom and four-year curriculum model may not last long. Students will increasingly demand new learning paradigms more suited to their learning styles and more appropriate to prepare them for a lifetime of learning and change. There are already signs that the entire classroom experience—that is, the transmission of knowledge content associated with courses—may soon be packaged through electronic media as a commodity and distributed to mass markets, much like today's textbooks.

Learning in the Age of Knowledge

The new interactive resources provided by emerging information technology represent the wave of the future for our society. As our knowledge base expands, isolated individuals will increasingly lose their ability to know everything they need to grapple with complex challenges. We must equip our faculty and students with the ability to exploit these new technologies. We must learn the difficult art of communicating across disciplinary and cultural differences in the pursuit of common goals, discovering which collaborative tools serve us best for our different purposes.

The reality of our new students, diverse and often technically savvy, requires new educational approaches. Encouragingly, our growing base of technology has begun to create the possibility of new, more flexible roles for both students and faculty, within and beyond the classroom. Richard Lanham calls the social, technological, and theoretical challenges that these changes create an "extraordinary convergence," catalyzing fundamental shifts in higher education, allowing more interactive learning, and giving students the ability to interrogate or even create knowledge instead of simply absorbing it.[17]

Without new ways of envisioning education, even the most expensive pieces of equipment can be more distracting than helpful. The computer did not, in itself, create a new curriculum—it simply made the new curriculum possible. Many constituencies across campus have begun to explore how our new abilities can change our visions of classrooms.

How, for example, does one make large entry-level classes more productive, personal, and engaging? Part of the answer is to make the class more interactive. Some of our faculty have developed new learning modules that allow groups of students to explore open-ended problems. In class, students often work in small groups on problems; out of class, students work together on the modules at their own speed. The modules promote collaboration and allow flexibility; the media capabilities allow students to view actual working equipment instead of simply learning theory from textbooks. The technology does not replace the classroom; it augments it, making the time spent in class more productive. Already we see experiments in student-controlled environments, such as Perelman's hyperlearning model, in which students are provided an array of learning opportunities that they access in an order and on a schedule of their own choosing, with the goal of preparing themselves to pass a standard certification examination.[18]

These advances may fundamentally change what it means to be a professor and a student at our universities. Faculty may soon become more like coaches or consultants than didactic teachers, designing learning experiences and providing skills instead of imparting specific content. Even our introductory courses may take on a form now reserved for only the most advanced seminar classes, thereby allowing more personal interaction. Not only do these new technologies create educational opportunities, they also represent the "literacy" of our future. The "stuff" of intellectual communication is in the process of evolving from the journal article to more comprehensive multi-media and even interactive documents. These shifts portend vast changes in the ways information is manipulated and interaction is structured in our society. Universities cannot call themselves successful unless they provide students with the fundamental skills they will require as they enter the world of the 21st Century.

In these new learning paradigms, the word *student* becomes largely obsolete, because it generally describes the passive role of absorbing content selected and conveyed by teachers. Instead we should probably begin to refer to the clients of the 21st Century university as *learners*, because they will increasingly demand responsibility for their own learning experiences and outcomes.

In a similar way, the word *teacher* may become obsolete. Today the primary role of faculty in undergraduate education is to identify and present content. That is, faculty who have become experts in certain subfields are expected to identify the key knowledge content for a course based on their area of interest, to organize this into a course, and then to present the material, generally in a lecture format, in this course. Frequently, others, including graduate teaching assistants and professional staff, are assigned the role of working directly with students, helping them to learn, and providing them with guidance and counseling. In a future increasingly dominated by sophisticated educational commodities and hyperlearning experiences, the role of the faculty member will shift to the cultivation of learning. That is, they will be expected to inspire, motivate, manage, and coach students.

More specifically, faculty members of the 21st Century university may find it necessary to set aside their roles as teachers and instead become designers of learning experiences, processes, and environments. In the process, 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.

Learning Communities

Such learning communities seem better aligned with how learning really occurs in a university. The classroom paradigm is usually dominated by one-way information flow from the faculty member to the student. But learning is not simply information transfer. It involves a complex array of social interactions in which the student interacts not only with the faculty member, but with other students, the environment, and possibly objects as well—for example, books! The role of the university and the faculty is to facilitate the formation of learning communities, both through formal academic programs and through social, extracurricular, cultural activities. When students and faculty join such communities, they share the ideas, values, and practices that lead to learning.

We could identify the value-added of the university as that of creating learning communities and then introducing students into these communities.[19] Undergraduates are introduced to communities associated with academic disciplines and professions. Graduate students and professional students are involved in more specialized communities of experience and expertise.

In true learning communities, the distinction between teachers and students blurs: both groups become active learners, working together to benefit each other. While this duality is commonplace at the level of graduate education, where graduate students frequently learn more about a specialized subject than their faculty advisors, it is far less common in undergraduate education. Yet, we have long known that some of the most significant learning occurs when one also serves as a teacher. Advanced undergraduates should be encouraged to assume such teaching roles, not only to other undergraduates, but even on occasion to faculty members themselves.

A couple of examples illustrate the point. For the past several years, we have taught our introductory writing courses using collaboration technology; e-mail, computer conferencing, distributed virtual environments, and the like. Advanced students serve as teachers to novice learners in these interactive learning communities, guided by experienced faculty. The faculty role in this case departs significantly from traditional classroom duties, because they must manage an active, collaborative learning community in which the teaching and learning are all performed by students.

A second example involves the spread of information technology across campus. Increasingly, faculty members find that the most knowledgeable tutors in learning new computer hardware and software are undergraduate students. After a bit of hesitancy, they have allowed the traditional student-faculty relationship to evolve into one involving two active learners.

Lifelong Learning

Perhaps part of our difficulty in reconceptualizing the undergraduate experience is that we still tend to think of the baccalaureate degree as a well-defined learning experience that prepares a student for life. But today, learning has become a lifetime need. Today's students will need to continue to learn, through both formal and informal methods, throughout their lives.

We need to rethink educational goals from this lifetime perspective. We should view undergraduate education as just another step—an important step to be sure—down the road of a lifetime of learning. This would allow us to better match learning content and experiences with both the intellectual maturation and the needs of the learner.

For example, primary and secondary education would focus on the development of fundamental skills in areas such as language and quantitative reasoning. Undergraduate education would prepare the student for lifelong learning, while providing the skills and competence to succeed in the workplace. The early years of one's career might be the time for experimentation, for risk-taking, since it is frequently then that the most creativity occurs. Later in life, there may be more of an interest in and acceptance of the need for a liberal education, to enrich one's later years.

In a world driven by knowledge, learning can no longer be regarded as a once-is-enough or on-again/off-again experience. People will need to engage in continual learning in order to keep their knowledge base and skills up to date. Given this need, the relationship between a student/graduate and the university may similarly evolve into a lifetime membership in a learning community. Just as we have suggested that the word student is no longer appropriate to describe an active learner, the distinction between "student" and "alumnus" may be no longer relevant. Perhaps enrollment should be viewed less as participation in a particular degree program and instead as a lifetime contract with the university, in which the university agrees to provide whatever learning resources are required by its learners/members throughout their life, wherever, whenever, and whatever their educational needs. Clearly, the rapid evolution of asynchronous learning technology will facilitate this. We also see increasing interest on the part of alumni in remaining connected to their university and to learning opportunities throughout their lives.

Transforming Ourselves and Our Society

What is the future of undergraduate education? Clearly the classroom will not disappear. Nor will the residential campus experience of undergraduate education for young adults be overwhelmed by virtual universities or "edutainment." The traditional forms of pedagogy will remain valuable opportunities for learning for many in our population at certain formative times of their lives.

These traditional models will coexist with new learning paradigms, providing a broader spectrum of learning opportunities. The transitions from student to learner, from teacher to designer/coach/consultant, and from alumnus to lifelong member of a learning community seem likely. And with these transitions and new options will come both an increasing ability and responsibility to select, design, and control the learning environment on the part of learners.

There will be strong pressures on universities to shift away from being faculty-centered institutions in which faculty determine what to teach, whom to teach, how to teach, and where and when to teach. Instead universities will likely evolve into learner-centered institutions, in which learners have far more options and control over what, how, when, where, and with whom they learn. This should not be surprising: in our increasingly democratic, market-driven world, the concerns of individuals/customers/clients have become the focus of most successful organizations.

Who will our students be in the future? Who will teach them and how? As areas to explore, these possible futures are exciting. As questions to be answered, they are daunting. We will never arrive at a final answer—the world is always changing faster than our efforts to respond to it.

To succeed, we must develop a more flexible culture, one more accepting of occasional failure as the unavoidable corollary to any ambitious effort. We must learn to adapt quickly while retaining the values and goals that give us a sense of mission and community. The current rigid and hierarchical structure of the university is becoming obsolete. To advance, we must discover ways to draw upon the unique and vibrant creativity of every member of our community.

As financial resources become increasingly constrained, and as competition for students globally increases, especially with the advent of "virtual" technology, we cannot afford to hide our heads in the sand. Many fear an age of attrition in higher education similar to that of the post-Civil War period, when those institutions that cannot reestablish their sense of purpose for a new society will begin to disappear.

As we ask our students to critique the received authority of their society, to examine and decide rather than accept the status quo, so must we re-open debates about the structure and goals of our common institution.

Many in the University have not yet accepted the challenges of our new era. This is especially true of our faculty. As Richard Lanham has pointed out, "The structure of the university . . . insulates the university from the competition building up around it. . . . There is no mechanism to introduce the faculty to the future because the whole system is designed to [prevent this]." This is a tremendous problem, because if we are to respond successfully, we must respond together, as a community.

We must ask ourselves: what will our students need in the 21st Century? What will citizens of our new world require? How can we forge a new mission for a changing society as we hold firmly to the deep and common values that have guided us over two centuries of evolution?

It is often scary and difficult to let go of old and comfortable roles, to open ourselves to new possibilities and ways of being. Yet change brings with it the possibility of deeper connections to our students and the potential for serving a much broader range of our society. Growth, both for an institution and for the individuals who comprise it, can come only with a step into the unknown. We move forward together, not recklessly, but thoughtfully—with care and a deep sense of commitment to the lives and dreams of our students.

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[5] Boyer Commission on Educating Undergraduates in the Research University, Reinventing Undergraduate Education: A Blueprint for America's Research Universities (Menlo Park: Carnegie Foundation for the Advancement of Teaching, 1998).

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[15] John Seeley Brown and Paul Duguid, "Universities in the Digital Age," (Xerox Palo Alto Research Center, Xerox Corporation, 1995).

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[17] Richard Lanham, The Electronic Word: Democracy, Technology, and the Arts (University of Chicago Press, Chicago, 1993).

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Chapter 8 *Graduate and Professional Education*

It is customary to distinguish universities from colleges by the presence of graduate and professional degree programs. While such advanced degrees were awarded earlier in Europe, the true university in America did not evolve until after the Civil War. Before then, American colleges had offered an education best suited for the aristocracy or the clergy. Its relevance to a society facing the industrial revolution was questionable.

Two different paradigms evolved as alternatives.[1] The first, a more utilitarian approach, stressed modern languages, mathematics, and the sciences—subjects more appropriate for a modern industrial nation. The second represented a natural evolution from the classical traditions: it continued to emphasize Greek and Latin, but added history, literature, and the fine arts. It aimed at forming character and intellect rather than providing direct relevance in terms of content, and it laid the foundation for what we call the liberal arts today.

The first approach was embraced by the emerging public universities. It led to specialization, particularly in professions such as engineering and medicine. In contrast, the liberal arts paradigm resisted specialization and sought an integration of knowledge rather than expertise.

To these two conflicting paradigms was added yet another ingredient, the experience American educators brought back from German universities. These institutions' missions were not only to propagate knowledge, but to advance it as well. They provided both faculty and students with the independence necessary to pursue knowledge, and they adopted advanced methods, notably the seminar, to train researchers. Ultimately, these researchers were certified with the Ph.D. degree. Academic leaders such as Tappan at Michigan, Wayland of Brown, Eliot of Harvard, and Gilman of Johns Hopkins merged the German approach with the evolving paradigms in higher education to create a uniquely American form of graduate education and scholarship.

The Current Problem: Mismatches

It is not surprising that during these times of challenge and change in higher education, many of the constituencies involved in the conduct and support of graduate education have expressed concerns. Faculty and their universities want to focus on the adequacy and nature of financial support for graduate education. Graduate students are more concerned with the job market for graduates and the time to degree. The federal government has expressed concerns about the number of advanced degrees relative to market needs and the high percentage of foreign graduate students.

In recent years, definitive studies of graduate education in science and engineering have expressed concerns and recommendations for graduate education, and specific actions have been taken to address the issues the studies have raised.[2, 3] Several themes run through these studies and programs:

1. There is general agreement that graduate education in America represents the world's leading effort for producing the next generation of researchers.

2. The complex and rapidly expanding roles in our society played by those with advanced science and engineering training suggest that graduate education needs to be expanded beyond the research and teaching models currently in place.

3. Included in this broader educational experience should be internship experiences in industry, government, or other types of educational institutions.

4. There is a need for new integrative, practice-oriented graduate degrees, at either the masters or doctorate level, to serve as alternatives to the Ph.D. research degree.

5. There is a need for a better balance among research assistantships, teaching assistantships, fellowships, and traineeships in the support of graduate education.

6. There should be stronger incentives to attract the very best U. S. citizen undergraduates into graduate study in science and engineering.

7. There needs to be a recognition that the support of graduate education should be the responsibility of all federal agencies that utilize research and employ individuals with advanced degrees.

Today, there are many mismatches in graduate education between what we do and what society needs.[4] Many believe there is a mismatch between the number of Ph.D.s we produce and the job opportunities available to new graduates. There may be a mismatch as well between the narrow, focused nature of Ph.D. education and the broader educational requirements of most careers in which Ph.D.s will find themselves. And almost certainly there is a major mismatch between the expectations of new Ph.D.s, who generally expect to become academicians just like their dissertation advisors, and the reality of the job market they will face.

These mismatches can be attributed to an array of possible causes.

The Post-Cold War Blues

The United States' graduate education system is arguably the most effective system yet devised for the advanced training of faculty and scholars. By carrying out graduate education in the same institutions where a large portion of the nation's basic research is done, our research universities have created a research and training system that is one of the nation's great strengths—and the envy of the rest of the world.

Yet this system evolved when the demand for research was either stable or rising. The national security demands of the Cold War and domestic priorities such as health care and the environment stimulated federal support of the academic research infrastructure, which in turn drove similar commitments to graduate education.

This situation is now changing. The end of the Cold War, the rapid growth of international competition in technology-based industries, and various constraints on research spending have altered the market for Ph.D.s. The three traditional areas of employment for Ph.D.s—universities, industry, and government—are experiencing very significant changes which are likely to alter their needs for individuals with research training considerably.

Foreign Ph.D.s

The quality of America's graduate programs has long served as a magnet for outstanding international students. In fact, over the past decade, most of the growth in the graduate student population in American universities has been a result of the growth in the number of foreign nationals enrolled in these programs, while the enrollment of domestic students has remained relatively flat or even declined in some cases.

Because of the advanced, highly specialized nature of American graduate training, many foreign students have been unable to find employment that takes advantage of their newly learned skills in their home countries. As a result, a significant number of US-educated foreign nationals attempt to enter the American job market. While the domestic employment of these students represents an extraordinary human resource for this country—and a significant brain drain from their home countries—they do intensify the competition for the limited job market for faculty and research positions. Likewise, the disintegration of the Soviet Union and Eastern Bloc has triggered a mass exodus of talented scientists and engineers to the west, flooding the marketplace in areas such as physics and mathematics.

Furthermore, the downsizing of the national defense effort, coupled with a reorientation of industrial research laboratories away from basic research toward product research, has both reduced employment opportunities in the federal and industrial sector, while releasing scientists and engineers formerly employed in these areas into the marketplace.

Decoupling from the Marketplace

It has become increasing clear that the forces within the university driving the production of Ph.D.s are decoupled from the marketplace. While overall unemployment rates for recent Ph.D.s have remained very low, there do seem to be far more Ph.D.s seeking faculty positions than there are available positions.[5] There are also some worrisome indicators of weakness in the market, such as the substantially longer delays in the initial placement of new graduates. At the same time, few internal or external incentives encourage graduate programs to reduce Ph.D. production. These signs suggest that the current oversupply of Ph.D.s—at least for the academy—will continue and may well worsen in the near term as federal budget cuts hit even harder.

As a nation, we—administrators, faculty, business leaders—have not paid adequate attention to the function of graduate programs in meeting the country's varied needs. Indeed, the academy produces new graduates as if it were its own customer—and as though the primary mission of graduate programs were merely to produce the next generation of academicians. In most universities, the size of the Ph.D. programs and the consequent production of doctorates are frequently driven by the need for university teaching and research assistants. In science in particular, Ph.D. production is driven primarily by the level of research funding and not by the needs of society. As a result, Ph.D. production is all too often regarded as a byproduct of research activity.

Misdirected Goals for Ph.D. Programs

Most Ph.D. programs have traditionally seen their role as training the next generation of academicians; that is, as the replication of the graduate faculty. Indeed, the process of graduate education is highly effective in preparing students whose careers will focus on academic research, and at least some component of our graduate programs should continue such a focus. However, this narrow definition of the Ph.D. serves neither the academy and the basic research enterprise nor broader society very well. Today and in the future, the majority of Ph.D. graduates will work outside the academy, and the training of doctorates needs to reflect these broader roles in industry, business, government, and education. More than half of new Ph.D.s will find work in non-academic, non-research settings, and our graduate programs must prepare them for these expanded roles. Furthermore, most academic positions will be in colleges and universities that do not stress research.

Most faculty are quite unaware of the employment needs of the nation, even within the higher education establishment. The majority of faculty positions today are in teaching institutions unlike the research universities where graduate education occurs. As a result, many new Ph.D.s who do find jobs in non-research colleges become frustrated, often pressuring these institutions toward more research and even the establishment of graduate programs. The specialized training provided to graduate students leaves them ill-prepared for the broader teaching responsibilities of colleges that are primarily focused on undergraduate education. The disparity between the present demands of graduate education and the needs of our nation suggests that doctoral education, rather than the pinnacle of American higher education, may be at the root of many of our problems, such as inadequate attention to undergraduate education or the decline in institutional loyalty of faculty.

Deeper concerns about the relationship between the current paradigm of graduate education in America's research universities and the broader needs of higher education have surfaced in recent years.[6] The relationship between the research universities, where most of research and graduate education occurs, and the broader higher education enterprise, which consists of almost 3,600 four-year colleges and universities with little research activity is becoming more and more tenuous. Administrators and faculty alike fail to recognize the role that the research university plays in this broader enterprise. As a result, the discussion about research and the productivity activity of research does not realistically consider the role that the graduate intensive university plays in the health and stress of the other members of the higher education continuum.

But this cuts both ways. In many cases, it is the top-ranked graduate programs that have the most difficulty placing their graduates. It could well be that those institutions where jobs are available perceive the highly specialized nature and limited teaching experience that characterizes top graduate programs as inappropriate to their needs. Harvard graduate students teach Harvard students. Most universities, however, have a far broader range of students; most jobs available in the academy today are jobs teaching "everybody else."

Some graduate students are beginning to realize that their training is not preparing them for positions at schools with more heterogeneous classrooms. Faculty need to be able to teach basic skills courses and a much wider range of much less specialized courses than they once did. Sooner or later, universities engaged in the production of new professors are likely to decide that if they want their graduates to get these jobs, they will have to train them more appropriately.

The Nature of Graduate Education

The success of the United States basic research endeavor to date has relied to a large extent on individual effort, as reflected in the investigator-initiated grant process. This emphasis on individual performance is strongly reflected in the promotion and tenure system at research universities. It is also reflected in our approach to graduate education.

Ph.D. training is best described as an apprenticeship. Graduate students are expected to attach themselves early and tightly to individual professors. In most universities, the faculty advisor of a graduate dissertation determines the intellectual content, the duration, and the financing of the remaining education of the Ph.D. student, until the final dissertation defense. In the best of circumstances, this final phase of graduate study can be very rewarding, since under the supervision of a skilled dissertation advisor, the graduate student learns the intricacies not only of basic research but also the trade of a faculty member. This is also the point at which many problems arise.

Many faculty members have little experience in supervising graduate students, and abuses frequently occur. In some cases, faculty members are simply not adequately concerned about or attentive to a student's progress. In other cases they may even wish to prolong a student's studies so that he or she can continue to contribute to the faculty member's own research project. There are also great differences in the nature of the relationship between graduate student and dissertation advisor among

the disciplines. For example, in science and engineering, graduate students generally work side-by-side in the laboratory with faculty advisors, interacting with them almost on a daily basis. By way of contrast, in the humanities, it is not uncommon for a graduate student to meet with a dissertation advisor only a few times a year, sometimes receiving very little guidance.

Ph.D. students are expected to focus on a very narrow slice of disciplinary investigation in their studies and their dissertation. Although graduate students are expected to explore thoroughly and deeply a narrow intellectual area in their dissertation research, the hope is that in this process, they will acquire a powerful methodology for formulating and solving broader problems. In this sense, the ideal of doctoral education is to learn how to learn at a very sophisticated level. Ironically, it is this specialist experience of the Ph.D. that provides training for a later role as an advanced generalist. Unfortunately, few Ph.D. students recognize this feature of graduate education, perhaps because few faculty acknowledge or value it.

Many new Ph.D.s have far too narrow a set of personal and career expectations. They think that their graduate training has prepared them to solve certain highly technical and specialized problems. Of course what they actually know that is of lasting value is how best to formulate and answer questions. Most do not understand that this is what gives them the edge they may have over people of their own age who are already out in the workplace without Ph.D.s but with a several-year head start in experience.

Today's research problems are becoming increasingly complex, and their solutions require interdisciplinary teamwork. The current training of new Ph.D.s is often intellectually too narrow, too campus centered, and certainly too long. Overspecialization can result in a lack of both perspective and self-confidence; new Ph.D.s often think that they are ill-prepared to venture outside their specialty. This is due in part to the lack of serious requirements for breadth in the typical graduate curriculum. It is also due to the fact that there is little encouragement and a lot of implicit discouragement for students who want to depart from the straight and narrow.

The Key Issues

The key issues swirling about in discussions of graduate education can be summarized in a series of questions:

1. *What is the purpose of graduate education?*

- To produce the future researchers needed by our nation? Clearly, the current system of graduate education does this quite well.

- To produce the future faculty members needed by higher education? Many suggest that the current graduate education paradigm of the research university does not serve the many colleges and universities that place far more emphasis on teaching than research.

- To produce the next generation of scientists, engineers, and other disciplinary specialists? Note that this is a quite different mission than producing researchers.

- To provide the educational background needed for other key professionals in areas such as medicine, business, and law? An increasing number of students with advanced training in science and engineering are moving into other professional careers such as medicine, law, and business. Should our graduate programs be responsive to this?

- To provide the labor necessary to sustain the research university through graduate research or teaching assistantships? Unfortunately, the size of many graduate programs in science and engineering seems to be determined less by national need or employability than by the graduate assistant needs of local research projects or instructional programs.

2. *How appropriate is the current graduate education paradigm for this role?*

- The current graduate education paradigm can be characterized best as an apprenticeship (although some graduate students might argue that it is more of a feudal system of indentured servitude), in which the dissertation advisor has significant responsibility for not only the content but the duration of the program as well. Is there a need for better national standards to guide this system, e.g., constraints on time-to-degree?

- The current system, stressing specialization and depth of investigation, is frequently accused of cloning the current cadre of research faculty. Is there a need for greater breadth? If so, then how could it be achieved? Through a broader graduate curriculum? Through a requirement of major-minor specialization like those in many undergraduate programs?

- Would graduate students benefit from an off-campus internship experience in industry, government, or a different type of educational institution as a part of their graduate education?

- Should there be a more strategic effort to identify postdoctoral appointments as a part of graduate education?

- Should experiments be encouraged with very different graduate education paradigms? For example, one might consider a phased, fixed-term-to-degree program that acknowledges that most graduate students will find themselves in non-research careers, e.g., faculty positions in non-research colleges and universities, management positions in industry, or policy positions in government.

3. *What is the best way to fund graduate education?*

- Research assistantships? Clearly, faculty prefer this method, since it provides the principal investigator maximum control over graduate students. One might well argue, however, that the fundamental purpose of graduate research assistantships should not be to provide cheap labor for research projects but to support graduate education. Is there a need for a national policy statement to this effect?

- Graduate fellowships? This has been the traditional alternative to research assistantships. Some concerns, however, include whether graduate fellows are too disconnected from the research interests of faculty and whether the portable nature of these fellowships tend to advantage the most prestigious institutions.

- Graduate traineeships? Note here that the principal distinction between traineeships and fellowships is that traineeship grants are made to university programs and departments for a specified purpose or program and then assigned to graduate students by the institutions. While traineeships have not been a major component of the portfolio in the sciences and the humanities, they have been the dominant form of graduate student support in areas like the health sciences, since they can allow a more carefully designed graduate experience.

4. *What is the role of the research university relative to the rest of the higher education enterprise?*

Peter Drucker recently commented that "The American research university of the last forty years has been a failure. The great educational needs of tomorrow are not on the research side but on the learning side."[7] While many of us in the academic community who see research as a vital part of graduate education for pedagogical as well as pragmatic reasons would strongly disagree, this view is probably shared by many people both within the higher education community and by society at large. There is no doubt, however, that where graduate education is concerned, the research university is becoming increasingly detached from the rapidly changing higher education enterprise both in this country and abroad, and its relevance to the learning needs of society is being seriously questioned.

A Call for Action and Reform

To address these challenges, administrators need to consider possible actions at various levels: the graduate department or program, the university, and at the national level of the higher education establishment.

The Departmental Level

Actions at the department or program level are likely to be most effective in addressing the challenges to graduate education. Some have suggested right-sizing programs by applying constraints on Ph.D. production directly to faculty—in effect, academic population control. Limiting each graduate faculty member to the production of just a few Ph.D.s over a career might be overly severe, since it comes close to mirroring the present rate of Ph.D. production. First, most Ph.D.s do not train other Ph.D. students; less than one-fifth of Ph.D.s become involved in graduate education.[8] A National Science Foundation study noted that at 1991 rates, the subset of senior faculty in doctorate-granting institutions currently produce an average of 10.7 new Ph.D.s over their 30 year careers. When spread out over all Ph.D.s, this amounts to only 1.7 new Ph.D.s produced per existing Ph.D. If we were to discount foreign students, then this reproduction rate drops to less than 1.0—certainly not sufficient to warrant population restrictions.

There also does not appear to be a compelling case for draconian limitations on foreign student enrollments in our graduate programs. Most foreign Ph.D. graduates

remaining in this country make significant contributions to the national interest. Further, there is already some indication that the rapidly evolving economies in those nations sending the largest numbers of students to American universities are beginning to create major growth in job opportunities. As a consequence, many foreign national doctorates, both new and experienced, are beginning to return to their home countries.

Far more effective would be efforts to challenge programs to develop alternatives to teaching or sponsored research needs as the primary drivers of the size of their graduate programs. For example, there might be a conscious effort to shift from graduate assistants to postdoctoral fellows and technicians to meet the needs of research projects. Perhaps more use of external advisory committees capable of assessing both placement and position opportunity data would be a way to achieve better accountability. And programs should provide far better information to graduating seniors with an interest in graduate education about the true state of the academic job market.

While many faculty already participate in efforts to place their Ph.D. graduates, there should be a broader acceptance of responsibility for placing graduates. Indeed, this might be one way to stress the importance of aligning Ph.D. training with society's needs. Graduate students should certainly receive more up-to-date and accurate information about career opportunities. This should not only be provided directly by the graduate program or department, but academic units should consider assigning a faculty member as an ombudsman for graduate placement. In fact, perhaps each faculty member who accepts the responsibility of the chair of a dissertation committee should also be asked to accept a personal responsibility for the placement of their Ph.D. student!

Most important—and most difficult—of all is to get the faculty to change both the values and expectations they pass along to their graduate students. The world of the 21st Century will be far different than the one for which today's faculty members prepared during their own graduate studies. It will require greater breadth in scholarship, deeper commitment to teaching and service, and far greater adaptability.

The Institution Level

At the university level, there is clearly a need to encourage a broadening in Ph.D. requirements. While we must retain the paradigm of research training, the acknowledged strength of the current system, we must also redefine the Ph.D. as the graduate analog of a "liberal education," shifting it away from the cloning of the academy,

and instead designing it to prepare an individual for a lifetime of learning. We need to develop doctoral programs that emphasize disciplines at the borders between fields, as well as programs that include interaction among scholars within different disciplines. Careful attention must be given to striking the right balance between training individuals capable of spanning fields and those with deep understanding of a highly specialized field.

Universities should develop integrative, practice-oriented degree programs in some fields in order to better respond to the needs of industry, perhaps by redefining the master's degree or by instituting an alternative form of the doctorate. There has been strong national interest in making internship experiences available to graduate students.[9] Internship programs that provide students with experience in industry, government, or different types of academic institutions could prove useful in broadening graduate education. Teaching internships, too, would also achieve this goal. Doctoral students interested in academic careers could spend a period on the campus of a different type of educational institution—perhaps a liberal arts college or a community college.

Yet another challenge at the university level is reducing the time to degree. The time required for the Ph.D. has steadily increased for the past several decades, in some cases doubling to over ten years. Universities, their graduate programs, and their faculty must accept the responsibility to reduce the time to degree. The primary objective of graduate education should be the education of students, therefore, the value of such activities as working as research assistants or teaching assistants should be judged according to the extent that they contribute to a student's education. A student's progress should be the responsibility of the entire department or program and not under the control of a single faculty advisor.

There have even been recent proposals to recast graduate education into components of fixed time duration, similar to professional education in other fields:

- A one-or-two year M.S. degree program would be provided for all students, but with this being the terminal degree for those interested in other professional careers such as law, business, or medicine.

- The Ph.D. itself would require two additional years of study including a dissertation (or a total of four years, including the M.S. degree) and suffice for most advanced positions in the public or private sector.

- For those students interested in careers in either the academy or basic research, further study beyond the Ph.D. would be achieved through postdoctoral studies. This latter training would provide the highly specialized training to move to the cutting edge of research.[10]

Such dramatic changes would likely be highly controversial within the academy and would undoubtedly meet with the objection that there will always be considerable variation from individual to individual and program to program in the time required to master a field and produce original research. Of course, one might also make the same argument about professional education in complex areas such as medicine which long ago accepted fixed-period educational models. Instead of debating the issue, several graduate programs should actually develop and implement Ph.D. programs with fixed terms for study and then let the graduate student and employer marketplace decide which is more appropriate and attractive.

The National Level

Since federal policies played a key role in stimulating the evolution of the American research university in the decades following World War II, it is reasonable to expect there is an appropriate role for government in addressing some of the concerns about graduate education. There seems little doubt that the prosperity, security, and social well-being of our nation will continue to require an adequate supply of graduates with advanced degrees. It is therefore alarming to note that the United States has not had a definitive, coherent policy for human resource development related to graduate education for decades—since the massive efforts represented by the G.I. Bill in the 1940s and the National Defense Education Act in 1960s. Instead, the nation has drifted on autopilot, with its human resource development largely determined as a byproduct of federal research and development programs rather than through a strategic consideration of national needs.

It seems imperative that the nation develop both a vision and a closely aligned federal policy concerning graduate education capable of responding to the contemporary and future needs of the nation.[11] This policy should be closely coordinated with parallel policies concerning research and technology development and deployment. It should be executed through federal programs that are sustained for a period sufficient to yield the necessary changes in the academic culture and to broaden the roles that those with graduate training will play in our knowledge-driven society. This policy should also respond to the changing nature of national needs and to the increasing diversity of the American people.

At the national level, the re-direction of Ph.D. training can only occur with a sustained commitment of the federal government to support new and innovative education initiatives. To foster versatility, the mechanisms for the federal support of graduate students should be broadened. The shift in the early 1970s from portable fellowships and traineeships to the research assistantship as the predominant method of graduate student support now means that training is driven primarily by the needs of sponsored research projects. A more balanced effort utilizing training grants, fellowships, and research assistantships would allow greater flexibility in graduate education. The National Institutes of Health have long used well-designed training grant programs to stress the development and support of graduate education in key areas, and this paradigm should probably be used more frequently in other areas of graduate study. The government should also look to increase the number of federal agencies that provide substantial training dollars, which will have the benefit of diversifying the nature of Ph.D. training. The federal government can also have a major impact on concerns such as time-to-degree by imbedding appropriate incentives in the peer review process indexed to the average time-to-degree experience of the academic program submitting the proposal.

While there is a general consensus that the quality of graduate education in America has been second to none, there are signs of strain that will only increase with time. It is time that the faculty, our universities, and our national leadership in science and engineering step up to the challenge and responsibility of developing a new set of policies, guidelines, and practices appropriate both for graduate education and for serving the changing needs of society in a new century.

Professional Education

One of the most important missions for the American university involves providing the advanced education necessary to prepare students for professional careers. Whereas the early colonial colleges stressed preparation primarily for the clergy or government service, an ever increasing number of professional education programs have appeared as society has become more complex. Familiar professions such as medicine, law, and engineering now coexist with emerging professional areas such as knowledge management or health systems administration.

Although undergraduate education in the liberal arts remains the core mission of most universities, their commitment to professional education is considerable.[12] In fact, because of the very large size of many professional schools (notably engineering, business, law, and medicine), most research universities devote a significant fraction,

in many cases the majority, of their faculty and financial resources to education in the professions. For example, at the University of Michigan, only one-third of faculty have appointments in our liberal arts college. The rest have appointments in various professional schools, including medicine (800), engineering (350), business administration (200), the visual and performing arts (200), and the allied health professions (200).

The Place of Professional Education in the University

The Copernican view of the solar system of the University would place the liberal arts college and its graduate programs as the sun, the four inner planets as the most powerful professional schools—Medicine, Engineering, Law, and Business—and then a series of elliptical orbits for the remaining professional schools, depending upon their quality and priority within a particular institution. Actually, some universities have evolved almost into a binary star system in which the medical school has assumed a size and financial importance almost comparable to that of the rest of the university. In fact, some of my liberal arts colleagues suggest that a more appropriate astronomical metaphor would be that of a star orbiting about a large black hole. . . .

Despite their central role, both undergraduate education and graduate education in the academic disciplines have strong professional characteristics in the modern university. This is true for those undergraduate degree programs intended to prepare students for professional careers, such as engineering, nursing, teaching, or business. It is also the case for "pre-professional" undergraduate majors designed to prepare students for professional programs at the graduate level such as pre-med or pre-law. Even traditional disciplinary majors are based on sequences of courses designed to prepare students for further graduate study in the field, i.e., for possible careers as academicians or scholars. In this sense the contemporary university is strongly grounded in professional education and training. In reality, this is nothing new, since even the medieval university was based on the learned professions of theology, law, and medicine.

But there are some important differences. Because most professional education requires an ongoing relationship with the world of professional practice, professional schools tend to be closely coupled to the needs of society. Indeed, professional practice and service is usually expected to be a component of the activities of both students and faculty. Further, since professional schools are so tightly coupled to practice, these schools tend to respond much more rapidly to changes in society. Good examples are provided by the dramatic changes that have occurred in medical and business schools in recent years.

The relationship between students and faculty is also somewhat different in most professional schools. Most professional school faculty take their responsibilities in preparing the next generation of professional practitioners very seriously. This provides these schools with a coherent intellectual focus, but beyond that, an *espirit de corps* that pulls students and faculty into tightly knit professional communities. This stands in sharp contrast to the loosely coupled enterprise characterizing the academic disciplines of an undergraduate college. As a result, surveys usually indicate that students enrolled in professional schools tend to be not only more highly motivated but more satisfied with their educational experience.

However, there are drawbacks to professional education as well. For example, the pressure on faculty to balance professional practice with teaching and scholarship can create unusual stress, particularly during the pre-tenure probation period. This is particularly pronounced in the health professions such as medicine, where there are intense pressures for faculty in clinical specialties to generate financial resources through their clinical activity.

So too the rapid growth of knowledge required for professional practice has overloaded the curricula of many professional schools. This has been particularly serious in undergraduate professional degree programs such as engineering, since the tendency is to include more and more specialized material at the expense of the liberal arts component of an undergraduate education. The knowledge overload has led to major restructuring of the curricula in many professional schools, notably medicine and business administration.

The Role of Professional School Faculty in the University

Most faculty in professional schools would acknowledge the important and central role played by undergraduate education and the liberal arts. Yet, particularly within public universities, professional schools have long-standing traditions and reputations comparable to those of liberal arts colleges. Although there is always some academic bigotry, many faculty of professional schools work in fields closely aligned with the traditional academic disciplines and move across disciplinary boundaries with ease. Professional schools share a deep commitment to quality education and scholarship.

Most faculty in professional schools have the same strong, rigorous traditions of scholarship and teaching as faculty in the academic disciplines. Many faculty in professional schools have educational backgrounds and degrees essentially indistinguishable from those of their liberal-arts colleagues. Indeed, many are far more "liberally educated" than their highly specialized liberal-arts colleagues.

It has always seemed a bit odd—and ironic—that faculty in the liberal arts sometimes look down on their professional school colleagues, treating them almost as second-class citizens within the university. In reality, these faculty members are frequently among the most valued teachers, scholars, and citizens of the university.

It is also important to recognize that many professional school faculty are quite interested in undergraduate education. Their unique experience as professional practitioners, coupled with their own scholarly training and interests, enables them to make important contributions to both undergraduate teaching and research.

The Future of Professional Education

Today's college graduate will face a future in which perpetual education will become a lifetime necessity since they are likely to change jobs, even careers, many times during their lives. To prepare for such a future, students need to acquire the ability and the desire to continue to learn, to become comfortable with change and diversity, and to appreciate both the values and wisdom of the past while creating and adapting to the new ideas and forms of the future. These objectives are, of course, those that one generally associates with a liberal education.

Unfortunately, many students are rapidly channeled into specialized studies and training even as undergraduates because they choose to major in those professional programs conducted at the undergraduate level, e.g., engineering, education, nursing, business administration, art, and music. And though many such undergraduate professional programs attempt to broaden the educational experience of their students through distribution requirements in the liberal arts, it is also the case that the rapidly expanding knowledge base of these professions adds more and more material to the professional training component of the curriculum.

Our graduate and professional schools are skillful in producing specialists of various kinds. While it is true that our knowledge-intensive world will need highly focused specialists, our ability to access specialized knowledge on worldwide knowledge networks, perhaps with the assistance of intelligent software agents, will likely allow breadth of education to become more valuable than depth in many professions. The age of knowledge will need broadly educated problem solvers who move easily across professional disciplines. Clearly, this will place a premium on a liberal education as preparation for further professional study.

The simplistic approach would be to simply shift all professional education and training to the graduate level, so that students would first be required to complete a liberal arts degree before entering a professional school. But such an approach faces several obstacles. First, it would place a very substantial additional financial burden on the student. Second, such a shift would probably not be accompanied by a significant increase in the value of the professional degree as seen by employers.

College curricula are organized for the undergraduate who comes straight from high school and earns a bachelor's degree in four years. Universities offer very few programs for the remaining fifty years of a person's professional life. Most continuing education is not a part of the regular academic program, and where it does exist, it is rarely staffed by regular faculty.

The current approach to professional education requires the student to acquire a portfolio of knowledge that, it is hoped, will be useful later in professional practice. Certainly some level of basic training is necessary in order to be able to practice in highly skilled professions such as medicine or engineering. But what about business administration? Most entry-level positions in business will require few of the skills learned during an M.B.A. degree program and instead are frequently provided through on-the-job training programs. To be sure, the more formal knowledge and skills provided by university education may well be valuable later in one's career, but perhaps it would be more efficient, both from the student's and the employer's perspective, to wait until certain skills are needed before acquiring the necessary education.

In a world of continual change, we should no longer assume that a professional education can provide sufficient knowledge to suffice for a substantial portion of a career. We should rely more heavily on "just-in-time" education, practical knowledge provided in modules and perhaps even through distance learning paradigms to practitioners when and where they need it.

Such "just-in-time" education is becoming increasingly common in many professions. For example, many business schools now find their faculty more heavily involved in non-degree continuing education programs such as executive education than in traditional B.B.A. or M.B.A. programs. They find that learning in such programs is more efficient—the students are more mature and highly motivated—and far more lucrative, and both the students and their employers know more accurately the value of the program.

Concluding Remarks

We are used to thinking about post-graduate education as a pyramid, in which students begin with a broad liberal arts education and then become increasingly specialized as they move through further levels of graduate and professional training, both through formal degree programs and work experience. From this traditional perspective, once a student mastered the fundamentals, whether at the undergraduate or graduate/professional level, only a moderate effort would be required to update one's skills and maintain a competitive edge through a career.

Even today we see that the forces of change in our world will demand a perpetual commitment to learning, along with a merging of various educational levels and objectives—from broad general education to professional education to specialized training. In a very real sense, learning, working, and living will become increasingly woven together, inseparable in character and content. In this culture of learning, degrees as we currently understand and value them—particularly as tickets to opportunity—could well be replaced by more instantaneous measures of knowledge and skills.

A brave new world, to be sure, for higher education.

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Chapter 9 *Research and Scholarship*

The University of Michigan was a leader in the broadening of the mission of the American university to include research. From the beginning Michigan had the most advanced plan for a state institution, and was in many respects the nation's first comprehensive public university, a model for all subsequent institutions. Michigan was the first to add the "new" fields of modern languages and the sciences to its curriculum and established the first professorships in zoology and botany, chemistry, mineralogy, and geology.

Despite the promise of these early efforts, Michigan continued to operate much like a traditional college until the arrival of President Henry Philip Tappan in 1852. Tappan expected his faculty to teach, to push back the frontiers of knowledge, and to initiate their students into a world of intellectual exploration. By 1900, the University participated in the founding of the Association of American Universities, an elite group of institutions whose members defined research as an integral part of their mission. Throughout this era, as researchers became more specialized, departments were created in a great burst of energy that lasted about two decades and then subsided, forming the basic geography of the university that is familiar to us today.

A second period of great changes for universities came in the 1940s. During World War II, university research proved its national importance with critical contributions to the success of the Allied war effort. At war's end, universities again found themselves in the midst of a radical paradigm shift, comparable to that of the late 1800s. Research activity at the University of Michigan and elsewhere burgeoned, supported by vast increases in federal funding. The creation of the National Science Foundation (NSF) in 1950 epitomized the new partnership that came with this funding. The assumption of the NSF, as expressed in presidential science advisor Vannevar Bush's 1945 *Science, The Endless Frontier*, was that by funding "pure" research, the government would create a storehouse of knowledge that would ultimately improve the quality of life for all Americans.[1] Funding also expanded in areas of applied research, especially for military projects. The World War II era made explicit the profound importance of university research to the larger society.

Michigan participated aggressively in this new environment. With the arrival, for example, of the first division of the Institute for Social Research (ISR) from the Department of Agriculture and the second division later from the Massachusetts Institute of Technology, we became a vibrant center for the study of social trends. The influence of ISR helped entice many social scientists across campus to study issues in the wider society. Since that time, Michigan has been a recognized leader in many areas of the social sciences. The natural sciences, humanities, and the professional schools similarly achieved world-class reputations in research and scholarship. Our many schools and departments have achieved a combination of breadth of coverage and depth of expertise on par with the world's best universities.

It was also during the post-World War II era that Michigan became known as a world leader in interdisciplinary programs. Much older programs, such as our many area studies programs and the Horace H. Rackham School of Graduate Studies, were joined by new ones, including the Michigan Memorial Phoenix Project, the Institute of Gerontology, the Howard Hughes Medical Research Institute, the Institute for Science and Technology, and literally hundreds of other institutes, centers, programs, seminars, and other informal groups.

In the 1960s and 1970s, under President Robben Fleming, the University reviewed its research priorities. By that time, over half of the research funding at Michigan came from military projects, and a number of investigators were engaged in classified research. After much debate and campus demonstration, the faculty voted to restrict classified studies. At the same time, the University divested itself of the Willow Run laboratories, which were supported almost entirely by the military, dropping the level of military funding on campus to below 10 percent of the total. Finally, in another important decision, the faculty established the "end-use" rule, prohibiting "any classified research contract with the specific purpose of which is to destroy human life or to incapacitate human beings." This again represented a new post-war realization of the importance of university research to the rest of the world, and of the University's responsibility to consider the ultimate impact of its discoveries.

Although few new departments were created during this period, the tendency toward specialization within departments increased. Departments became more splintered, made up, in some cases, of loose confederations of faculty in rarefied subfields who had more in common with peers in their disciplines at other universities than with campus colleagues. Generous funding for the sciences also widened the already immense gulf between the social sciences, the natural sciences, and the humanities.

This intellectual evolution of the university continues today and, indeed, it has become one of our greatest challenges. Today we must provide an environment in our universities that responds adequately to the dramatic intellectual changes occurring in the nature of our teaching and scholarship conducted by our faculty.

The Government-University Research Partnership

The basic structure of the academic research enterprise of the past half-century was set out in the Bush Report some fifty years ago. The central themes of the document were that the nation's health, economy, and military security required continual deployment of new scientific knowledge and that the federal government was obligated to ensure basic scientific progress and the production of trained personnel in the national interest. It insisted that federal patronage was essential for the advancement of knowledge. It stressed a corollary principle—that the government had to preserve "freedom of inquiry," to recognize that scientific progress results from the "free play of free intellects, working on subjects of their own choice, in the manner dictated by their curiosity for explanation of the unknown."[2]

Since the federal government recognized that it did not have the capacity to manage effectively either the research itself or the universities, the relationship was essentially a *partnership*, in which the government provided relatively unrestricted grants to support part of the research on campus, with the hope that "wonderful things would happen." And indeed they did, as evidenced by the quality and impact of academic research.

Federal support was channeled through an array of federal agencies: basic research agencies such as the National Science Foundation and the National Institutes of Health; mission agencies such as the Department of Defense, the Department of Energy, the National Aeronautics and Space Administration, and the Department of Agriculture, and an assortment of other federal units. In most cases, the mechanism used to support research was the merit-reviewed research grant where faculty submit unsolicited proposals detailing the research they were interested in conducting. The funding agency then asked various experts, including peers of the investigators, to review the proposal and evaluate its quality and importance. Based on this review and available funding, the agency then decided whether to fund the work or decline the proposal. If the decision was to fund, a grant would be provided to the host institution for the support of the work, typically for a one- to several-year period.

Although grants arising from unsolicited proposals were the most common form of support, some funding agencies did approach select institutions with requests for proposals to conduct research directed toward specific needs. Such research support was sometimes provided through research contracts between the agency and the host institution rather than through relatively unrestricted grants.

The most common form of research support was through research grants to individual faculty—so-called single-investigator research grants. The grants would support a portion of the faculty member's salary: the wages paid to student research assistants and research staff, equipment and facilities, and incidental expenses such as travel and publications. In addition, the grants would provide support for those institutional costs associated with the research which were difficult to identify on a project-by-project basis, so-called "indirect costs" or overhead, at rates established through negotiation between the host institution and the federal government.

Although funding was also provided through research grants and contracts to larger groups of investigators, particularly through various "center" programs such as the NSF Engineering Research Centers or Science and Technology Centers or various centers of the NIH, most funding was channeled directly to a single investigator or a small team of investigators. Hence, a culture rapidly developed on university campuses in which faculty were expected to become "research entrepreneurs," capable of attracting the federal support necessary to sustain their research activities. In many areas like the physical sciences, the capacity to attract substantial research funding became an even more important criterion for faculty promotion and tenure than publication. Some institutions even adopted a free-wheeling entrepreneurial spirit, best captured in the words of one university president who boasted: "Faculty at our university can do anything they please—provided they can attract the money to support what they want to do!"

Of course, there were many drawbacks to the research university culture. Faculty soon learned that the best way to attract funding for their research was to become as specialized as possible, since this narrowed the group of those likely to review their proposals to the few peers in the field. Universities encouraged faculty to seek more and more sponsored research support for a portion of their academic salary, thereby freeing up funds to hire more faculty. As a result, many universities walked far out on the limb of dependence on sponsored research; they had to make certain that a certain number of faculty were always supported by external research support since they didn't have the internal funds to support everyone. In many fields, the pressures on faculty to generate research funding became extreme. And, understandably, many faculty soon became more loyal to their discipline—and their funding agency—than to their university.

The Success of the Research University

Although in reality there are only 125 universities that are classified as research universities among the 3,600 institutions of higher education in America, these are clearly the envy both of the nation and the world. A few years ago a New York Times editorial referred to our nation's research universities as the "jewel in the crown" of our national economy. It went on to assert that university research "is the best investment taxpayers can ever make in America's future."[3]

In our increasingly knowledge-intensive society, the rate of return from investment in research is rising. While the average rate of return on capital investment in the United States today ranges from 10 percent to 14 percent, the private rate of return of research and development investment is estimated to be an impressive 25 percent to 30 percent. The social rate of return—the rate that accrues to society more generally—is estimated to be as high as 50 percent to 60 percent, roughly four times the rate for other types of investment.[4] In a recent survey, when asked to identify the one federal policy which could most increase the long-term economic growth rate, economists put further investment in education and research at the top of the list.[5]

The importance of publicly financed scientific research on economic prosperity was made even more evident in a recent study of American industrial patents.[6] It found that 73 percent of the primary research papers cited in these patents were based on research financed by government and nonprofit agencies. Such publicly financed science, the study concluded, has turned into a "fundamental pillar" of industrial advance and pays handsome dividends to society.

In a recent letter to Congress a group of leading corporate CEOs wrote:

> *"America's leadership position in an ever-increasing globally competitive economy has been fueled by our technological prowess. Our universities, and the research programs pursued therein, have played a pivotal role in continually advancing our technical knowledge and know-how. Further they have produced the scientists and engineers who have provided the brainpower that allows American business and industry to operate and compete with nations and cultures throughout the world. The standard of living we enjoy today has, in large part, been made possible by our ingenuity and creativeness and our ability to continually advance and apply technology. Our university system and its research programs play a central and critical role in advancing this state of knowledge."*[7]

Challenges to the Research Partnership

If the good news is that our research universities are the strongest in the world—at a time when the benefits from research and development investment have never been higher—the bad news is there is a alarming sense of crisis at many of our nation's most distinguished campuses.[8] The signs of stress are everywhere:

1. The recent deluge of attacks on the academy has revealed a skepticism—indeed, hostility—on the part of the media and government toward higher education in general and the research university in particular. This has badly eroded public trust and confidence.

2. The breakdown of mutual trust has led to increasingly adversarial relationships between universities and government, as manifested in recent skirmishes over matters such as indirect cost reimbursement, scientific misconduct, and pressures to restrict the flow of technical information.

3. Forces from both outside and within the universities (like the rapidly escalating costs of research) are pushing toward a rebalancing of missions away from research and toward teaching and public service.

4. The morale of academic researchers has deteriorated significantly over the past decade, due in part to the pressures and the time consuming nature of the need to obtain and manage sponsored research funding, and to the disintegration of a scholarly community within the university.

What is going on here? To some degree, we may be seeing evidence of the increasing estrangement of the American public—and their elected representatives—from science itself. The gap grows even wider between the omnipresence of science in modern society and the scientific literacy of the body politic.

We also may be experiencing the same forces of populism that rise from time to time to challenge many other aspects of our society—a widespread distrust of expertise, excellence, and privilege. Unfortunately, many scientists, universities, and university administrators have made themselves easy targets for accusations of arrogance and elitism.

But something else may be happening that is illustrated by an interesting paradox. An analysis of research funding during the 1980s reveals that real research and development support increased at rates comparable to the 1960s, at roughly 6 per-

cent per year. Yet the attitudes of the scientists themselves indicate a belief that there is serious underfunding. In 1976, 63 percent of those surveyed thought funding was adequate; in 1990, only 11 percent believed this.[9]

During the mid-1990s the National Academy of Sciences and the National Science Foundation conducted a series of town hall meetings of faculty investigators at all levels, from beginning to experienced, on dozens of university campuses across the nation to discuss these issues. Among the concerns expressed in these meetings were:

- Fears about the future funding of research
- The stresses of grantsmanship
- The loss of a sense of scholarly community with increasing specialization
- The imbalance between the rewards for research versus teaching
- A host of technical issues, such as indirect costs, facilities support, government reporting and accountability requirements, and so on.[10]

As these concerns were examined in more detail in subsequent meetings, it became apparent that these stresses are driven by more fundamental forces which could be captured in a single word: *change*. Our universities and their faculties are feeling the stresses of these forces of change.[11]

Stresses on the Academic Research Enterprise

The Erosion of Public Support

We have noted that at both the federal and state level, a growing imbalance between revenues and expenditures threatens to undermine support for essential institutions as governments struggle to meet short-term demands at the expense of long-term needs. These financial stresses are particularly threatening to the research university.

Federal outlays for R&D declined throughout most of the 1990s. The strength of the American economy in the late 1990s has allowed some reinvestment in federally sponsored basic research, particularly in the life sciences with major increases in the budget of the National Institutes of Health. However most federal research programs, particularly those conducted by mission agencies such as the Department of Defense and the National Aeronautics and Space Administration, have still not recovered to the level of the 1980s. Furthermore, there remains concern that discre-

tionary domestic spending, research and education programs, and federal support of the research university are at some risk over the longer term as long as entitlement programs remain unchecked, particularly as the baby boom generation approaches retirement.

States are also encountering major budget challenges that will make it difficult for most to sustain even inflationary increases in appropriations for higher education in the decade ahead. Although some have suggested that the states might be willing to pick up some of the shortfall resulting from a decline in federal support for university-based research, it seems quite unrealistic to believe that most states will have the capacity or the will to do so.

Cost Shifting

Another dilemma arises here. The constituencies we serve seek to minimize the resources they provide while maximizing the services they receive from the university. Since each party wants more out of the system than it is willing to put in, they thereby leverage other contributors. Few of these constituencies seem to be able to appreciate the university as a whole, with its diverse missions. Most people—and most state and federal agencies—can picture the university only in terms of the part they can feel, e.g., research procurement and student financial aid. This is particularly true in Washington.

To illustrate, consider two recent examples: First, federal efforts to impose artificial limits on the reimbursement of indirect costs on research grants and, second, the alarming trend toward increasing cost-sharing requirements. Recent efforts to reduce the costs of federally sponsored research by imposing limits on the rates in indirect cost reimbursement are an example of cost-shifting. While complex to calculate, indirect costs are nevertheless real costs associated with the conduct of federally sponsored research and must be paid by someone. Indeed, many of these costs are driven directly by the federal government through layer after layer of regulation, accounting, audits, and policy shifts.

To put it in the bluntest of terms, most institutions have only one recourse in responding to federal efforts to pay less than the full costs of the university research they procure: increasing student tuition and fees. If the federal government decides it wants to reduce federal research expenditures by several hundred million dollars by capping indirect costs, in reality it is asking students and parents to pick up this much of the tab for federal research projects, since this is the only alternative funding source most universities have.

The same can be said for cost-sharing requirements on federal grants. While there is a certain simplistic rationale behind such requirements—after all, cost-sharing can be viewed as a kind of earnest money demonstrating the sincerity of the institution seeking the grant—they can have serious negative implications, since they usually result in the diversion of discretionary funds away from educational programs and into federally sponsored projects.

The Changing Role of the Faculty

While the benefit of the government-university research partnership to our society has been extraordinary, there has been a downside for the academy. The faculty reward system has evolved far beyond "publish or perish"; instead, grantsmanship, the ability of faculty members to attract sponsors for their research projects has become a key factor in promotion and salary decisions. Pressures for success and for national recognition imposed on individual faculty members have led over time to major changes in the culture and governance of research universities. The system fosters fierce competitiveness, imposes intractable work schedules, and contributes to a loss of shared purpose and collegiality. We seem to have lost the institution-building philosophy of past research programs.

Many faculty members express their concern that the research university has become in effect "a holding company for research entrepreneurs." Faculty members experience little identification with or loyalty to the institution, instead viewing their research as part of a free market economy. Many have allowed their research interests to detract from their teaching and education responsibilities. There is particular concern that junior faculty are thrown far too early into the dog-eat-dog world of sponsored research grants. Further, it is all too easy for mature scientists to lose funding and fall out of this competitive marketplace.

Those characteristics faculty value—such as an emphasis on basic research; a highly disciplinary focus; and strong, long-term support for individual investigators—are increasingly distant from the terms dictated by federal and industrial sponsors, e.g., more applied investigations of a highly interdisciplinary nature involving large research teams. More generally the faculty believes they are deprived of the opportunity to do what they do best—thinking, dreaming, talking, teaching, and writing—by the daily pressures that force them to hustle contract research, manage research projects, and deal with government and university bureaucrats, all of which takes them out of not only the classroom but the laboratory as well.

Intellectual Forces

The curiosity-driven search for new knowledge and the publication of results in scholarly journals has become a one-dimensional criterion for academic performance and prestige. Beyond that, the scientific method itself triggered a reductionist approach that depends upon greater and greater specialization to discover new knowledge.

Yet, here there is another dilemma. While the social contract underlying the government–university research partnership was based on the premise of practical benefits to society, it was also based on a linear model in which basic research led to innovation, development, production, and societal benefit. In reality, however, the process of innovation and application is far less straightforward, involving a fusion of activities and ideas. In fact, benefit to society involves the integration of knowledge across many disciplines, just the type of activity that is falling through the cracks in the university reward system. Furthermore, the one-dimensional reward structure emphasizing basic scholarship and grantsmanship all too frequently works against the synergy that should exist between research and education.

Human Resource Development

Yet another source of stress is the total absence of a federal policy on the development of human resources—particularly in the fields of science, mathematics, and engineering. Although the nation's scientific research has been guided for the past fifty years by the vision and policies articulated in the Bush Report, no coherent corresponding policy for human resource development in science and technology has been in place since the 1960s. Nothing has succeeded earlier federal policies such as the G. I. Bill and the National Defense Education Act. The nation has been on autopilot, with its human resource development largely occurring as a byproduct of research and development programs rather than through a strategic consideration of national needs. It is little wonder that the current system tends to replicate itself by producing scientists and engineers trained for increasingly narrow—and increasingly limited—research roles, largely ignoring the broader interests of our best students, the increasing diversity of today's generation of students, and the complex and rapidly broadening roles played in our society by those with science and engineering training.

As pointed out in the recent National Academy of Science and National Science Board studies, the federal government urgently needs to develop both a vision and an associated federal policy aimed at providing the human resources in science and

technology necessary to respond to both the contemporary and future needs of the nation.[12] The goal of such a policy should be to develop broadly educated people with the scientific and technological knowledge and skills necessary to address the needs of the nation in a rapidly changing world. This science and technology human resources policy should be closely aligned and tightly coordinated with federal policies concerning science and technology, including both fundamental and strategic scientific research and technology development and deployment.

The Real Issue: Shifting Paradigms

Beyond the financial pressures, the cost-shifting trends, human resource concerns, and the difficulties in comprehending and balancing the many missions of the university, there is yet another important theme that we must consider, and that is change itself. Today we find ourselves in the midst of two simultaneous paradigm shifts, first, in the nature of the government-university research partnership and, second, in the character of the university itself. These shifts are driven by the extraordinary nature and pace of the changes taking place in the world today.

A Shift in National Priorities

For almost half a century, the force behind many of the major investments in our national infrastructure has been the concern for national security in the era of the Cold War. The evolution of the research university, the national laboratories, the interstate highway system, our telecommunications systems, airports, and the space program, all were stimulated by concerns about the arms race and competition with the Communist Bloc. Much of the technology that we take for granted, from semiconductors to jet aircraft, from computers to composite materials, were spin-offs of the defense industry.

Today, however, priorities have shifted. With the political events of the past decade—the breakup of the Soviet Union, the reunification of Germany, the rapid appearance of democratic governments and free markets around the world—national security no longer drives fundamental research. Indeed, part of our challenge today is to understand and articulate the new national priorities that would motivate a continued investment in research. While our concerns are many—economic competitiveness, national health care, crime, K-12 education—it is not obvious how these can be addressed by our existing research infrastructure. The national laboratories are facing massive downsizing and necessarily searching for new missions. The

burdens of the massive debts incurred in the buyout-merger mania of the late 1980s have forced corporate America to downsize research and development activities, including the shift of many of America's leading corporate research laboratories from long-term research to short-term product development.

Equally serious are signs that the nation is no longer willing to invest in research performed by universities, at least at the same level and with a similar willingness to support understanding-driven basic research. Some in Congress have made it clear that they will insist that universities focus increasingly on applied research that is more directly related to national priorities (although many industrial leaders have tried in vain to explain that without "basic" research, there is nothing to "apply"). The federal government has yet to develop a successor to the government-university research partnership which served so well during the Cold War years.

It is certainly appropriate to seek to support "strategic" research; that is, both basic and applied research that has a high probability of contributing to national goals. And it is also the case that universities have responded to such national priorities in years past, ranging from national security to health care to agricultural or industrial development. Many of our land-grant public universities have such strategic research as an important part of their mission.

The concern here is not the renewed federal interest in strategic research, but rather the way that the federal government is approaching this effort. The American research enterprise triad—research universities, national laboratories, and industrial research laboratories—is generally approached through the institutional structure of Congress where most committees and, therefore, budget decisions, are organized around specific mission-oriented agencies (e.g., defense, energy, health, and environment). While it certainly makes sense to attempt to redirect the entire American research enterprise to focus on new strategic objectives, to do so within a single committee or budget category could lead to a damaging distortion of our research capacity.

A Change from Partnership to Procurement

In recent years the basic principles of this extraordinarily productive research partnership between the federal government and the research university have begun to unravel. Today this relationship is rapidly changing from a partnership to a procurement process. The government is increasingly shifting from being a partner with the university—a patron of basic research—to becoming a procurer of research, just like other goods and services. In a similar fashion, the university is shifting to the status

of a contractor, regarded no differently from other government contractors in the private sector. In a sense, today a grant has become viewed as a contract, subject to all of the regulation, oversight, and accountability of other federal contracts. This view has unleashed on the research university an army of government staff, accountants, and lawyers, all with the intent of making certain that the university meets every detail of its agreements with the government. To be sure, we must all be concerned about the proper expenditure of public funds. But we also must be concerned about restoring the mutual trust and confidence of a partnership and move away from the adversarial contractor/procurer relationship that we find today.

Unfortunately, even the procurement model such as shifts in federal accounting rules, may be only a transitional stage, since in recent months there have been signs that the paradigm is continuing to shift still further to the same cost-control—or more correctly, federal cost-shifting—patterns characterizing health care. Just imagine a system of cost-reimbursement rules for basic research similar to the Diagnostic Related Group (DRG) approach used in medical care reimbursement.

The most ominous warning sign for academic research is the erosion, even breakdown, in the extraordinarily productive fifty-year partnership uniting government and universities. Scientists and universities are questioning whether they can depend on the stable and solid relationship they had come to trust and that has paid such enormous dividends in initiative, innovation, and creativity. It is truly perverse that the partnership that has been in large measure responsible for our long-undisputed national prosperity and security should be threatened at the very moment when it has become most critical for our future.

A Shift in Attitudes toward Teaching and Research

In recent years, public attitudes toward the purpose of a university have shifted away from research and toward undergraduate education. A several-decade-long public consensus that universities were expected to create as well as transmit knowledge, a consensus that supported strong investment in the scientific, technological, and scholarly preeminence of this nation, has begun to erode. There is a new devaluing of research for its overshadowing of undergraduate education. Society is beginning to question whether it should continue to pay for the faculty's preoccupation with research. Why should it tolerate the urge of individual faculty to discover and apply knowledge to transform so many four-year institutions into self-declared "research universities" at public expense? The concept of faculty as teacher-scholars has narrowed to the idea that most university faculty should be confined primarily to the role of teachers.

For decades, the conventional wisdom has been that research and teaching were mutually reinforcing and should go together.[13] Indeed, even as recently as 1996, the National Science Board in a major policy statement recommended that:

> *The integration of research and education is in the national interest and should be a national objective. To advance this goal, federal science and engineering policies should strengthen efforts to promote the integration of research and education at all levels and should support innovative experiments in this area. Confidence that academic research enriches the educational process at U.S. colleges and universities underpins public support for science and engineering. Federal science and engineering policies should promote public awareness of model higher education institutions and programs that have demonstrated leadership in strengthening the synergy between research and education.*[14]

Even within the academy, doubts have been raised about the impact of the research university culture on education.[15] The fragmentation of disciplines driven in part by increasing specialization of scholarship has undermined the coherence of the undergraduate curriculum. There appears to be a growing gap between what faculty like to teach and what undergraduate students need to learn.

The Need for a New Social Contract

Such challenges suggest that the status quo is no longer an option. But, of course, the university is no stranger to change. American higher education has always been characterized by a strong bond with society, a social contract. As society has changed, so too have our institutions changed in order to continue to serve.

In the past, the American university has responded quite effectively to the perceived needs—or opportunities—of American society. A century ago our universities developed professional schools and rapidly transformed themselves to stress applied fields favored by the federal land-grant acts, such as engineering, agriculture, and medicine. In the post-World War II years, they responded again, expanding to absorb the returning veterans and later the postwar baby boom, and then to develop an extraordinary capability in basic research and advanced training in response to the evolving government-university research partnership.

As we approach the end of the decade, there is an increasing sense that the social contract represented by the government-university research partnership simply may

no longer be viable. Political pressures to downsize federal agencies, balance the federal budget, and reduce domestic discretionary spending will almost certainly reduce the funding available for university-based research. Government officials are concerned about the rapidly rising costs of operating research facilities and the reluctance of scientists and their institutions to acknowledge that choices must be made to live with limited resources and set priorities.

Furthermore, the government-university partnership has not adequately taken into account other key stakeholders in the scientific enterprise. Academic researchers often seem to place the support for the specialized pursuit of their self-initiated projects well above the importance of addressing the social and economic challenges of our nation. The public is increasingly viewing the persuasiveness of the research methods and its cost to taxpayers as a prerogative that faculty claim for themselves—almost an entitlement, regardless of the particular mission of the host institution or the importance of the research undertaking. They question whether the faculty is upholding its end of the social contract represented by the research partnership, since even curiosity-driven research is expected to benefit society over the long term.

Interestingly enough, other elements of the national research enterprise have faced similar challenges in recent years. Industrial research laboratories have had and continue to engage in a thorough reexamination of their past effectiveness and their present relevance to corporate goals. Federal research laboratories have had to reconsider and refocus their missions, particularly in the wake of the end of the Cold War. The academic sector is not as far along in this agonizing but inevitable reappraisal.

The anticipated decline in federal support of university-based research and development in the years ahead will inevitably cause a variety of responses on the part of both public and private research universities. Many university faculty will shift from the public to the private sector for support to accommodate the erosion in federal support. Beyond seeking corporate support for research and development, they will need to market more aggressively educational services and put in place more realistic price structures (e.g., tuition and fees) that accurately reflect costs.

Even more profound shifts will likely occur in the character of institutions. To thrive in the competitive marketplaces of the 21st Century, universities must shift from the faculty-centered cultures of research universities to the learner-centered enterprises of land-grant institutions . . . that is, in the language of the business world, from "provider-centered" to "customer/market driven."

An even more subtle shift that may occur in public attitudes toward universities that will place less stress on values such as excellence and elitism and more emphasis on the provision of cost-competitive, high-quality services—from prestige-driven to market-driven philosophies. For the past half-century, the Bush paradigm of government–university research partnership has been built upon the concept of relatively unconstrained patronage: The government provided faculty with the resources to do the research they felt was important in the hopes that this research would benefit society in the future. Since the quality of the faculty, the programs, and the institution was felt to be the best determinant of long-term impact, academic excellence and prestige were valued.

Today society seems reluctant to make such long-term investments, preferring instead to seek the short-term services from universities of high quality. Cost is clearly a consideration as well, and consumers now look for low-cost, quality services rather than prestige. The public is asking increasingly, "If a Ford will do, then why buy a Cadillac?"

Rather than moving ahead to a new paradigm, we may be returning to the paradigm that dominated the early half of the 20th Century—the "land-grant university" model. Perhaps, therefore, we need to create a contemporary land-grant university paradigm. As many leaders of public universities have stressed, the land-grant paradigm of the 19th and 20th Centuries was focused on developing the vast natural resources of our nation.[16] The agricultural and engineering experiment stations and the cooperative extension programs were enormously successful. Today we have come to realize that our most important national asset for the future will be our people. Hence, a contemporary land-grant university might focus on human resource development along with the infrastructure necessary to sustain a knowledge-driven society.

Other national priorities such as health care, the environment, global change, and economic competitiveness should be part of an expanded national service mission for universities,[17] forming the basis for a new social contract. Institutions and academic researchers would then commit to research and professional service associated with such national priorities. To attract the leadership and the long-term public support needed for a valid national public service mission, academics would be called upon to set new priorities, collaborate across campus boundaries, and build upon their diverse capabilities.

Beyond this, we need to modify the university reward culture so that it is no longer dominated by disciplinary research performance. We need to add meaningful

performance measures that acknowledge the importance of integrative learning and collaborative professional practice, thereby addressing the complexities of the education and public service missions of the university.

Creating the Interdisciplinary University: Bringing the Neighborhoods Together

The focusing and specialization that began at the end of the nineteenth century and intensified after World War II was one of the great advancements in the history of higher education, allowing scholars to gain expertise and engage in coherent debate amid a growing cacophony of voices. Today, however, as the speed of change increases, it has become more and more evident that we need to make basic alterations in the disciplinary culture and structure of the University of Michigan. New funding policies have made this even more imperative, as agencies increasingly support more multidisciplinary teams of scholars. We are entering a third era of change in higher education.

Concerns about the fragmentary nature of knowledge are not new. Calls for more fluidity in intellectual inquiry arose as soon as the disciplines began to form at the end of the nineteenth century, and some scholars cite evidence of "interdisciplinary" agendas in the work of Hegel, Kant, and even as far back as Plato and Aristotle. So why has today's effort to break down the barriers between the disciplines taken on special importance?

Partly, the new emphasis comes with the shifting nature of knowledge production. Never before has the speed of change itself become the central issue of intellectual life. Disciplinary configurations are changing so rapidly that departments have difficulty coping with new ways of seeing. Today, those who are at the cutting edge of their fields are often those who travel across them. And new ideas are often birthed in the collision between disciplines.

At the same time, we can no longer ignore the importance of the knowledge we produce to the wider society. We began to realize the social impact of knowledge in the 1950s, but today information is replacing material objects as primary economic and social forces. English departments, for example, have become fundamentally concerned with issues that affect our culture, examining, among other issues, how power and ideologies structure the way we see the world. And the complexities of internationalism challenge daily our attempts to define what we mean by these

words "culture" and "world," as national and cultural boundaries become more permeable and untidy. In our increasingly complex, interdependent world, narrow answers will not succeed. The "interdisciplinary moment" is not a fad, but a fundamental and long-term restructuring of the nature of scholarly activity.

Our goal is not to force scholars to conform to the new mantra of interdisciplinarity, however. Not all interdisciplinary endeavors are good; neither are all disciplinary efforts bad. High quality interdisciplinary work will look different in different disciplines, and even for different individuals in the same discipline. For some pursuits, scholars may need to shift from the current "small think" to "big think." They may be able to overcome their lack of specialized knowledge, especially in areas like engineering and the sciences, when intelligent software agents will roam far and wide, instantly and effortlessly extracting details from networks containing the knowledge of the world. For some exceptional scholars, the solution may be appointments to University-wide positions. We will need to learn to value a diversity of approaches and develop a more flexible vision of faculty career paths. There should be places for eclecticism, places for extremely specialized research, and places for colleagues to learn from each other. We will need to learn to work both in isolation and in communities.

The Changing Nature of Scholarship: From Linear Thinking to Revolution

What we sometimes think of today as traditional disciplines actually only represent current incarnations, the result of profound alterations over time. James Winn, former director of the Institute for the Humanities, has pointed out that anthropology has evolved over only a few decades from "skull measuring" into a true social science; the field continues to develop today, beginning to focus on the humanities. Intellectual upheaval like this has shaken all areas of scholarship in recent years. Few scholars continue to believe in some stable foundation for knowledge. We have experienced too many examples of new concepts that have blown apart long-held traditional views. In my own area of physics, for example, Einstein's theory of relativity and quantum mechanics have revolutionized the way we see the physical world. Most of us were trained to think about change as a linear, causal, and rational process. We were taught that by looking at the past, we could predict the future. Yet current scholarship in both the sciences and the humanities has shown that this kind of confident prediction is only a fantasy. Radical critiques and collisions between different cultures and disciplines increasingly threaten our sense of intellectual coherence and stability.

Over the short term, however, there does seem to be a pattern to the development of new disciplines. Within an embryonic field of inquiry, knowledge seems to grow not linearly but in an S-shaped curve. In the earliest phase, growth is slow and risky, flat, as early participants, generally a few exceptional individuals, make extraordinary contributions. But as the discipline matures, growth in knowledge becomes exponential. This is the stage that produces the most return from investments of time and money. It is "safest" to work at this stage, easiest to get grants and achieve tenure. Finally, as the field grows older, growth trails off, flattens out again; a law of diminishing returns sets in as most of the potential of the new area is depleted. All too often, much of our work drifts into this stage, and stagnates.

Even in the short run, however, this description is only a sketchy outline. It assumes that fields of knowledge operate in some predictable and coherent way. Complex systems—like disciplines—often appear stable but actually fluctuate constantly, held in a precarious state of equilibrium. Chaos theory has taught us that even very small changes can threaten this complex balance of forces. The popular press calls this the "butterfly effect," because it suggests that the minute disturbance of a butterfly's wings could effect major weather patterns halfway around the globe. Thus, dramatic change in knowledge is often triggered by a single new idea or exceptional individual.

This vision of disciplines as complex, chaotic systems echoes philosopher Thomas Kuhn's theory of scientific revolutions.[18] In essence, Kuhn argues that individual disciplines operate under what he calls "paradigms." In a sense, a paradigm is what the members of a community of scholars share, their accepted practices or perspectives. Paradigms are not rules, but more like subjects for further study and elaboration, beliefs in certain metaphors or analogies about the world and shared values. For Kuhn, most research consists not of major breakthroughs, but of mopping up, or sweating out the details of existing paradigms. Major progress is achieved and new paradigms are created, not through gradual evolution, but through revolutionary, unpredictable transformations after the intellectual field reaches saturation.

Translated into more human terms, what both of these conceptions tell us is that intellectual transformations are frequently launched by a few extraordinary people. Those who invent new paradigms, who destabilize the structure of a field, are often very young or very new to their field. Uncommitted to current disciplinary rules, they are, as Kuhn says, "particularly likely to see that [these] rules no longer define a playable game and to conceive another set that can replace them." They also, however, must be willing to take serious risks, to participate in the early, flatter, and less productive portion of the learning curve where the broad outlines of new fields are hammered out.

One of the greatest challenges for research universities, then, will be to learn to encourage more people to participate in the high-risk, unpredictable, but ultimately very productive confrontations of stagnant paradigms. We must jar as many people as possible out of their comfortable ruts of conventional wisdom, fostering experiments, recruiting restive faculty, turning people loose to "cause trouble," and simply making conventionality more trouble than unconventionality.

The Deification of the Disciplines, and the Loss of a Common Intellectual Community

Academic disciplines dominate the modern university, developing curriculum, marshalling resources, administering programs, and doling out rewards. Faculty increasingly focus their loyalty on their disciplines instead of their home institutions. As a result we may be losing the cohesiveness of a broad community of scholars. As we have built stronger and stronger disciplinary programs, we have also created powerful centrifugal forces that threaten to tear our community apart.

The process of faculty evaluation, which has increasingly rewarded specialization, is a major culprit. We need only look at how narrowly new faculty positions are defined. Our "business" style of faculty appraisal depends upon very crude measures of achievement. We look more at the quantity of one's publications than at the quality of a person's scholarship or teaching. Of course, faculty soon learn that the best way to succeed in this system, to proliferate their publications, is to specialize even further. In a very real sense, because of our failure to develop more sophisticated measures of accomplishment, we are forcing faculty into very narrow roles.

The truth is that most of us have a "clan instinct." We feel most comfortable when we belong to an identifiable group, a tribe, a discipline. We even define ourselves by our disciplines—"I'm a physicist. You're a historian"—causing us to resist interdisciplinary scholarship and teaching. In fact, our research proposal review panels and curriculum committees often look down on broader efforts as simply hodge-podge collections of watered-down material.

This predominance of "narrow think" has been intensified by traditional funding patterns, especially in the sciences. For years, universities have been dominated by the single-investigator model of sponsored research, in which each individual faculty member is expected to secure whatever resources are necessary for research and graduate training in his narrow area. This pattern has diverted faculty from broad

institutional goals and directed them toward personal, specialized career tracks. As Joshua Lederberg, Nobel Laureate and former president of Rockefeller University, notes, "The project funding system has [exacerbated] specialization. Many able professors have little experience and little culture beyond the domain of their discipline. The project system further preempts the loyalties that might be directed to one's colleagues and one's institution."

Disciplinary rigidity is also reducing the effectiveness of our Ph.D. programs, which traditionally served as a training ground for the next generation of academicians. The current system produces scholars who are trained for increasingly narrow—and increasingly limited—academic and research positions, largely ignoring the broader interests of our best students, their increasing diversity, and the complex and rapidly widening societal role played by those with such advanced training. Ultimately, this narrow definition of the Ph.D. does not serve either the nation or the student well. In the future, a large proportion of Ph.D.s will work outside the academy; our training needs to reflect these broader roles in government, business, and education. Universities have barely begun the difficult work involved in re-designing the Ph.D. degree so that it prepares students for a more diverse future.

There are signs of change, however. Many major funding agencies have begun to shift away from a traditionally disciplinary focus, fueling a rapid increase in the amount of federal support going to multidisciplinary teams of investigators instead of isolated researchers restricted to a single discipline. This is especially true in the natural and social sciences, but a nascent movement in this direction is also visible in the humanities. And despite the pressures, a few faculty stress simply doing interesting things in their research or teaching instead of allowing themselves to be pigeon-holed into a discipline. These all-too-rare scholars often develop an intellectual span that not only carries them across disciplinary boundaries with ease, but allows them to collaborate with colleagues from quite different fields. They are the potential seeds for a new and vibrant intellectual community—human connections between the isolated bulwarks of different departments. Yet these small shifts are clearly not enough.

A Vast Gulf: The Humanities, the Natural Sciences, the Social Sciences, and the Professional Schools

As inquiry of all kinds has expanded our intellectual horizon, it has also begun to show us how truly small our world really is. As technology and the international economy connect us ever more intricately with communities across the globe, we realize how much the actions of each of us affect all the others. Increasingly we must accept the consequences our new discoveries create. This challenge suggests that the current separation between the humanities, social sciences, natural sciences, and the professions is simply no longer tenable. Those who work to expand human technical knowledge must seek common ground with those who explore the implications of this knowledge for our society.

The goal is not to place restrictions on research but to have discussions together about how our advances will be best used to benefit mankind. As an example, Michigan's new Media Union on North Campus is designed to help foster these campus-wide discussions by providing opportunities for engineers, artists, architects, and musicians to collaborate. Together they might be able to consider the use, durability, and aesthetics of their products.

Here we are not arguing for a shift from "pure" or "basic" research to more applied projects. The argument that justified huge appropriations of government funding has always been that pure research generates an unfathomable but incalculably valuable resource for the future, and the NSF, for example, was created to further basic research. Studies actually estimate that about 30 percent of the economic development of the United States after World War II was a byproduct of basic research. The search for truth and for the desire to know will continue to be a core pursuit of university scholarship, even as we seek ways to build more relationships with industry and other fields. The current trend toward treating universities as contractors, through a process of procurement, represents a tragic loss of faith in the benefits of the unconstrained search for truth. Both applied and basic research will benefit immensely from an environment where restrictions and barriers preventing the free movement of thought are removed.

Today, programs such as the Comparative Study of Social Transformation, American Culture, and Women's Studies struggle mightily with the relatively small distances between the social sciences and the humanities. Truly interdisciplinary work that regularly combines the much more separated world views of scientists, humanists, lawyers, or anthropologists will not come without deep alterations in the structure

and assumptions about the workings of our community. Professor Nicholas B. Dirks points out that "the humanities are too important to be left to the humanists." Likewise, the sciences are surely too important to be left to the scientists.

Michigan Today: Amid Challenges, a Strong Foundation for the Future

We must find ways to adapt the disciplines to a new reality that is intolerant of stasis and inflexibility. Departments are beginning to realize that if they do not learn to bend, they will surely break. The creation of a sustained dialogue is as important to most interdisciplinary work as it has been to the disciplines. Departments set standards, evaluate faculty, monitor quality, and provide the University as a whole with a sense of its overall mission. Our goal is not to eliminate these coherent dialogues but to open them up, encourage new foci, wider communities, and perhaps entirely new paradigms. In fact, many argue that departments may be the most promising organizational unit to guide our process of transformation. It is clear that the university of the future will be far less specialized and far more interconnected through a web of structures, some real and some virtual, which provide both horizontal and vertical integration among the disciplines.

At Michigan, we already have a strong foundation of interdisciplinary work upon which to build. For example, the number of multiple offices that our professors have in different units is something of a standing joke (as well as a financial challenge). It is not unusual to see a calendar on a professor's door listing a different office almost every day of the week. No other research university in the nation has this kind of tradition, where scholars wear so many hats. We also have an unusually large number of successful interdisciplinary programs, such as Population Studies, American Culture, Women's Studies, the Ultrafast Science Laboratory, and Bioengineering. The new International Institute, which brings our many interdisciplinary Area Studies Centers under a coordinating umbrella, is an important advance.

Historically, new proposals at Michigan tend to win out over those that aim to sustain or strengthen ongoing programs. While this can be dangerously faddish at times, it also represents an ability to look forward and a growing capacity for phasing out efforts that have outlived their productivity. At the same time new outside funding policies have increased the already considerable funding flowing across rather than down disciplinary lines. Yet, despite these promising strengths, there are still examples of worn-out programs across the campus that manage to limp on, draining

resources from more vital areas. And although some resources do indeed flow across the disciplines, most other forms of power and authority here, as elsewhere, reside in narrow specialties.

Despite our accomplishments and our strong reputation for interdisciplinary work, we are not doing enough. In many meetings across campus, faculty express a great frustration with the constraints placed on their teaching and scholarship. Most faculty see their work as increasingly interdisciplinary, but are stifled by the current University structure. One group actually made a list of enemies to creative scholarship: curriculum specialization, disciplinary boundaries, provincialism, and an "entrenched wisdom group" of faculty unwilling or unable to recognize broader scholarly efforts. These concerns are shared by many others across campus. For example, in a recent survey of Michigan faculty interested in environmental issues, 74 percent felt that our academic climate does not adequately encourage or support interdisciplinary work. Indeed, many view the present organization of the university as not only obsolete, but a hindrance.

Directions for the Future

The University of Michigan must face up to the challenge of change. To retain the traditional character, mission and values that we cherish, we must either transform ourselves or risk becoming as irrelevant to the 21st Century as the early nineteenth century college became for the 20th Century. Success will require committed participation from all levels of our community—fundamental change is not amenable to edicts from the top.

Many people have made suggestions for reducing the constraints on faculty. One approach would create a number of University-wide professorial chairs, allowing these faculty to roam widely, teaching and conducting research in a variety of arenas. These faculty would help cross-pollinate ideas across disciplinary lines. We might encourage faculty to take their sabbatical leaves in universities and disciplines far removed from their usual intellectual and geographical homes. An engineering professor might spend her time in history or social work in Africa. A humanist might join a professional school in Australia. This would both widen our professors' horizons while, ideally, stirring things up a bit in their temporarily adopted homes.

Ernest Boyer, president of the Carnegie Foundation for the Advancement of Teaching, suggests that we think even more broadly, developing comprehensive "creativity contracts" in which faculty define their professional goals for a multi-year period,

perhaps shifting from one scholarly focus to another. For example, a faculty member might devote most of her early career to specialized research, and expand to broader concerns later in life. Or vice versa. Still later, the creativity contract might focus on an applied project, one that would involve the professor in school consultations or as an advisor to a government body. These contracts would give us more flexible methods of evaluating faculty, setting individual goals, while creating a mechanism to allow wider, occasionally high-risk pursuits.

Encouraging interdisciplinary work within the structure of graduate education also poses a challenge. Recent surveys indicate that one of higher education's most intransigent problems is in funding interdisciplinary graduate students. In fact, it is frequently difficult for graduate students interested in non-traditional, often cutting-edge issues even to find a place to study in our narrowly compartmentalized University. In response to these problems, many universities are reorganizing their teaching and scholarship, particularly at the graduate level, into broad divisions and away from specialization. It is my belief that we should challenge ourselves to seriously consider more mergers and integration.

This same integrative approach might also improve education for undergraduates especially since they are likely to pursue multiple careers during their lifetimes. The quickly shifting nature of knowledge means, for example, that much of the training received by our graduating engineering students has already become obsolete in the years of their undergraduate studies. As a result, education and re-tooling will become a lifetime commitment. Instead of offering extremely specialized undergraduate majors, we should design an undergraduate education that would prepare a graduate to move in many directions: teaching them to learn, not to know; providing a facility for inquiry instead of facts. In our introductory chemistry and math classes, for example, we are already moving in this direction. Instead of giving students the facts of math and science, in a world where these facts change every day, we are initiating them into the worlds of scientists and mathematicians.

However, as knowledge becomes more integrated and information technology more advanced, limited attacks on specific problems like these may miss the point entirely. The transformations our society is undergoing may well invalidate most of our current assumptions about the future of our University. We need to explore new social structures, new modes of community capable of responding to the pace and immensity of the changes we face. One possible approach is the "collaboratory" concept, first proposed in an NSF workshop by Joshua Lederberg and others. The collaboratory would use multimedia information technology to relax constraints on distance, time, and even reality, supporting close intellectual teamwork. Perhaps

some form of the collaboratory will be the "infrastructure" of the university of the future.

One way to explore the possibilities of the collaboratory would be to create a small university within a university that could serve as a test-bed for possible futures of a 21st Century university. This "New U" could be an academic unit, consisting of students, faculty, and programs, and its mission would be to provide the necessary intellectual and institutional framework for constant innovation. Highly interdisciplinary, its programs could be organized around such themes as global change, social dilemmas, and economic transformation. It would connect students, faculty, and alumni, helping them to work together as they address real societal problems. It would act as a crucible for the evolution of new disciplines, potentially shaping the larger University and society through collaboration, internships, and exchanges of students and personnel. We could also use the "New U" to develop new organizational models for Michigan, experimenting with different kinds of communities, lifelong education, new concepts of faculty and student roles, and community service, intentionally trying to stay twenty or thirty years in the future. Although this might seem too speculative or "blue skies" to some, it is important to note that our new Media Union which opened in 1996 on North Campus is at least a first step toward this vision.

To be sure, the intellectual character of the university is dynamic. Achieving the appropriate balance between disciplinary and interdisciplinary teaching and scholarship is one of the major challenges before the modern university. This is not a new challenge, however, since the birth of, competition among, and disappearance of scholarly areas has always been a critical part of the university's history.

The disciplines are powerful tools that have served us well for more than a century. We need to find ways to make sure that these tools continue to work for us and do not define or restrict us.

Concluding Remarks

If there is one common thread that runs through all of our conversations with faculty about the need for intellectual transformation, it is a sense of excitement. We are all here because we love what we do. Many of us seek desperately for ways to overcome the institutional barriers that often keep us from renewing the enthusiasm that initially brought us into the academic world.

To succeed, we need to learn to tolerate more ambiguity, to take more risks. This may mean we will be less comfortable in our scholarly neighborhoods; we may have to relax the relatively stable "professional selves" that we have preserved for so long. We will find working together much more fulfilling than working apart. Ultimately this will release incredible creativity.

American universities have always responded to the needs and opportunities of American society. In the 19th Century they responded to the federal land-grant acts with the establishment of professional schools and the development of applied knowledge in essential areas. In the post-World War II years, they responded again developed a thriving capability in basic research and advanced training in response to the federal initiatives embodied in the Bush Report, *Science, The Endless Frontier*.

This is not at all surprising, considering the individualistic, entrepreneurial nature of the faculty and the loosely coupled, dynamic organizational structure of universities. We can argue that these institutions have taken on far too many missions as a result, but we cannot deny that they do respond to the opportunities and challenges presented by society. Today, universities are evolving rapidly, responding once again to their faculties' perception of the marketplace. And the faculty are hearing loud and clear the message that America no longer values the importance of basic research and questions even the relevance of the research university.

While they may not like it, the faculty is remarkably sensitive to the criticisms voiced about the academy—too much emphasis on research over teaching, too many Ph.D.s and not enough jobs, the need for a shift toward more applied activities. And they are responding, quite rapidly, to adapt to this brave, new world. Just survey any group of junior faculty.

The world and the structure of academic research have changed greatly since Vannevar Bush wrote his report. However, the major principles he advanced merit reaffirmation. Now more than ever before, the national interest calls for an investment in human and intellectual capital.[19] As Bush so clearly put it, the government-

university partnership is not simply about the procurement of research results. It is also about nurturing and maintaining the human strengths of a great technological nation and sowing the seeds that will ultimately bear fruit in new products and processes to fuel our economy and improve our quality of life.

Perhaps it is time to explore entirely new paradigms of learning—and learning institutions—that may be required to serve a changing society and a changing world in the century ahead. Perhaps the greatest stress of all on the academy—which is still unspoken—has to do with the very viability of the research university as we know it in the next millennium.

Nevertheless, the research partnership between the university and the federal government continues to be a relationship of great value to our nation and the world. The American public, its government, and its universities should not surrender the long-term advantage of this research partnership because of a short-term loss of direction or confidence. At a time when many of society's other institutions do not seem to be working well, the research university is a true success story. We must get that message across to the American public. We must re-articulate and revitalize the remarkably successful partnership that has existed between our government, our society, and our research universities over the past four decades.

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[2] Ibid.
[3] Editorial, New York Times, March, 1996.
[4] "Economic and Social Significance of Scientific and Engineering Research," in *Science and Engineering Indicators*, 1996, National Science Board (Washington, DC: National Science Foundation, 1996) 8-3 to 8-6.
[5] William J. Broad, New York Times, May 13, 1997 (Science Tuesday); NSF Study, Research Policy, Sussex.
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[8] Jonathan R. Cole, "Balancing Acts: Dilemmas of Choice Facing Research Universities," The American Research University, *Daedelus*, Vol. 122, No. 4, Fall, 1993.
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[11] Harold T. Shapiro, "Reflections on the Future of University-Based Research," *Educational Record*, Spring, 1990, pp. 48-50.
[12] M. R. C. Greenwood, *Science in the National Interest* (White House Office of Science and Technology Policy, Washington, 1996).
[13] Jaroslav Peliken, *The Idea of the University: A Reexamination* (Yale University Press, New Haven, 1992) 238 pp.
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[15] Harold T. Shapiro, "The Functions and Resources of the American University of the Twenty-First Century," (University of Chicago Symposium, 1991).
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[17] Daniel Alpert and William C. Harris, "Renewal of the University's Compact with the Society it Serves," draft, September 18, 1996, 18 pp.
[18] Thomas S. Kuhn, *The Nature of Scientific Revolutions* (University of Chicago Press, Chicago, 1961).
[19] Charles M. Vest, "Research Universities: Overextended, Underfocused, Overstressed, Underfunded," Cornell Symposium on the American University, May 22, 1995, 11 pp.

Chapter 10 *Public Service*

Public service is an extension of the research, teaching, and professional expertise of the faculty. The support of universities, both public and private, whether via direct public funding or indirect tax benefits, implies particular service responsibilities. The commitments which such institutions are willing to assume for society cannot remain implicit. The public has the right to ask how public universities are responding to its needs, and these institutions have an obligation to provide a clear answer.

Today's universities are more heavily involved than ever in public service activities, ranging from economic development to health care delivery to strengthening inner city schools. Yet, in a world of intense economic competition, technological change, and social complexity, public universities are continually besieged by demands that they do even more to serve the public.

This growing demand for our services may be one of our greatest contemporary challenges. Increasingly, the public's willingness to support higher education tends to be determined not by the value placed on its traditional missions of teaching and scholarship, but rather by the perception of direct and immediate benefit through its public service activities.

The Changing Roles of the University

What is the role of higher education in America today? Certainly the education of our citizens continues to be a primary function. To this end, the education of the young, in the broadest sense of the term, remains the central goal of our modern educational system.

Colleges and universities have long been considered essential to our nation's well being, anchoring the values of a democratic society and producing the educated citizens capable of governing a nation.[1] America's system of higher education extended far beyond the education of the elite in its efforts to provide an education to a significant fraction of our population. A diverse array of institutions evolved to serve the many and varied needs and aspirations of our society.

The second traditional role of our colleges and universities has been scholarship: the production, re-evaluation, dissemination, and preservation of knowledge in all forms. While the academy might contend that knowledge is important in its own right and requires no further justification, it is also the case that such scholarship and research are essential to its related missions of instruction and service. Universities seek to unite education and discovery.

Closely related to the traditional roles of teaching and research has been the role that the university is expected to play as a center of critical inquiry and learning. Its role is not merely to accumulate and disseminate knowledge, but to assume an independent questioning and analytical stance toward popularly accepted judgments and values. In this sense, it becomes the central business of universities to conduct precisely those endless forms of testing, refining, and reformulating human knowledge that, all too often, are resisted by society at large.

Yet another traditional mission has been to provide service to society. American higher education has long been concerned with applying special expertise to the needs and problems of society. As we have noted, the land-grant university was created, in part, to respond to the needs of our agricultural and industrial base. When the Morrill Act was adopted in 1862, it was aimed at establishing programs in agriculture, mining, and the mechanical arts—the forerunner of today's schools of engineering. The objective of this legislation was the industrialization of the nation, and Europe was our competitor. That we were successful is obvious; the vast natural resources of our country produced immense wealth for some, and a higher standard of living for most. The agricultural experiment stations and cooperative programs were particularly successful in modernizing our agricultural industry. Furthermore, the development of professional schools in fields such as medicine, nursing, dentistry, law, and engineering was itself an important public service. In the last century, our universities, particularly land-grant institutions, created and applied knowledge, and provided human resources to address the needs of the nation.

As we look to the knowledge-intensive future of American society, we recognize that our great research universities will hold the key to our collective well-being. These institutions will be the primary source of the intellectual capital, the creativity, the innovation, and the well-educated graduates capable of applying this new knowledge. While the research university will indeed play the key role in providing the intellectual capital necessary for the strength and well-being of our nation, we should not view the university as a "knowledge factory." University education is not a depersonalized process, where products—the educated graduates and the research so essential in the age of knowledge—are simply stamped out. The university's role is

not simply to produce suitably imprinted college graduates with standardized values and useful skills. Rather, the years ahead will witness the advancement of knowledge, whether through the scholarly inquiry performed on its campus, the liberal learning experienced by its students, or the application of knowledge to serve the needs of society.[2]

Whom Do We Serve?

One of the greatest challenges is balancing the various complex roles of the modern research university, even as these roles are rapidly changing. How does one achieve an optimum balance between teaching and research? Public service versus our role as an independent critic of society? The liberal arts and the professions? The tensions among these various roles occur in part because of the incompatibility in the needs, values, and expectations of the various constituencies served by higher education.

This challenge is particularly difficult for the public research university since so many different constituencies must be served. In a sense, each of its constituencies responds to a different aspect or role of the university. The tax-paying public and its elected state representatives expect these institutions to serve state and national interests while providing access to education for peoples of diverse racial, cultural, and economic backgrounds. These groups tend to emphasize the teaching function of the university, which is both demanding and essential for the dissemination of knowledge.

Other constituents such as business, industry, and the federal government believe these institutions also have important obligations as research centers to achieve and maintain the highest possible level of excellence in the discovery of ideas and knowledge. Governments and public-interest groups seek expertise applicable to current social problems, foreign policy issues, or health care needs. At the same time, various publics expect the university to create an environment that sustains the research and inquiry that sometimes requires years of labor before coming to fruition. The interaction of these various functions can be creative and enriching, but the contrasting expectations of diverse constituents can also lead to a conflict in missions.

Higher education today faces greater pressures than ever to establish its relevance to the various constituencies in our society. For example, the increasing pace in the development and application of knowledge requires forming new relationships with

both private industry and government agencies. So, too, does the direct support of university activities by institutions in both the public and private sectors. Our colleges are drawn into new and more extensive relationships with each passing day. At the same time, they are expected to act as independent and responsible critics of society. Some contend that the university's consent to play an active, participatory role in society has saturated it with society's problems, thereby jeopardizing its role as an island of intellectual freedom where all views are freely investigated.

Inadvertently, the public service role can undermine the stability of our educational institutions if it is not carefully managed. The academy's relations with its various constituencies can create a web of constraints that dilute its basic mission. For example, the federal government's substantial investment in higher education since World World War II is based on the premise that research and education are vital for the nation's future. With massive federal support, however, came federal rules and regulations which have tangled universities in a web of red tape. The result has been higher costs for education and research as universities create administrative structures simply to interact with the massive bureaucracies in Washington.

At the state level, the tie between a sound system of higher education and economic development has become quite clear, but cooperation is often undermined by the divisiveness of state politics. Like the connections between universities and governments, the relationship between universities and the business sector is potentially symbiotic, involving a partnership between two dissimilar institutions. The primary motive of business and industry is profit; that of the university is education and scholarship. Thus, efforts to respond to the real needs of the private sector must be balanced in order not to distort the fundamental academic values of the campus.

The modern university is, and should be, responsible to many constituents: to its students, faculty, staff, and alumni; to the public and their elected leaders in government; and to business and labor, industry and foundations; and the full range of other private institutions in our society. Both the independence and competition of American universities motivate them to pay close attention to these groups. Indeed, in a very real sense, the ability of an institution to effectively manage the tension among the roles demanded by these diverse constituencies measures its distinction.

The Changing Nature of Public Service

The term public service in higher education usually triggers images of outreach and extension, of regional systems such as the Cooperative Extension Service, massive medical centers, lifelong learning programs, community development, and a host of other activities specifically designed to respond to public needs. Many universities have developed major organizational structures to conduct these activities, in many cases staffed by professionals with only peripheral ties to academic programs.

While public service might best be defined, in its broadest sense, as those activities, including teaching and research, that benefit the public at large, it is more often narrowly defined. Public service, in this restricted sense, is comprised of those activities that are aimed at serving the needs of society, as dictated by an agenda set by the public and its representatives, rather than the institution itself. Public service is in this context primarily a responsive activity, designed to respond to societal needs, rather than a proactive effort that is in alignment with the primary academic objectives of the university.[3]

Another common restricted definition construes public service as work that draws upon one's professional expertise—an outgrowth of one's academic discipline. This includes applied research for an external client, consultation and technical services, clinical work or performance, or instruction within continuing education programs. In this sense, public or "professional" service is an applied version of teaching or scholarship.

Unfortunately, it has been precisely these restrictive definitions of public service that have led to the diminishment of public support for higher education. While there continue to be complaints that higher education is unresponsive to the needs of society, quite the opposite is true since the competitiveness of American universities causes them to pay close attention to their constituencies. This intense desire to respond has, in fact, led many institutions to reallocate limited resources away from their primary responsibilities in teaching and research in an effort to generate more direct public awareness and support.

By attempting to respond to unrealistic public aspirations and expectations, by attempting to be all things to all people, higher education has whetted an insatiable public appetite for a host of service activities of marginal relevance to its academic mission. A quick glance around any community with a local university provides numerous examples of this, from extension offices for continuing education to medical clinics to incubation centers for high-tech business formation to athletic camps for K-12 students.

Yet such responsiveness to the needs—indeed, even the whims—of society by higher education may, in the long run, be counterproductive. Not only has it fueled an inaccurate public perception of the primary mission of a university and an unrealistic expectation of its role in public service, but it has also stimulated an increasingly narrow public attitude toward the support of higher education. A "What-have-you-done-for-me-lately?"attitude now permeates federal, state, and local government. This fuels powerful forces of parochialism that force institutions to spread themselves ever more thinly as they scramble to justify themselves to their elected public officials.

Some believe that we may have failed to link university-based public service closely enough to our academic mission. For example, universities benefit the public directly through their libraries and museums (preservation of knowledge), their theaters and concerts (provision of aesthetic experiences), intercollegiate athletics (entertainment for the masses), their custodianship of the young, and a host of direct consumer services including hospitals, testing laboratories, publishing companies, hotels and restaurants, and so on. While not an "extension service" in the traditional sense, these activities certainly provide important services to the public.

The basic functions of the university must continue to be teaching, research, and the preservation of knowledge; other major activities of the university gain legitimacy only to the degree that they are linked with teaching and research. In this sense, public service that is based upon teaching and its research is not a function but one of a number of principles which animates and guides the basic work of a university.

There is little doubt that the need for—and the pressure upon—universities to serve the public interest more directly will intensify. The possibilities are endless: economic development and job creation; health care; environmental quality; the special needs of the elderly, youth, and the family; peace and international security; rural and urban decay; and the cultural arts. There is also little doubt that if higher education is to sustain both public confidence and support, it must demonstrate its capacity to be ever more socially useful and relevant to a society under stress.

As we enter the age of knowledge, the traditional articulation of the mission of the university as a triad of teaching, research, and service may be too narrow. We need to consider more contemporary forms of our fundamental mission of creating, preserving, integrating, transferring, and applying knowledge.

Some Guidelines for the Role of Service

As we noted at the outset, the university—particularly the public university—was established for the societal good. Indeed, these institutions are viewed as key societal mechanisms, not only for the creation, preservation, and dissemination of knowledge through their instructional and research activities, but also for the distribution and application of this knowledge to benefit society. It is also clear that public support for higher education will be determined, in part, by the perceived social and economic benefits.

Responsibility and Responsiveness

While the mission of seeking, conveying, and preserving knowledge has not changed, the functions associated with the mission have changed because of the interdependence and interrelatedness of the university to other organizations. Most institutions, whether public or private, acknowledge public service as an essential component of their mission and have become deeply involved in these activities.

American universities are particularly sensitive to the pressure from their many publics. The public university provides an excellent example of the capacity of complex institutions to respond to the changing demands and needs of society. Particularly during periods of growth, when stimulated by new sources of support, universities have adapted through substantial and even dramatic change to better respond to societal needs.

The principal themes of public higher education over the past century have been growth, diversity, and accessibility. In the three decades following World War II, strong public investments allowed our system of higher education to expand rapidly to keep pace with expanding populations and growing aspirations. The research university became the cornerstone of our national effort to sustain American leadership in science and technology, thereby underpinning both our economic prosperity and military security.

Today, higher education faces a very different world—and a very different future. The pool of high school graduates dropped significantly during the 1980s as the postwar baby boom cycle subsided, and, although this population is building slowly once again, universities are serving an increasing number of nontraditional students. Public support of higher education has leveled off in the face of other competing social needs. And a host of factors, ranging from the student unrest of the 1960s to the increasing cost of a college education, has undermined the public's view of both

the credibility and relevance of higher education in America. The fundamental themes of the future will shift from growth and breadth to quality and efficiency—to focusing resources on only those areas capable of true excellence. These ultimately will determine an institution's capacity to attract the human and financial resources necessary to achieve and sustain distinction. Of particular significance, here, will be the role of America's great research universities. For, while the primary rationale behind most of higher education will continue to be that of providing instruction, the priorities of our comprehensive research universities are shifting rapidly in response to their role as the key sources of the knowledge and the "knowledge workers" necessary to build and sustain the strength and prosperity of our nation.

Institutional Diversity

We have noted the remarkable diversity of American higher education, stimulated in part by the complex and heterogeneous nature of American society. To respond to the differing—indeed, frequently conflicting—needs and aspirations of our society, our higher education system has achieved a diversity which must be regarded as one of its greatest strengths. This diversity must be kept clearly in mind when considering the appropriate role of a major research university in serving the public. Research universities must avoid the temptation to undertake tasks that other institutions—including government agencies, commercial firms, or other types of academic institutions—can discharge equally well. It is essential to always ask whether the proposed activity truly requires the unique resources of the research university before launching a new program of public service.

Constraints

When major legislation was enacted to expand service roles for higher education, it included mechanisms to provide the resources to support these activities. For example, the Morrill Act provided federal lands to support the new land-grant universities. The major role of universities in health care has been supported both by massive federal capitation and research programs and by third-party cost reimbursement formulas favorable to academic medical centers. Today, however, higher education faces a future of seriously limited resources. Few institutions will benefit from major increases in public support, though all will continue to experience ever-increasing expectations and demands for public service.

Higher education must therefore face the inevitable challenge of focusing its limited resources on those public service activities capable of most impact. To fail to make these hard choices, to fail to say "no" on occasion, will only lead to a far more serious consequence in which public service activities begin to draw resources away from

academic programs—from teaching and research. This latter path would mean that students would, in effect, be asked to support the public service activities of the university since it has been their escalating tuition that has, in large measure, offset the decline in public support of their instructional programs.

Academic Mission

The fifth and final theme concerns the academic nature of public service. It is true that institutions engage in public service activities that extend far beyond their academic programs. Indeed, much of the outreach and service provided by universities is carried out primarily by peripheral units, with only limited involvement of core faculty. While this far-reaching public service activity may be important, it must nevertheless always be kept in mind that the primary mission of an academic institution is teaching and scholarship. Service activities that draw the research university away from its fundamental mission of teaching and research and which compete for limited resources with academic programs can in the long run only harm the institution and diminish its contribution to society.

The most successful public service activities of research universities are those which have been conceived as teaching and research, albeit broadly conceived. Indeed, the quality and benefit of university public service is inevitably determined by the extent to which it incorporates teaching and research. Research universities can best serve society by channeling their public service activities through their academic programs, through their teaching and research, in a way that coincides with their primary mission.

Public Service at University of Michigan

Public service has always been an important component of the mission of the University of Michigan. Perhaps President James Angell articulated this best:

> *Perhaps in no other particular is the contrast between the old college and the new university more marked than in the close relation of the university, and especially the university in the West, to the public and to the schools. It is not easy for us to realize how great an extent the college of 50 years ago was isolated from the public. By the great mass of common people it was regarded as the home of useless and harmless recluses, of the mysteries of whose life they knew nothing and for whose pursuits they cared nothing. But we all know how conspicuous most of the universities have been in recent years.*

> *They have abandoned their monastic seclusion. They have sought to make their aims and their life known to the public and to interest all classes of men in their welfare. Public and private generosity thus rival each other in the hearty support of the universities which have had the wisdom to dedicate themselves with all their resources to public service.*[4]

The University evolved with the State of Michigan, responding to its needs as its economy and society expanded and diversified. From the earliest days the University was animated by social purpose through the social responsibility expected of its graduates to justify public investment, the faculty commitment to educating undergraduates to civil and practical life, and the improvement of public institutions throughout the state. Later, as research, professional training, and graduate education took firm hold, these too were infused with public purpose. Indeed, from its founding, the University of Michigan was identified as one of the most progressive forces in American higher education, establishing a strong tradition of service to the society that supported it.

Today our critics question the depth of commitment the University has to public service activities. For example, they suggest that the University has backed away from its earlier public service responsibilities through actions like the discontinuation of its Extension Service in the early 1980s.

Others within the University raise the issue of just who is responsible for public service. Can we depend upon the deans and faculty members of the academic units to perform public service in the face of limited resources and their other academic responsibilities? Perhaps these activities should generally be conducted by special units, staffed by professionals with few direct ties to academic units to provide them with more independence to respond to societal needs.

Many faculty members and staff suggest the University should give more consideration to public service in reward structures such as merit salary programs, promotion, and tenure if we are really serious about this component of our mission.

Several specific policy issues need to be considered in our planning activities.

1. The University of Michigan's involvement in public service

The University of Michigan today is more involved in serving the public than ever before in its history, whether measured in terms of an inventory of public service activities or in terms of the number of citizens whose lives are touched and benefited by the University. Michigan, however, like other public institu-

tions, simply does not have the resources to respond to all of the needs and expectations of the public. Indeed, we have no choice but to focus our limited resources on the achievement of quality and effectiveness in public service, just as we must focus our efforts in teaching and research. As we make the difficult choices of ceasing some activities so that we can initiate others of more value to our state, we inevitably will face some resistance and questioning.

2. *Who should perform public service at the University?*

The most successful university public service activities are those that have been conceived as teaching and research projects, albeit broadly conceived. As a quick glance through the inventory of University public service activities indicates, the bulk of our public service is performed by the academic units themselves, not by peripheral extension units with professional staff. The history of this University clearly establishes the deep commitment of our faculty, staff, and students to public service.

3. *The role of service in salary, promotion, and tenure*

While public service does not weigh heavily in faculty promotion and tenure decisions, to the degree that service activities flow naturally through academic programs, there is strong evidence that they fall within the reward system of academic units. Furthermore, many service activities such as clinical care and technology transfer carry rather substantial benefits beyond the normal academic merit system.

The faculty itself is responsible, in the end, for defining the criteria for promotion, tenure, and salary. The academic leadership can assist by monitoring and communicating about changing internal and external conditions and opportunities. But it is the responsibility of the academic units themselves and their faculty to regularly discuss and evaluate the criteria for measuring all faculty activity and the relative weight given to teaching, research, and service. This tradition of responsibility at the departmental level insures that faculty adapt to changing conditions, and it cannot be replaced by top-down management from the administration.

4. *Who should fund public service activities*

Taxpayers of this state provide very substantial tax support that is needed to sustain our academic programs as well as our service activities. During a period of substantial decline in the state support of the institution there has simply not

been adequate funding to respond to the host of legitimate public needs for our resources. Indeed, evidence shows that as we have attempted to maintain the level and quality of our public service activities in the face of declining public support, there clearly has been some inadvertent reallocation, in effect, from academic programs into service activities. Such a reallocation is of particular concern since increases in student tuition and federal research support are being stretched to cover for losses in state appropriations.

The Need for a New Paradigm

The Morrill Act and similar pieces of legislation created a paradigm for American higher education that has benefited both individual students and the nation as a whole enormously. However, the growth and expansion of public higher education over the past century has come to an end. As the federal government–university research partnership was forced to evolve after World War II, the public service activities of many institutions declined. Some universities sought to change their images and became dedicated to improving their status in the national rankings of major research universities, primarily by shifting their priorities from the dissemination of existing knowledge to the search for new knowledge. The public service mission was further confused by dropping the word "public" and then in many cases even eliminating the word "service."[5]

America's research universities need to meet the numerous challenges before higher education today: the rising costs of excellence, our changing roles, the tension of relating to various constituencies, the demands of pluralism and diversity, and the need to achieve a new spirit of liberal learning. We need a new model that can integrate and balance the various missions expected of these institutions–that can relate teaching, research, and public service, just as it does undergraduate, graduate, and professional education. We need a model capable of spanning both the public and private sectors. We need a model that can link together the many concerns and contrasting values of the diverse constituencies served by higher education.

Public service must continue to be an important responsibility of the public research university. But these institutions can best serve society if public service is incorporated into a broader vision of the nature and role of the university in America's future.

[1] John Dewey, *Democracy and Education* (New York: MacMillan, 1916).
[2] Russell Mawby, *Public Service and the Public University*, W. K. Kellogg Foundation, Battle Creek, 1987.
[3] Barry Checkoway, "Reinventing the University for Public Service," Journal of Planning Literature, Vol. 11, No. 3 (February, 1997) 307-319.
[4] James Angell, *The Papers of James Angell* (University of Michigan Press, Ann Arbor, 1930).
[5] Daniel Alpert and William C. Harris, "Renewal of the University's Compact with the Society it Serves," draft, (September 18, 1996) 18.

Chapter 11 *Academic Medicine and Health Care*

The best example of the manner in which the missions of education, research, and service interweave is the academic medical center, perhaps the most complex component of the university. Furthermore, its missions of education, research, and clinical care are conducted all on a scale which dwarfs most other university programs. There is also no part of the university that has experienced such powerful forces of change in recent years because of the profound changes in the ways in which health care is delivered and financed. There is also no part of the university that has required so much time and attention of university leaders.

The University of Michigan Medical Center

Education in the health professions—medicine, dentistry, nursing, pharmacy, and public health—has been an important mission of comprehensive universities in America. Many universities own and operate hospitals to support their teaching and research efforts in the health sciences; others have important affiliations with community hospitals to serve as sites for clinical training.

Beyond this teaching and research role, the American university has long played a major role in the delivery of health care. Teaching hospitals have evolved into complex health care centers, offering a broad range of services. The changing nature of health care delivery and costs stimulated both major growth and concentration of health care services in these centers to the point where many have become comparable in size to their host university.

The University of Michigan Medical Center provides an excellent case study of the evolution of the academic medical center,[1] especially since Michigan was the first American university to build, own, and operate its own teaching hospitals over a century ago. During the early days of the University, over half of its students were enrolled in its Medical School. Beyond medicine, the University developed a broad array of instructional programs in the health professions: medicine, dentistry, nursing, dental hygiene, pharmacy, public health, and social work.

The Medical School and the University Hospital have always been closely linked together. Although in theory the primary function of the University Hospital was to provide a site for teaching, training, and research, in practice it soon became the cornerstone of health care delivery in the state. Its size, comprehensiveness, and sophistication attracted the most complex medical cases. As a public institution, it played a major role in providing health care to those unable to afford treatment at private hospitals. The University Hospital operated as a closed shop in the sense that only faculty of the Medical School had practicing physician privileges. Furthermore, all of its "house officers," its interns and residents, were also all members of the Medical School.

Despite this close relationship between the Medical School and the University Hospital, each unit had separate leadership: a Dean of the Medical School and a Director of the University Hospital, with separate administrations. Furthermore, each unit had a different reporting line, with the Dean reporting through academic channels to the Provost, and the University Hospital Director reporting through financial channels to the Vice President and Chief Financial Officer. As a result, the differences that would occasionally arise due to inevitable conflict between academic and clinical goals would frequently require resolution at the level of the President. In order to deal with these issues the University eventually formed a special executive officer team consisting of the President, Provost, Vice President and Chief Financial Officer, Dean of the Medical School, and University Hospital Director.

Both the Medical School and the University Hospital experienced rapid growth throughout the post-war decades. This growth continued throughout the 1970s and 1980s, even as there were pressures to reduce the enrollments in the Medical School, arising from the growing awareness that there was an over supply of physicians—specialists in particular. Even though the Medical School reduced its enrollment of medical students by 30 percent during the 1980s (to 180 students per class), the number of faculty in the School continued to grow to its present level of over 900, driven by the increasing clinical needs of the hospitals. Similarly, both the physical size and the level of patient activities of the University Hospital—more correctly "hospitals," since the medical center spawned separate facilities for activities, such as pediatrics, maternal care, geriatrics, cancer treatment, ophthalmology, and so on—continued to grow through the 1980s and 1990s. Today, the medical center receives almost one million patient visits per year, with total revenues of $1.2 billion, ranking it as one of the largest academic medical centers in the nation.

The primary reason for this extraordinary growth was, of course, both the opportunity and the need to generate revenue from patient care. Since the University

Hospitals operated as an auxiliary unit of the University, without state or University subsidy, it needed to generate sufficient revenues to cover its expenses. Since scale determined market competitiveness, there were strong incentives for growth.

The revenues from patient care also were critical to the Medical School. Faculty in clinical departments had long benefited financially through the provision of patient care. For many years, the University allowed selected faculty to develop private practices. In the late 1970s, the Medical School consolidated these activities into a series of clinics, each operated as a separate business under the umbrella of a Medical Service Plan (MSP). While faculty no longer received direct payment from individual patients, they did receive incentive compensation from the Medical Service Plan based on the success of their clinics. For faculty in highly compensated clinical disciplines, such as surgery, radiology, and internal medicine, this MSP compensation could double or triple their University salary. Furthermore, MSP income also provided substantial support for the broader operations of the Medical School, including staff support and facilities. Indeed, less than 20 percent of the support of the Medical School was derived from academic revenue sources such as tuition and state support, which characterized other university programs.

Academic medical centers faced very significant changes in clinical care payments during the 1970s and 1980s, many driven by changes in federal reimbursement policies such as the use of DRGs (Diagnostic Related Groups) to determine payments for various procedures. However, most hospitals were adept at responding to these changes, and these decades were a time of prosperity and growth. For example, during the early 1980s, the University of Michigan completely rebuilt its Medical Center, investing almost $1 billion in new clinical and research facilities. Throughout the late 1980s and early 1990s, the University Hospitals were running bottom-line "profits" of 10 to 15 percent of revenues ($80 to $100 million).

In the late 1970s, earlier leaders of the University, notably Presidents Fleming, Smith, and Shapiro, had "bet the ranch" on the Replacement Hospital Project, at $350 million, the largest construction project in the history of the University. Although this was an extraordinary gamble, particularly at a time when the state's economy was in a deep recession, the new facility provided the University Medical Center with a highly competitive advantage as it came on line in the late 1980s. This, coupled with a series of restructuring and cost-reduction efforts led by John Forsyth, then Director of the University Hospitals, rapidly positioned the University Hospitals among the most profitable in the nation. Hospital reserves grew to over $750 million. A combination of Hospital reserves and clinical income, generated by Medical School faculty, funded an extraordinary period of new research and clinical

facilities, including sophisticated research laboratories, a new pediatric and women's hospital, a cancer center, a geriatrics center, and extensive new outpatient facilities.

Changes in health care delivery and financing continued to accelerate with the public's increasing concerns about rising health care costs. This intensified competition and drove new health care organizations to provide managed care. Again, the leadership of the Medical Center was visionary and launched major new efforts: the M-Care Health Maintenance Organization; a network of primary care facilities scattered throughout southeastern Michigan, including a new medical campus in northeast Ann Arbor; and important strategic alliances with hospitals and health care insurance providers.

As each wave of changes in health care swept across the nation, the University Medical Center, both because of commitments made in the past and an aggressive vision for the future, seemed to thrive and become even stronger. By the mid-1990s, the renamed University of Michigan Health System had grown to over $1 billion in clinical activity and, together with the teaching and research activities of the Medical School, represented over 50 percent of the budget of the entire University.

But signs of stress were beginning to appear and further change loomed on the horizon. Faculty were under pressure to generate more and more clinical income in order to support the Medical School operations, particularly for the debt cost of new facilities. Junior faculty, in an effort to achieve promotion and tenure, were under particularly severe stresses because the need to generate clinical income came on top of those to build competitive research programs.

The changing nature of the health care marketplace required major growth, particularly in the areas of primary care, in order to provide the referrals to the tertiary care provided by the Medical Center. The University established a network of primary care clinics throughout the southeastern Michigan area, acquired other practices, and formed a series of alliances with other health care providers and managed care organizations. This growth in the Medical Center drove major growth in the number of faculty in the Medical School. It also shifted the attention of both the University Hospitals and the Medical School away from the core missions of teaching and research to focus instead upon the financial profitability of clinical services.

Restructuring

Today, all academic medical centers are under great stress, not because of federal policy, but rather because of the changing nature of the marketplace for health care. The rapid growth of managed care organizations (where payment is not structured around clinical services but on a fixed basis for maintaining the health of each individual) has changed dramatically the nature and financing of health care. The marketplace has become intensively competitive because of an excess of hospital capacity, and the entry of for-profit organizations such as Columbia HCA and Humana. Because of the high costs associated both with the tertiary clinical mission and teaching function, many academic medical centers face serious financial challenges today that threaten their very survival.[2]

In simple terms, what is really occurring is a shift in the risk associated with providing health care.[3] In the past, the "fee-for-services" payment system placed most of the risk on third-party payers, such as the federal government or insurers. Physicians and patients were focused on the quality, rather than the costs, of health care, since others picked up the tab.

Managed care shifts the risk from third party payers to health care providers. Managed care organizations negotiate a fixed cost per person, regardless of the costs of their medical treatments. The burden is placed on health care providers to manage the costs of maintaining the health of the "managed lives" in the contract. In most academic medical centers, this risk has been borne initially by the hospitals.

It is increasingly clear that for teaching hospitals to survive, they must have increasing freedom to control their costs—to operate like a business—with attention given to the bottom line, even if this conflicts on occasion with their teaching and research mission. In particular, most teaching hospitals are taking a far more aggressive stance toward negotiating physician services from their associated medical schools. In practical terms, this means that they are seeking to shift the risk associated with health care costs once again, this time to the clinical faculty and the medical school. The implications, both for medical schools and their host universities, are serious indeed.

The Challenges Facing Medical Education

Perhaps nowhere else in the modern university is change such a constant presence as in medical schools. The medical curriculum has already undergone profound change with the explosion in technology-intensive medicine and the shift from macroscopic biological sciences, such as anatomy and physiology, to microbiology and molecular medicine. The research enterprise also has become far more expensive and competitive, with the need for complex laboratories and highly trained technical staff.

The medical school curriculum has already changed very significantly. The rapid growth of the scientific knowledge base associated with medical practice has overloaded the traditional lecture format. Hence medical schools have moved to more integrated programs in which medical students are involved at an early stage with clinical practice, developing the investigative tools to seek the necessary knowledge as they need it.[4]

For decades, medical schools have been viewed as among the most prosperous academic units on their campuses. Medical school faculty members earn salaries considerably larger than those faculties of other schools—in the case of clinical specialties such as surgery or radiology, several times larger, in fact. Medical school facilities are both extensive and expensive. And medical school faculty are among the most aggressive entrepreneurs on the campus, with extensive outside interests, e.g., consulting or spinoff companies.

Despite this historical prosperity, in recent years medical schools have become rather fragile financial enterprises. Although our nation's medical schools had expenditures in 1995 of more than $30 billion, only about 10 percent to 20 percent of their revenues came from secure sources such as tuition, endowment earnings and gifts, or state support.[5] Another 20 percent of their support came from sponsored research grants and contracts. The remainder, about 50 percent of medical school's aggregate revenues, comes from clinical activities, either payments for the clinical services provided by their faculty or direct payments from teaching hospitals. It is this clinical income that is at most risk as the health care industry is restructured.

The changes driven by the marketplace have been wrenching. It has been clear for some time that there is an imbalance between the needs of our society for physicians and the production of new health practitioners by our medical schools and teaching hospitals. In most specialties, there is an oversupply of physicians, which is likely to become worse as an increasingly competitive marketplace drives down costs, closes hospital beds, and focuses health care increasingly on the prevention, rather than

treatment, of disease. Although the rate of 17,000 new MDs a year graduated by our medical schools is in rough balance with total physician needs, the more significant number is the 25,000 new residents produced each year by our medical centers. The difference between the two is due to foreign-educated physicians being educated in medical specialties, although sometimes these are U.S. citizens who receive their training from foreign medical schools.

There is also a significant mismatch between the focus of most medical centers in producing specialists and the primary-care physicians needed by our society. In managed care, primary-care physicians become revenue producers, since they are the entry point to the health care delivery system. In contrast, specialist care is a cost function, since more expensive procedures must be paid for out of the limited capitation payments available to the provider.

Perhaps the most serious challenges to medical schools will inevitably involve restructuring of their faculties and their academic programs. The size and focus of most medical schools today have been determined primarily by the needs for physician services of their associated hospitals, operated in a fee-for-service mode. Furthermore, many medical schools today not only have a disciplinary focus toward specialization, with less than 10 to 20 percent of faculty in primary care areas, but they are also overstaffed relative to their teaching needs by several fold. As hospitals negotiate more aggressively for physician services, perhaps even turning to physician groups not associated with the university, these very large clinical faculty components will pose great risk both to medical schools and their host universities. Since the downsizing of academic units is very difficult, many universities will find the restructuring of their medical schools one of their most formidable challenges in the years ahead.

Lessons to be Learned

Higher education could learn much from the restructuring experience of the health care industry over the past decade.[6] There are many similarities between the two enterprises. Both health care and higher education are not only very significant in size, $600 billion and $180 billion respectively, but they both represent activities of critical importance to the nation. And both enterprises are world-class in quality.

Prior to the restructuring of the health care industry, the cultures of these enterprises also shared a great many similarities. Both were "provider-centered," controlled by an expensive and elitist professional caste—physicians or professors. Both paid

relatively little attention to the changing needs of the marketplace. Both had little respect for management issues such as productivity and cost-containment. Both relied heavily upon subsidies, both public and private, to support the high prices charged to customers. And both eventually encountered strong resistance to rapid cost increases from market pressures and political forces.

A decade ago, as health care costs continued to escalate rapidly, many looked to government to provide the answers, to regulate the industry and either to subsidize or constrain costs. Yet, government intervention foundered on the shoals of the complexity of the matter and the intense political disagreements over the nature of the federal role. Instead, the marketplace took over and rapidly and profoundly changed the nature of the health care industry. New organizations appeared, such as managed health care organizations, massive for-profit health care providers, and new consortia of employers and others, facilitated by brokers, all determined to drive down health care costs.

As health care became a commodity in a highly competitive marketplace, health care providers soon learned that they had to view the patient—or, more frequently the employer or broker negotiating health care contracts for employees—as the center of their attention. While they took pride in highly skilled physicians and sophisticated medical facilities, they learned that in the end, these were only assets if they were capable of providing high-quality, cost-competitive health care. In a very real sense, health care providers learned rapidly that they had to operate as businesses in an intensely competitive marketplace. Having one of the leading tertiary care medical centers in the nation was of little value if patients believed they could get better care at lower costs elsewhere.

This attention to the needs and concerns of patients became critical to the financial viability of health care providers. Patients wanted to see doctors, not allied health care professionals. They were frustrated with bureaucracy. They wanted to deal with only a single bill for medical treatment, rather than the array of billings from various clinics for various services. They wanted convenient access to health care, near their homes or places of work.

The comparisons with higher education are obvious. The university remains very much a "provider-centered" organization, organized around the needs and desires of faculty rather than students. Students seeking an education are required to conform to the faculty-driven characteristics of the university, living on its campus, dealing with its bureaucracy, learning from graduate student instructors rather than profes-

sors, and paying rapidly increasing prices for the privilege. Faculty resist efforts to contain costs or increase productivity. While the use of technology is extensive, it is rarely used to improve the quality of learning or the efficiency of operation.

Like health care in the 1980s, the higher education enterprise is entering a period in which market forces could well lead to massive restructuring. As information technology breaks apart monopolies and opens up the market by releasing students from the constraints of space and time, competition among both existing and newly emerging institutions is intensifying. In Chapter 24 we will consider in more detail some implications of the possible—indeed, likely—restructuring of the higher education enterprise. Suffice it to say here that the analogy with the experience of the health care industry is quite striking and instructive.

Concluding Remarks

The academic medical centers of many universities are now comparable in size and complexity to their host institutions. The stresses and challenges they faces threaten their universities as well. As one of my colleagues put it, organizations are loath to change until they see the wolf at the door—and become convinced that it is big enough to eat them! If so, they need only look at their academic medical centers, since these are indeed large enough to devour their host universities.

Like many other roles assumed by the university over the years, it could well be that the delivery of health care has reached the stage where it is time to spin it off. Other universities have reached this same conclusion, creating independent health care systems, merging them with other health care providers, or even selling them to for-profit organizations. The academic management culture and the glacial speed of the academic decision process makes it increasingly difficult for a university to manage a viable health care system in the intensely competitive world of modern health care. To attempt to do so puts the university at financial risk and distracts the attention of its leadership from the core missions of teaching and scholarship.

To be sure, such devolution of teaching hospitals from universities reduces the influence of medical schools over the academic medical center and, not surprisingly, is generally resisted by medical faculty. But the management demands and risks attendant to health care delivery on a sufficient scale for financial viability seem increasingly incompatible with the mission and culture of the university.

[1] Harold T. Shapiro, "The Future of the Academic Health Center and the Research University: New Missions? New Roles? New Models?", The John Hogness Award lectureship Association of Academic Health Centers, San Diego, CA, September 30, 1993, 26 pp.
[2] Samuel Their and Nanerl Keohane, "How Can We Assure the Survival of Academic Health Centers?" *Chronicle of Higher Education*, (March 13, 1998) A64.
[3] William N. Kelley, The University of Pennsylvania Health System Model: The Academic Health Center as the Nucleus of an Integrated Health Care Delivery System, in *New Models for Higher Education*, William F. Massey and Joel W. Meyerson, Eds. (Peterson's Guides, Include, New York, 1997) pp. 37-64.
[4] Donald E. Detmer, Editorial, *Science* 275, March 28, 1997, p. 1859.
[5] David Korn, Letter to the Editor, *Science* 275, March 28, 1997.
[6] Jack Gregg, *Educom Review* (June, 1997).

Chapter 12 *Financing the University*

In the decades following World War II, the growth of higher education in America was fueled by growing public commitments. During this period, public institutions treated state and local governments as their primary revenue source, with tuition playing a relatively modest role. Even at private universities, the strong growth in federal research expenditures and student financial aid programs led to very significant increases in public support.

From 1980 on, however, this trend toward expanded public support of higher education has clearly reversed. At all levels of government, public resistance has led to limitations on tax revenues and the reallocation of limited public resources to other priorities such as health care and prisons. Today, the relative decline in public support and consequent increase in tuition has led to a funding pattern more typical of the support of higher education in the 1940s and 1950s when students and parents were asked to provide a larger share of the support of higher education than in the 1960s and 1970s when strong public subsidy made public higher education relatively inexpensive. Whether stated or not, it is typical of policies at both the state and national level to shift more of the burden for the support of higher education from the shoulders of the taxpayer to those who benefit most directly: students and parents.

Higher education has already faced the challenge of making a transition from the growth era of the 1950s and 1960s, which saw increasing populations, public and private support, and prestige, to the no-growth era of the 1980s and 1990s. Today it faces the brave new world of even more limited resources. Unless institutions act decisively, the costs of excellence in education and scholarship will almost certainly increase faster than the resources available to them. Furthermore, the pools of students and faculty members from which the university in America draws its strength are also changing rather rapidly.

Universities must transform their financing if they are to thrive and serve in this future era of limitations and constraints.

A Future of Limits

Like other enterprises in our society, the operation of a university requires the generation of adequate resources to cover the costs of activities. This is a complex task for academic institutions, both because of the wide array of their activities and the great diversity of the constituencies they serve. The not-for-profit culture of the university, whether public or private, requires a different approach to the development of a business plan than one would find in business or commerce.

Universities usually begin with the assumption that all of their current activities are both worthwhile and necessary. They first seek to identify the resources that can fund these activities. Beyond that, since there are always an array of worthwhile proposals for expanding ongoing activities or for launching new activities, the university always seeks additional resources. The possibility of reallocating resources away from ongoing activities to fund new endeavors has only recently been seriously considered. Strategies from the business world aimed at cutting costs and increasing productivity are relatively new to our institutions.

Most universities depend upon the following revenue sources:

- Tuition and fees paid by students
- State appropriations
- Federal grants and contracts
- Gifts and endowment income
- Auxiliary activities (such as hospitals, residence halls, and athletics)

Strategies for the expenditure side of the ledger include:

- Cost containment
- Strategic resource management
- Innovation through substitution
- Total quality management
- Re-engineering systems
- Selective growth strategies
- Restructuring the organization

The availability and attractiveness of each of these options varies greatly, and depends upon the nature of the institution and the environment of which it is a part.

Such financial strategies vary significantly with the particular circumstances faced by the institution. For many public institutions more heavily dependent upon state appropriation, the most appropriate strategy might be to build the political influence necessary to protect or enhance state support. Small private institutions with modest endowments depend heavily upon tuition and fees, and issues such as enrollments and tuition pricing play a key role in financial strategies. Small, highly focused research universities such as MIT and Caltech are heavily dependent upon federal research support and, needless to say, seek to influence federal research policies as part of their financial strategy.

To better understand some of the issues involved in financing higher education, it is useful to comment briefly on each of these revenue and expenditure strategies.

Federal Support

All universities are suffering the consequences of the structural flaws of national and state economies, the growing imbalance between revenues and expenditures. As governments struggle to meet short-term demands at the expense of long-term investments, the support for essential institutions is undermined. At the federal level, funding for higher education has been stagnant or declining since the late 1970s. While tax revenues as a share of personal income increased over this period, the impact of federal entitlement programs such as Social Security, Medicare, and Medicaid, and the national debt consumed an ever-larger share of the federal budget, now accounting for about 67 percent of federal expenditures. While higher education was a priority in the budget balancing agreement of 1997 and the Higher Education Act of 1998, the primary beneficiaries of these federal actions are likely not to be colleges and universities but rather middle-class students and families. More specifically, the roughly $40 billion of federal tax benefits included in the budget agreement will flow directly to students and parents through tax credits and deductions aimed at mitigating the cost of a college education. In the end, these dollars are likely to be channeled into alternative forms of consumption, rather than into increasing educational opportunity or enhancing the quality of our institutions.

Furthermore, while the federal budget deficit has been erased by stronger-than-expected economic growth, this was accomplished by using the surplus in Social Security payments to finance other operations. As the baby boomers approach retirement in the next two decades, entitlement obligations will place enormous

pressure on the discretionary component of the federal budget used to fund financial aid and research programs. Discretionary domestic spending, research and education programs, and federal support of higher education are all at great risk. Some leaders have even suggested that the viability of the research university paradigm, heavily dependent upon federal support, may be at significant risk during the next decade.[1]

Equally serious are signs that the nation is no longer willing to invest in research performed by universities—at least at the same level and with a similar willingness to support understanding-driven basic research. Congress has made it clear that it will insist that universities focus increasingly on research more directly related to national priorities. The federal government has yet to develop a successor to the government-university research partnership that served so well during the Cold War years.

The prognosis for federal financial aid also has been uncertain. The decade-long deterioration in federal financial aid programs saw a decline of fifty percent during the Reagan and Bush administrations. Although there has been some restoration of programs such as the Pell Grants during the Clinton administration, it is likely that the trend away from federal grants to federal loans will continue, albeit with the possible introduction of new direct loan or income-contingent repayment plans. While such programs would clearly assist students in meeting the costs of a college education, they would only help directly those universities with the flexibility to implement tuition rates that more closely reflected the real costs of education.

It is also likely that the trend toward increasing federal regulation will continue (health, safety, conflict of interest, scientific misconduct, foreign involvement)—and the costs associated with compliance will continue to rise. Similarly, the need to generate additional tax revenue to deal with the federal deficit will probably have an impact on higher education just as it does on other sectors of our society. And, of course, the major changes in health care financing could have a profound impact on the university, both on academic health centers and the health-benefits costs for university employees.

State Support

The states have also faced serious financial challenges in recent years. In the late 1970s Washington provided 25 percent of the revenues necessary for state and local programs.[2] Today, it provides less than 17 percent. Unfortunately, that does not prevent the federal government from transferring to the states major responsibilities for funding federal programs such as social welfare and health care. Cost shifting

from the federal government through unfunded mandates, such as Medicare, Medicaid, ADA, and OSHA, has destabilized state budgets. For example, while the federal government sets the general guidelines for Medicaid, it provides less than 56 percent of the costs to cover these commitments; the states must pay the rest. As a result, these costs are zooming upward, with no end in sight. A second cost transfer is K-12 education, the largest item in the budget of every state. In 1980 the federal share of education support was 9.2 percent. In 1990 it had fallen to 6.3 percent. Because of these cost transfers, the states have been unable to make adequate investments in areas of traditional responsibilities such as modernizing infrastructure, improving schools, and making public services more effective. Instead, they have had to respond to the shift of costs and responsibilities from the federal government.

Beyond federal cost shifting, many states have seen a major change in funding priorities. Public concerns about the quality of K-12 education have led many states to earmark support for primary and secondary education off the top of the state budget, before other priorities are considered. Many states have made massive investments in corrections and commitments to funding K-12 education through earmarks off-the-top. Harsher sentencing policies have exploded prison populations, demanding new state expenditures to build and operate corrections facilities. In fact, in many states today the appropriations for prisons have now surpassed the funding for higher education and show no signs of slowing. A case in point: in 1986, Michigan had fifteen public universities and eight prisons. In 1996, a decade later, we still have fifteen universities, but thirty-five prisons. More to the point, in 1996-97 the state spent $1.4 billion for the education of 250,000 students in its public universities and over $1.4 billion for the incarceration of 40,000 inmates—at an annual cost per inmate of $35,000, somewhat more than the cost of a Harvard education!

Over the past decade, the role of supporting higher education has changed most dramatically in the states rather than the federal government.[3] As late as 1980, the states contributed 45 percent of all higher education revenues. By 1993 that share had fallen to 35 percent and continues to fall. For public institutions, the contribution of state and local government spending has reached its lowest level since World War II, comprising roughly 53 percent of the support base. Largely as a result of this decline in public support, tuition levels have been driven up. Private institutions face a similar situation with the slowing of the growth in federal research programs and student financial aid programs. The result is the same—a rapid increase in tuition levels.

Also of great long-term concern is the trend in recent decades among most elected public officials to shift the costs of public higher education from general tax revenues to the tuition charged to students and their parents. Whether deliberate or simply a response to the tightening constraints and changing priorities for public funds, the new message is that education has become a "private good," and that it should be paid for by the individuals who benefit most directly, the students.[4]

There is a growing consensus that, unlike the need for retrenchment experienced in the 1980s, the current erosion in state support for higher education is part of a more permanent shift in funding priorities. Generous support of higher education is unlikely to be sustained in most states over the longer term.

Tuition

Whether public or private, most colleges and universities draw the majority of their revenues from operations—tuition from instruction, rentals from housing, clinical income from health care, and so on. In many states, even appropriations are indexed to instructional activity. The most significant and controllable revenue source for most universities is tuition. But this is an option available only for the short term since eventually market pressures or political forces respond to constrain tuition increases.

Tuition represents the price charged for a college education. In both public and private colleges and universities the true cost of a college is heavily subsidized with public and private funds. Often tuition is discounted still further through financial aid programs. This means that while colleges advertise a certain tuition level as a "sticker price," a very significant number—in some institutions, the majority—–of students receive a subsidy through financial aid in the form of scholarships, work-study, or loans, which are generally determined by their financial need. This is certainly an important consideration from the point of view of the student. But it is also important from the perspective of financial operations, since financial aid is a direct write-off against tuition revenue in many institutions, particularly at the margin. In fact, some institutions have found that the incremental cost of financial aid programs necessary to protect their student applicant pool actually exceeds the revenue from tuition increases.

The complexities inherent in shifting to a high tuition/high financial aid strategy can best be illustrated by considering the University of Michigan's experience as a case study. The constitutional autonomy of the University vests the responsibility for determining tuition in its board of Regents. During the years of generous state

support, tuition levels for Michigan resident students remained at nominal levels. However, since state public policy dictated that Michigan tax dollars be restricted to the subsidy of Michigan residents, the tuition charged to nonresident students rapidly approached levels comparable to private institutions and were constrained by that marketplace.

The University did have significant potential for increasing in-state tuition revenues. In fact, during the 1980s, state support had eroded to the point at which it no longer provided adequate subsidy to compensate for the difference between in-state and out-of-state tuition for those Michigan residents enrolled in the University. The University's aggressive efforts to maintain strong financial aid programs in the face of rising educational costs had protected the principle that any Michigan resident academically qualified to enter the institution would receive sufficient financial aid to cover their demonstrated financial need. Indeed, when the financial aid provided to in-state undergraduate students was taken into account, it was clear that the average discounted tuition had remained remarkably stable during a period in which state support had plummeted. Hence, there was both a policy rationale and significant market capacity to sustain increases in resident tuition.

Private Fund Raising

For many universities, private fund raising provides the greatest opportunity for enhancing support.[5] For private colleges and universities, private fund raising, particularly that aimed at building endowments, has long been a critical priority. Even for public universities, private fund raising may represent a more realistic option in the face of strong political opposition to tuition increases.

Again, the University of Michigan provides a useful case study. As we developed our business plan for the 1990s it became clear that private giving would be increasingly important to our future, since this was one of the few sources capable of significant growth. However, building private support of the University would require not only a major investment in fund raising capability, but a shift in the perception of the University, both on the part of our faculty and staff and on the part of our donors and other interested publics.

In a sense, the University would have to acknowledge that it was evolving into a new paradigm, a "privately financed" public university. While remaining committed to retaining its public character—serving the people of the state of Michigan—the University would have to operate increasingly like a private university, earning much of its support in the competitive marketplace via tuition, research grants, and gifts.

As we have noted, by the early 1990s, almost 90 percent of Michigan's support already came from self-generated revenues.

Private fund raising rapidly became a key element of the University's financial strategy.[6] While the University's goal in the past had been to use private giving to provide "the margin of excellence," today the goal is more basic: To recognize that private giving will replace—not augment—an eroding base of state financial support. The University of Michigan is not alone in such efforts. While it was one of the first public universities to see state appropriations drop to such a low fraction of its operating budget, it was quickly joined by other major public universities also facing a privately financed future.

Fortunately, private giving was recognized early on by the University as a resource with the potential for significant growth. In the early 1980s, under the leadership of President Harold Shapiro, the University moved aggressively to build an effective central development operation. The University raised more than $300 million during the major campaign of the 1980s, and perhaps more significantly, it began to build a network of volunteers and prospective donors that would lay the foundation for the massive effort of the 1990s. Annual giving rose to $60 million, and the campaign established the nucleus of an endowment at $250 million.

In 1990 the University accepted the challenge of an even bolder goal: By the end of the decade, it would attempt to raise private support to a level exceeding state appropriations to the University, roughly $300 million per year. This stretch goal demanded not only a significant increase in the effort directed toward private fund raising. It also required far more aggressive management of the University's endowment. Key in this was the launch of a major fund raising campaign with a goal of raising $1 billion by 1997, the first public university to launch such a major campaign. (We would far exceed this goal by raising over $1.4 billion by fall of 1997.)

Auxiliary Funds

The funds generated by auxiliary units of the universities—particularly, their academic medical centers—have been the fastest growing component of their resource base through the past decade. For example, the University of Michigan saw the revenues of its UM Hospitals rise at the rate of 14 percent per year throughout the 1980s and early 1990s. Through strong leadership, the UM Hospitals saw positive bottom-line gains throughout this period, ranging from $60 million to $100 million on revenues of roughly $1 billion per year. This strong financial performance had enabled the investment in a new physical plant at a level of about $700 million.

Yet these were also the most uncertain of our resources because of the rapidly changing national health care environment. With the rapid evolution of managed care and capitation and the entry of new for-profit health care providers, the academic medical center has become an endangered species. Returning to the Michigan example, by the mid-1990s the UM Hospitals began to face operating deficits that would require a major restructuring designed to take almost $200 million a year out of operating costs.

We considered many of the issues associated with academic medical centers in Chapter 9, but suffice it here to observe that most such centers are fighting for their financial survival in an intensively competitive health care market. There may occasionally still be an opportunity to utilize the short-term profitability of such activities to make important investments in those academic units that contribute to the bottom line of academic medical center (e.g., clinical research facilities). But it seems most unwise to make permanent base commitments to more general university purposes from such activities.

While most other auxiliary units such as intercollegiate athletics barely generate revenue sufficient to cover their own operating expenses, there are occasional opportunities for funding from these sources. For example, continuing education presents an excellent opportunity to generate additional revenue. The executive education programs conducted by many business schools provide examples of the degree to which high quality programs, when marketed aggressively, can generate resources which directly benefit academic units, while responding to the teaching mission of the institution.

The Costs of Higher Education

The wise and efficient deployment of resources is as important as the effort to generate sufficient revenue when it comes to compensating for eroding public support. Understanding how to better use available resources to perform the many different missions of the contemporary university is key. Yet this can be a difficult task. Today's university is like a conglomerate, with many different business lines: education (undergraduate, graduate, professional), basic and applied research, health care, economic development, entertainment (intercollegiate athletics), international development, etc. Each of these activities is supported by an array of resources: tuition and fees, state appropriation, federal grants and contracts, federal financial aid, private giving, and auxiliary revenues. Part of the challenge is to understand the cross-flows, e.g., cross-subsidies, among these various activities.

General Aspects of University Costs[7]

It is tempting to place the blame for the increasing costs of a college education on external forces—e.g., the need to compete for high quality faculty, staff, and students; the external imposition of new rules and regulations; or the increasing litigiousness of our society. While these forces clearly influence a university's costs, they are only part of the picture. Just as important are those costs universities inadvertently impose on themselves by operating inefficiently. Many of our systems and processes allow or even encourage more waste and duplication than we care to admit.

The costs of higher education matter differently to constituencies on and off the campus. Faculty and staff are aware of the ever-increasing costs of teaching and research, but they generally think of these in terms of maintaining or enhancing the quality and scope of these programs. In contrast, the key stakeholders in higher education—tuition-paying students and parents, legislators and other governmental administrators, alumni and other donors, and the tax paying public—are concerned by the burden of rising costs. The concerns of these financial supporters or "customers" of higher education are important. This importance is reflected in the priority given to higher education by legislators and other government officials and in the impact upon application and enrollment flows of potential students. It is also reflected in the increasing concerns expressed by the public, the press, and the political process to limit tuition increases.

For many years university expenditures in general have been growing more rapidly than the Consumer Price Index. In part this reflects the fact that the prices of the types of goods and services purchased by universities have been rising faster than the inflation rate. But it is also important to note that universities have not only been paying more for the goods and services that they buy, but they have also been buying more of them. At most research universities this expansion is highly concentrated in facilities, state-of-the-art equipment, and other non-salary areas. These facts only amount to a restatement of the fundamental problem, however, and cannot serve as an explanation to the general public or as a guide for internal management decisions.

It is essential to establish a framework, both for understanding the underlying forces that drive the costs of higher education, and for thinking about ways in which those forces could be subjected to more effective internal management. Such an effort reveals the importance of organizational structure as a means of assuring that costs are fully understood and are managed effectively. Good managers will make good

(cost-effective) decisions when they are provided with the necessary information and proper incentives. The first challenge for a university is to select good managers and to provide adequate training for them. The second challenge is to identify the appropriate level at which decision making authority should lie with respect to each type of decision. If it is at too high a level there may not be an understanding of the primary impact on the unit or individuals (e.g., if the president were to assign faculty to courses). If it is at too low a level there may not be an understanding of the secondary impact on related units or individuals (e.g., if each faculty member chose his or her own courses).

The major costs of higher education will always be in teaching and research programs. While many cost increases are due to external market factors beyond the control of any single institution, some possibilities do exist to increase quality and reduce costs through more effective management, while recognizing the essential collegial nature of academic decision making processes.

Cost Drivers

Cost drivers can be divided into two major categories, those that reflect external conditions and those that arise from internal management practices. Market driven external forces which greatly influence costs are in large part the result of institutional objectives, e.g., comprehensiveness or quality. Such objectives require that institutions of the same caliber compete with one another for both faculty and students. They must meet market rates for faculty salaries, work loads, and other resources and must compete effectively for the best undergraduate and graduate students. Faculty needs for computing services, library resources, laboratory facilities, support staff, and associated expenses such as travel are also competitively driven. Not only is there intense competition with universities of similar stature, but also with those that aspire to meet their stature either comprehensively or selectively. Different choices related to comprehensiveness or excellence lead to different markets and potentially lower cost resources.

Many costly external forces, however, are not market driven but rather consist of rules, regulations, and social forces. In addition, the university is asked to provide public service as well as time and talent to local, state, national, and international organizations for a wide variety of important activities and concerns. All of those non-market driven forces have important cost implications for the university and require careful attention to the way in which they are managed; different management strategies can result in decidedly different cost outcomes.

From another perspective, the organizational structure of the university itself may be a primary cost driver. This observation stems from several factors. The first is that there is substantial cost and general overhead associated with centralized bureaucratic policies and procedures of any large, complex organization like the modern university. Activities such as central personnel, financial operations, purchasing, plant operations, and information technology in most universities are simply not perceived as lean, efficient, customer-focused operations. At the same time, a tradition of decentralized and delegated decision making and responsibility also creates numerous duplicated efforts and costs. More by historical accident than by design, universities arrived at a particular mix of these centralized and decentralized services and need to examine whether the current mix is optimal from either a cost or customer service point of view.

A final primary cost driver is the cost related to space, which constitutes a large component of all universities' total budgets. This includes the costs of new construction and remodeling, together with those of utilities, maintenance, custodial services, and safety. A university also may rent commercial space for many activities, and the explicit rental costs may be significant. With a few notable exceptions, centralized university budgets bear all of these space costs, and the space is allocated to units on the basis of history and negotiation. From the point of view of the unit administrator, the acquisition of additional space may require the expense of substantial time and effort in negotiations with the central administration. It will require little or no expenditure of local financial resources in either the short or the long run, however.

Space growth is clearly limited by a university's total resource base and central allocation decisions. The fact that the allocation decisions are made at one level while the needs are assessed at another creates the strong possibility of serious misallocation, inefficiencies, and a greater-than-optimal supply of space. The lack of any incentive for a local unit to economize on its use of space virtually guarantees this result, and some systemic modification of the economics of space occupancy needs to be considered.

Hidden Costs

Costs cannot be adequately understood by looking only at the dollars recorded on an accounting statement. The cost of an activity is best understood in terms of "opportunity cost": the opportunity (or activity) foregone by undertaking that activity. For example, a unit's accounts may show that the cost of going through a promotion (or

upgrade) process for an employee is merely the incremental compensation associated with the new grade. Not recorded are many associated costs such as the time and effort spent by the employee, the supervisor, and university personnel staff. All of this time could have been used for other purposes if it were not spent in this process.

Better budgetary and cost-attribution systems must be developed if costs of this nature are to be understood and managed. Clearer priority choices can and will be made in an era of resource constraints if the full cost implications are better understood. The admonition is not that we avoid actions which incur such costs, but that they should be incurred knowingly.

Cultural Factors

We should also acknowledge that certain cultural factors sustain the current cost structures of higher education. For decades, evidence has indicated that the quality rankings of colleges and universities are correlated with expenditures. In fact, several of these rankings actually build in correlations with measures such as expenditures-per-student. Like other consumer items, it is assumed that the more one spends, the higher the quality the consumer will receive.

Similarly, most institutions focus on inputs rather than outputs. We tend to recruit those faculty with the highest reputations and those students with the highest scores on standardized tests. We measure the success of leaders of higher education by how many private gifts they procure or the size of the university endowment they create. Rarely do we focus on more traditional measures of productivity or value-added, e.g., the learning of students or the impact of scholarship.

Finally, higher education has long had a monumental function. Wealthy donors prefer to give to wealthy universities, to see their names associated with buildings or endowed chairs at elite institutions. In fact, several of our campuses have become almost palaces, richly appointed and endowed far beyond the educational needs of their students or the scholarly needs of their faculty. The old maxim continues to apply in higher education: the rich get richer, and the poor continue to suffer.

Total Quality Management

Higher education has been slow to focus creative attention on a careful understanding of quality and how quality relates to costs. As we face an era in which incremental resources become scarcer for the university, learning how to achieve higher quality while containing costs will be absolutely vital.

The 1980's were a period of extraordinary learning, change, and improvement in the area of quality in much of U.S. industry. The development of a global economy brought new standards of competitive performance in quality and new levels of customer expectations with which U.S. companies had to cope if they were to survive. While it is very important to be sensitive to the institutional differences between higher education and the private sector, there are valuable insights to be gained by reflecting on industry experience with quality improvement in the 1980s and considering what it means to the higher education world of the 1990s.[8]

There are two major lessons or insights about quality from the private sector that have special relevance for the university. The first is that quality can be improved only by developing a deep understanding of customer needs and expectations. Indeed, one definition of quality is "providing products and services to customers which fully meet their real needs and meet or exceed their expectations." The process of quality improvement then involves doing whatever is required to serve customers in ways that achieve these goals.

Thinking about the people we serve and with whom we interact as "customers" is not normal or natural in many parts of the University. Indeed, some may find it offensive. But in the 1980s, people in many organizations, in business, government, and health care, learned that to improve quality and overall institutional performance, they need—often for the first time—to carefully identify their customers, to learn more about their needs and expectations, then strive to improve their own performance based upon what they have learned.

In truth, the university does have customers. Those most obvious are external to the institution, such as prospective students or faculty. But customers may also be internal—that is, one university unit may be the customer of another. Attention to defining the customers of a unit and understanding their needs and expectations is key to quality improvement and a step toward understanding and eliminating unnecessary costs.

The customers of academic units can be identified in at least four major categories. First, students are customers who exercise choices among universities, among schools and colleges, among majors, and among courses. They vote for their choice with tuition dollars. Second, taxpayers who supply support through the appropriation process may be considered customers. Agencies or other sources that contract for sponsored research are also customers. They, too, indicate their preferences with where they choose to spend their dollars. A fourth group which may also be somewhat arbitrarily regarded as "customers" are the peer academics around the world who daily evaluate the merit of the scholarly endeavors of any academic group. This evaluation takes many forms; none are measurable in dollars, but all are vitally important. These include polls of academic quality, citation indices, recommendations to prospective faculty (or graduate students), peer appraisal of research grants, and attempts to hire away individuals. This set of customers is clearly of vital importance to the quality assessment of an academic unit.

In mounting a cost-containment effort, a key goal is to be able to devote the necessary resources to satisfying these groups of "customers." That does not mean that any one university or any one academic unit can possibly simultaneously serve all the potential customers of this kind. This is precisely the area that requires the most thoughtful choice of priorities.

A second major insight from industry experience with quality in the 1980s is that the pursuit of certain dimensions of quality clearly increase costs (e.g., hiring "star" faculty members, increasing the specialized programs available to undergraduates, adding staff to improve the quality of support for any activity). But the pursuit of some dimensions of quality can actually lead to cost reductions. This is a major change from the traditional thinking that "quality (always) costs more." Obviously, an institution dedicated to containing costs while improving quality needs to understand as much as possible about the cost-quality relationship. To be more specific, how can improving quality reduce costs? Several ways are relevant to the university.

First, resources and activities that do not meet real customer needs or help meet and exceed customer expectations are certainly candidates for close review and elimination. An obvious example is in the area of instruction. What do we know about the relationship between student learning and class size? It seems apparent that some faculty members are highly effective in teaching large numbers of students and that the students' expectations are met in such classes, both in terms of what they learn and the quality of experience they have. Do we offer sections of courses, taught by multiple faculty, simply for the purpose of achieving small class size? Might these small sections be inferior (in terms of the learning effect and the human experience

provided) to large classes taught by faculty who are highly competent at this form of teaching? What assumptions about customer needs and expectations are guiding our practice? How accurate are they?

Second, central to the pursuit of quality is elimination of waste in all work processes. Quality improvement always requires identification and analysis of key work processes and elimination of any steps or activities that add little or no value. Because of the stability of the university, many work practices develop and remain unexamined over a long period of time. All planning, budgeting, and approval processes, both within the units and between the units and the central administration, are obvious candidates for process improvement which may reduce costs.

Third, quality can often be improved with a cost-reduction effect by requiring internally provided services to compete with those available in the open market. This requires the hard step of allowing units to treat central services as simply a vendor candidate, as opposed to the sole or preferred vendor of services. This brings the quality and cost discipline of market competition into the institution.

Fourth, to achieve institutional excellence, it is important to identify, for every critical activity, who in the world does it best and make that the target standard of performance for the university. This vital process is commonly called "benchmarking," and it underpins continuous improvement.

It is, of course, common practice to benchmark certain university activities, most notably the quality of research output of various departments. However, to achieve quality while containing costs, benchmarking needs to be extended to other areas such as return on research investment, teaching effectiveness and productivity, and cost and quality effectiveness of support units.

Fifth, to make rapid and substantial progress in simultaneously improving quality and containing costs, the leaders of the university and its units must make quality the centerpiece of their institutional strategy. This is commonly called "strategic quality management." In addition, quality must undergo a transformation of meaning in the minds of these leaders and the members of the university community. It must go from meaning "more and better of everything" (with all the resource requirements that implies) to "being the best in that which we choose to do" (not everything) and "searching relentlessly for means of improving quality that reduce cost or are cost neutral or low cost in character."

The equivalent transformation in industry thinking about quality has been to shift from viewing it as an inspection problem, to an assurance problem, to a management problem, to a strategic opportunity. This series of changes has occurred over approximately sixty years. In the university, it is imperative we follow a less circuitous path and travel it more rapidly.

Fortunately, we can borrow from and build on the work that has been done in industry and elsewhere with those firms that have adopted a "total-quality management" philosophy. From them we get a sense of the possibilities of such an approach. Our challenge will be to adapt these successful endeavors to processes which work in the university environment.

A thoughtful approach that recognizes our differences from industry yet uses quality as a strategic opportunity has many potential benefits for the university. There are many sources to guide our efforts but no road map for instituting a total quality approach in higher education. However, there is good reason to believe that this approach could lead to similar successes in our environment as it has in industry and in health services.

Resource Allocation

Over the past decade, it has become increasingly clear that universities must develop more effective budgeting systems, capable of sustaining their core missions—teaching, research, and service—in the face of the rapid changes occurring in their resource base.

Many universities—particularly public universities—have relied for decades on a system of resource allocation best described as "incremental budgeting" based on a fund-accounting system.[9] In this system, a unit began each fiscal year with the same base level of support it had received the previous year, incremented by some amount reflecting inflation, a unit's additional needs and aspirations, and the university's capacity to provide additional funds. These resources were partitioned into specific funds, more determined by historic traditions than strategic management, e.g., the General and Education Fund, Restricted Fund, Restricted Expendable Fund, Auxiliary Fund, and Capital Fund. Beyond simply serving as an accounting tool, firewalls were constructed between these funds to limit transfers.

This system worked well enough during the three decades following World War II when the increases in public support outpaced inflation. Universities had the additional dollars each year to launch many new initiatives, to do many important new things, without disturbing the resource stream to ongoing activities.

But, with the erosion in public support—particularly state support—that began to occur in the late 1970s and has continued through today, it has become apparent that such incremental budgeting/fund accounting approaches are increasingly incapable of meeting new challenges and opportunities. Indeed, in the face of a more limited resource base, it will eventually lead to the starvation of all university activities.

The inadequacy of incremental budgeting became most apparent at the University of Michigan when the institution experienced a serious financial crisis in the early 1980s, triggered by the loss of a significant fraction of its state support. To respond to this crisis, the University launched a major reallocation effort—the "smaller-but-better" strategy—relying essentially on a highly centralized decision process, assisted by a joint faculty-staff-administrator advisory group.

The "smaller-but-better" strategy, and an associated Five-Year Plan for reallocation, enabled the University to respond to the financial crisis of the early 1980s—albeit with considerable pain and trauma to many campus units. However, it was clear that such a crisis-driven, centralized decision process was not appropriate for the longer term. As state support continued to drop to a smaller and smaller fraction of the University's resource base—indeed, today, it is only about ten percent of our total resource base—the dominant share of the university's resources were generated by the activities of our various units—through tuition and fees, sponsored research support, private giving, and auxiliary activities. It made little sense to continue with a highly centralized resource-allocation scheme. To this end, steps were taken throughout the 1980s to distribute the decision making process for resource-allocation more broadly across the University. The control of various resources and the responsibility for meeting costs were decentralized to the unit level, e.g., staff benefits, student financial aid, retention of account balances, and recharging for internally provided services.

In summary, the more constrained resource base facing higher education during the 1990s and beyond will force many institutions to abandon incremental budgeting if they are to preserve their core values, mission, and character. Universities must retain the capacity to set priorities and allocate resources to these priorities.

There are many ways to do this. One could continue to implement targeted resource reallocation based upon decisions made by the central administration, assisted by faculty advisory groups. But in most universities today, not only are most costs incurred at the unit level, but this is also where most of the institution's revenues are generated. Such centralized resource-management schemes are incompatible with the realities of highly decentralized resource generation and expenditure.

An alternative is to totally decentralize resource management, e.g., an "every tub on its own bottom" strategy, like that used at Harvard. Each unit has full authority and responsibility for its financial operation. A serious drawback is that it is difficult to address university-wide values or objectives with such a highly decentralized approach.

Many private universities and a few public universities, including the University of Michigan, have chosen an intermediate route to decentralize resource management through a system known as "responsibility center management"[10] as an alternative to the more commonly used incremental fund-accounting system. This is a process which shares the resource allocation decisions through a partnership between academic units, administrative units, and the central administration.

More specifically, responsibility center management is aimed at three objectives:

1. To allow resource allocation decisions to be driven by the values, core mission, and priorities of the university rather than dictated by external forces

2. To provide a framework for such decisions, consisting of knowledge of the true resource flows throughout the university

3. To allow both academic and administrative units to participate, as full partners with the central administration, in making these resource allocation decisions

In its simplest form, this system allows units to keep the resources they generate, makes them responsible for meeting the costs they incur, and then levies a small tax on all expenditures to provide a central pool of resources necessary to support central operations (such as the university library) while providing the additional support needed by academic units unable to generate sufficient resources to support their activities.

It is clear that the highly centralized, incremental budgeting accompanied by fund-accounting systems may no longer suffice in the rapidly changing resource environment of the contemporary university. Moving from crisis to crisis or subjecting institutions to gradual starvation through across-the-board cuts simply are not adequate long-term strategies.

Innovation Through Substitution

The fiscal pressures resulting from reduced revenue streams and uncontrolled cost drivers can be substantial. These pressures could lead to negative results within the normal university environment with a long tradition of incremental budgeting. How can such pressures be made positive, and how can the funds that will be needed for new ideas and continuing improvement be found?

The most dramatic change will have to be in the way universities plan. It will be necessary to start all planning exercises with significantly tightened and restrictive revenue assumptions. No longer will it be feasible—or even acceptable—to develop expenditure budgets first and then to close the gap between expenditure plans and revenue projections by a price increase (e.g., tuition). There will have to be much more care in setting priorities, along with a painful acknowledgment that in order to do something new we generally will have to eliminate something old. Innovation by substitution, not growth by incremental resources, will have to become the operative management philosophy. For instance, an academic unit that wishes to embrace a new sub-field of its basic discipline may be required to phase out some other activity in order to make room for the new endeavor.

The necessity for cost containment need not be viewed negatively. Rather, it is an opportunity to restore credibility with the various clients and stakeholders of the university. It is also an opportunity to demonstrate to the potential private supporters of the university that we are serious about cost effectiveness and institutional efficiency. They need to know that their future support will be used wisely in the delivery of instructional, research, and public service programs.

Underlying nearly all of these comments is the fundamental premise that we cannot continue to use “cost-plus” planning. We cannot always or even often start with where we are in a given unit and allocate existing resources to ongoing activities, and then depend on additional resources to undertake a new or innovative activity. We must instead consider eliminating, reducing, or otherwise changing a current activity

to make budgetary room for the new activity which we believe to be important. This process, if effectively utilized, might be termed "innovation-by-substitution." To reduce costs, to improve productivity, to enhance quality in order to generate flexible operating funds does not sound easy. It will not be easy. But it has been done in other environments, and it can be done in the university.

Restructuring and Reengineering

In addition to adopting the lessons of total quality management, universities need to follow industry's lead by asking more fundamental questions. They need to shift from asking "Are we doing things right?" to "Are we doing the right things?" They need to grapple with the difficult challenge of restructuring and re-engineering the most fundamental activities of the institution.

Most institutions have considered the redesign of administrative processes, such as managing financial operations, student services, and research administration. Beyond the concern about costs and quality, there were other driving factors such as "the millennium effect," the fact that much administrative software needed to be redesigned to avoid catastrophic failure when the calendar clicks over from 1999 to 2000.

But since the core activity of the university involves academic processes, this too will eventually need fundamental reexamination. Here most institutions face more serious challenges. First among these is the faculty culture that strongly resists business methods. But there are other fundamental obstacles as well.

For decades universities have defined academic quality in terms of inputs—student and faculty quality, resources, facilities—rather than outputs such as student performance. Rethinking the core academic functions of the university requires a shift in perspective from resources to results. This turns the institutional focus from faculty productivity to student productivity; from faculty disciplinary interests to what students need to learn; from faculty teaching styles to student learning styles. It reconceptualizes the university as learner-centered rather than faculty-centered. It grapples with the most fundamental processes, such as the way decisions are made, how information is shared, how students are taught, how students learn, how faculty work, how research is conducted, and how auxiliary enterprises are managed.

Even those universities that accept the challenge of restructuring academic processes, can be disappointed.[11] The pattern of retrenchment, reorganization, restructuring, and reengineering may not yield substantial productivity gains. Something more may be needed: fundamental transformation of both the university and the higher education enterprise.

The Changing Nature of the Higher Education Enterprise

Universities have long enjoyed a monopoly over advanced education because of geographical location and their monopoly on certification through the awarding of degrees. However, today all of these market constraints are being challenged, as information technology eliminates the barriers of space and time and as new competitive forces enter the marketplace to challenge credentialling.

In the current paradigm, our colleges and universities are faculty-centered. The faculty has long been accustomed to dictating what it wishes to teach, how it will teach it, and where and when the learning will occur. Students must travel to the campus to learn. They must work their way through the bureaucracy of university admissions, counseling, scheduling, and residential living. And they must pay for the privilege. If they complete the gauntlet of requirements, they are finally awarded a certificate to recognize their learning—a college degree. This process is sustained by accrediting associations, professional societies, and state and federal governments.

This carefully regulated and controlled enterprise could, however, be blown apart by several factors. First, the great demand for advanced education and training simply cannot be met by such a carefully rationed and controlled enterprise. Second, the expanding marketplace will attract new competitors, exploiting new learning paradigms, and increasingly threatening traditional providers. Perhaps most important of all will be the impact of information technology, which will not only eliminate the constraints of space and time but will create open learning environments in which the learner has choice in the marketplace.

More specifically, tomorrow's student will have access to a vast array of learning opportunities, far beyond today's faculty-centered institutions. Some of these opportunities will provide formal credentials, others will provide simply knowledge, still others will be available whenever the student—more precisely, the learner—needs the knowledge. The evolution toward such a learner-centered educational environment is both evident and irresistible.

As a result, higher education is likely to evolve from a loosely federated system of colleges and universities serving traditional students from local communities into, in effect, a knowledge and learning industry. Since nations throughout the world recognize the importance of advanced education, this industry will be global. With the emergence of new competitive forces and the weakening influence of traditional regulations, higher education is evolving like other "deregulated" industries, e.g., health care or communications or energy. In contrast to these other industries, which have been restructured as government regulation has disappeared, the global knowledge industry will be unleashed by emerging information technology that releases education from the constraints of space, time, and credentialling monopoly. As our society becomes ever more dependent upon new knowledge and upon educated people—knowledge workers—we need to recognize that this global knowledge business will be one of the most active growth industries of our time.

Many in the academy undoubtedly view the depiction of the higher education enterprise as an "industry" or "business" with derision or alarm. But as higher education facilities begin to operate in a highly competitive, increasingly deregulated, global marketplace, we will require a new paradigm for how we think about postsecondary education. No one, no government, is in control of the higher-education industry; instead, it responds to forces in the marketplace.

Will this restructuring of the higher education enterprise really happen? If you doubt it, just consider the health care industry. While Washington debated federal programs to control health care costs and procrastinated taking action, the marketplace took over with new paradigms such as managed care and for-profit health centers. In less than a decade the health care industry was totally changed. Today, higher education is a $175 billion a year enterprise. It will almost certainly be "corporatized" similarly to health care. By whom? By state or federal government? Not likely. By traditional institutions such as colleges and universities working through statewide systems or national alliances such as AAU or ACE? Also unlikely. Or by the marketplace itself, as it did in health care, spawning new players such as virtual universities and for-profit educational organizations? Perhaps. Just note a brief passage from a recent venture capital prospectus analyzing possible investments in education:

> *"As a result, we believe education represents the most fertile new market for investors in many years. It has a combination of large size (approximately the same size as health care), disgruntled users, lower utilization of technology, and the highest strategic importance of any activity in which this country engages . . . Finally, existing managements are sleepy after years of monopoly."*

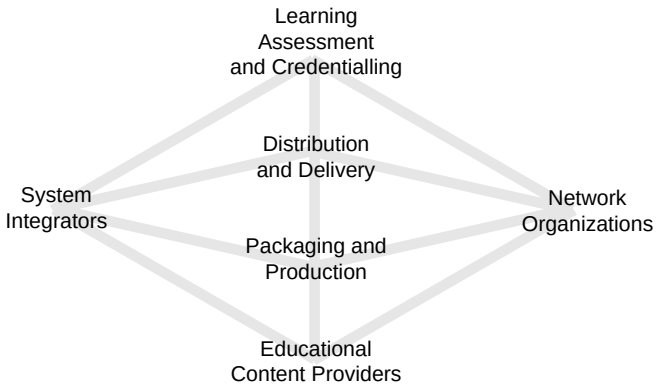
Unbundling

The modern university has evolved into a monolithic institution controlling all aspects of learning. Universities provide courses at the undergraduate, graduate, and professional level; they support residential colleges, professional schools, lifelong learning, athletics, libraries, museums, and entertainment. They have assumed responsibility for all manner of activities beyond education—housing and feeding students, providing police and other security protection, counseling and financial services . . . we even see power plants on many midwestern campuses!

Today comprehensive universities, at least as full-service organizations, are at considerable risk. These institutions have become highly vertically integrated. We are already beginning to see the growth of differentiated competitors for many of these activities. Universities are under increasing pressure to spin off or sell off or close down parts of their traditional operations in the face of this new competition. They may well find it necessary to unbundle their many functions, ranging from admissions and counseling to instruction and certification.

An example might be useful here. Consider the rapid growth of cyberspace or virtual universities, institutions without a campus or faculty that provide computer-mediated distance education. The virtual university might be viewed as the "Nike approach" to higher education. Nike, a major supplier of athletic shoes in the United States and worldwide, does not manufacture the shoes it markets. It has decided that its strength is in marketing, and that it should outsource shoe manufacturing to those who could do it better and cheaper. In a sense, the virtual university similarly stresses marketing and delivery. It works with the marketplace to understand needs, then it outsources courses, curriculum, and other educational services from established colleges and universities—or perhaps individual faculty—and delivers it through sophisticated information technology.

There are many other examples. While we are very good at producing intellectual content for education, there may be others who are far better at packaging and delivering that content. While in the past universities have had a monopoly on certifying learning, there may be others, whether they be accreditation agencies or other kind of providers, more capable of assessing and certifying that learning has occurred. Many of our other activities, e.g., financial management and facilities management, are activities that might be outsourced to specialists.



Clearly higher education is ripe for the unbundling of activities. Universities, like other institutions in our society, will have to come to terms with what their true strengths are and how those strengths support their strategies—and then be willing to outsource needed capabilities in areas where they do not have a unique competitive advantage.

The Emergence of a Commodity Market

Throughout most of its history, higher education has been a cottage industry. Individual courses are a handicraft, made-to-order product. Faculty members design from scratch the courses they teach, whether they be for a dozen or several hundred students. They may use standard textbooks from time to time—although many do not—but their organization, their lectures, their assignments, and their exams are developed for the particular course at the time it is taught. In a very real sense, the industrial age has largely passed the university by. Our social institutions for learning continue to favor programs and practices based more on past traditions than upon contemporary needs.

The nature of higher education will be changed by our ability to introduce new, more effective avenues for learning, rather than just new media in which to convey information. This will bring with it new modes of organization, relationships among universities and between universities and the private sector. The individual handicraft model for course development may give way to a much more complex method of creating instructional materials. The standard packaging of an undergraduate education into "courses" in the past was required by the need to have all the students in the same place at the same time. This may no longer be necessary with new forms of learning based on computer networks.

As we have noted, universities—more correctly, faculty—are skilled at creating the content for educational programs. Indeed, we might identify this as one of their core competencies. But they have not traditionally been particularly adept at "packaging" this content for mass audiences. To be sure, many faculty have written best-selling textbooks, but these have been produced and distributed by textbook publishers. In the future of multimedia Net-distributed educational services, the university may have to outsource both production and distribution from those most experienced in reaching mass audiences—the entertainment industry.

As distributed virtual environments become more common, one might even conceive of a time when the classroom experience itself becomes a "commodity," provided to anyone, anywhere, at any time—for a price. You want to take Vincent Scully's course in history of architecture? Just sign up here and become an "avatar" student, as Professor Scully leads you and other virtual classmates on a fascinating journey through the ages, touring through 3-D simulations of great architectural masterpieces. How about Stephen Jay Gould's "Life on Earth" course? Available as well. If students could actually obtain the classroom experience of these talented teachers, why would they want to take classes from the local prof—or, in many cases, the local teaching assistant?

In such a commodity market, the role of the faculty member would change very substantially. Rather than developing content and transmitting it in a classroom environment, a faculty member might have to manage a learning process in which students use an educational commodity, e.g., the Microsoft Virtual History of Architecture Course. This would require a shift from the skills of intellectual analysis and classroom presentation to those of motivation, consultation, and inspiration. Hello, Mr. Chips!

Mergers, Acquisitions, and Hostile Takeovers

The perception of the higher education enterprise as a deregulated industry has several other implications. As we have noted, there are over 3,600 four-year colleges and universities in the United States, all of a great diversity in size, mission, constituencies, and funding sources. Not only are we likely to see the appearance of new educational entities in the years ahead, but as in other deregulated industries, we may experience a period of fundamental restructuring of the enterprise itself. Some colleges and universities might disappear. Others could merge. Some might actually acquire other institutions.

A case in point: The Big Ten universities (actually there are twelve, including the University of Chicago and Penn State University) have already merged many of their activities, such as their libraries and their federal relations activities. They are exploring ways to allow students at one institution to take courses—or even degree programs—from another institution in the alliance in a transparent and convenient way. Could one imagine the Big Ten universities becoming a university system "of the heartland of America"?

One might also imagine affiliations between comprehensive research universities and liberal-arts colleges. This might allow the students enrolling at large research universities to enjoy the intense, highly personal experience of a liberal arts education at a small college while allowing the faculty members at these colleges to participate in the type of research activities only occurring on a large research campus.

One might even imagine a Darwinian process emerging with some institutions devouring their competitors in "hostile takeovers." All such events have occurred in deregulated industries in the past, and all are possible in the future we envision for higher education.

Perhaps the most profound question of all concerns the survival of the university in the face of the changes, the emergence of new competitors. Could an institution such as the university which has existed for a millennium disappear in the face of such changes? As William Wulf suggests, if you have doubts, just think of the family farm, a social institution existing for centuries which has largely disappeared over the past three decades.[12]

Conclusion

While some may continue to debate, to others the choice has become clear. We can either accept the risks and the uncertainties of attempting to transform the higher education enterprise to serve a society with new needs and new imperatives. Or we can wait for the market to reshape our institutions, perhaps even relegating them to a backwater role in the emerging global knowledge industry. Clearly, embracing the status quo, treading water, also has very real risks.

The learners of our future society will demand that their educational experiences prepare them for a lifetime of learning opportunities, fused both with work and with

life. They will seek just-in-time and just-for-you learning through networked organizations. They will seek the integration of timeless and timely knowledge.

The system of higher education that emerges in the decade ahead will almost certainly be far different than today's. Higher education will either transform itself or be transformed as financial imperatives, changing societal demands, emerging technologies, and new competitors reshape the knowledge enterprise, changing in the process how colleges and universities organize and deliver learning opportunities as well as how they structure and manage their institutions.

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[2] P. M. Callen and J. E. Finney, eds., *Public and Private Financing of Higher Education: Shaping Public Policy for the Future* (Phoenix: Oryx Press, 1997).
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[4] Robert Zemsky and William Massey, "Toward an Understanding of Our Current Predicaments," *Change*, November/December, 1995, pp. 41- 49.
[5] James L. Fisher and Gary H. Quehl, *The President and Fund Raising* (American Council on Education, MacMillan, New York, 1989) 238 pp.
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[7] Gilbert R. Whitaker, Chair, "Enhancing Quality in an Era of Resource Constraints," Report of the Task Force on Costs in Higher Education, The University of Michigan, March, 1990.
[8] Daniel T. Seymour, *Causing Quality in Higher Education* (American Council on Education, MacMillan, New York, 1992).
[9] Frederick E. Balderston, *Managing Today's University: Strategies for Viability, Change, and Excellence* (Jossey-Bass, San Francisco, 1995) 398 pp.
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[11] Patricia J. Gumport and Brian Pusser, Academic Restructuring: Contemporary Adaptation in Higher Education, Chapter 23 in M. Petersen, D. Dill, and L. Mets, Eds., *Planning and Management for a Changing Environment: A Handbook on Redesigning Post-Secondary Institutions* (Josey-Bass, San Francisco, 1997).
[12] William A. Wulf, "Warming: Information Technology Will Transform the University," *Science and Technology,* Summer 1995, pp. 46-52.

Chapter 13 *The Cost, Price, and Value of a College Education*

Perhaps the most contentious issue in higher education today involves its cost. Students and parents, taxpayers and politicians, and the media and public-at-large all have raised concerns about the cost of a college education. They question spiraling tuition levels, the erosion of federal financial aid, and managerial waste and duplication. Some have even begun to wonder whether a college education is worth the investment. While the cost of a college education is a subject of great importance, it is also a subject surrounded by as much myth as reality.[1]

For this reason, it seems important to begin by reviewing some of the more common concerns expressed about the costs of a college education.

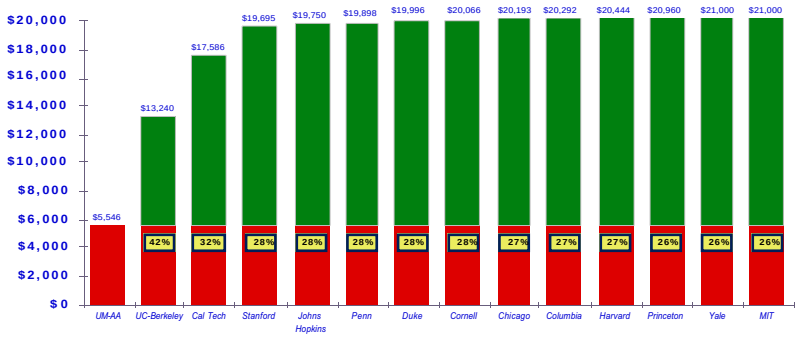
Common Concerns about the Costs of a College Education

Some of the more common concerns expressed about the costs of a college education are listed below.

Concern: *Tuition levels at most universities—including the University of Michigan—are out of control.*

Response: In reality, tuition levels at the University of Michigan—and at most *public* institutions—have been quite low and quite stable for some time. This is a very important point since most of the panic has in fact been generated by the very high tuition levels of a few highly selective private institutions. It is true that at some universities such as Harvard, Stanford, and MIT, tuition levels have soared to $20,000 per year or more. Even at regional private colleges such as Kalamazoo and Albion, tuition levels now exceed $14,000 per year. In sharp contrast, the tuition levels at major public universities, including the University of Michigan, have remained both quite stable and quite modest over the 1970s and 1980s, amounting to less than 25 percent of private tuition levels, as noted in the figure below.

UM Tuition Cost for a Michigan First Year Undergraduation in Relation to Tuition at Other Top Universities 1995-96



During the decade from 1986 to 1996, the tuition rates for resident undergraduates at the University of Michigan increased by 41 percent. This is not only comparable to or less than most other public and private institutions across the nation (which have seen increases in the 40 percent to 60 percent range), but it is less than the higher education inflation rate of 45.6 percent during this period. Hence, in real terms, tuition levels at the University of Michigan—and at other *public* institutions in the state—have been quite stable.

Concern: *Tuition levels at the University of Michigan are high relative to other institutions.*

Response: Contrary to popular belief, tuition levels at the University of Michigan and at Michigan's other public universities are relatively low and comparable to those of most other public universities throughout the nation. The roughly $3,000 to $6,000 per year of annual tuition fees charged to resident undergraduates enrolling in Michigan's public universities represents a bargain when compared to all other alternatives: public or private colleges and universities across the nation. For example, Michigan students face far higher tuition levels at peer public institutions such as the University of California at Berkeley or the University of North Carolina since they would be assessed nonresident tuition levels in the range of $8,000 to $15,000 per year.

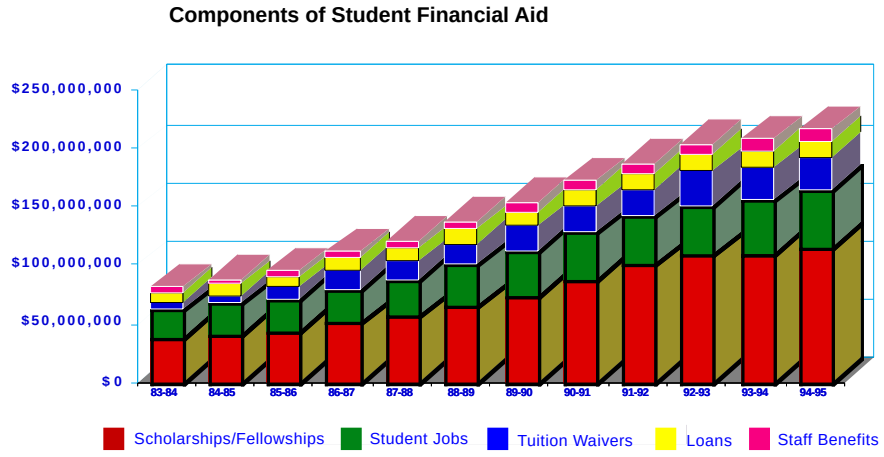
There are other interesting comparisons. It is now estimated that 60 percent to 70 percent of college-age students own an automobile. Ironically, the cost of a degree at a public university in this state is less than the cost of that car.

Perhaps because the absolute tuition levels at public institutions are so low, it is easy to become confused in a comparison of costs by simply noting percentage increases.

Remember that a large percentage of a small number is still a small number. Further, it should be noted that the true cost of higher education at a public institution is not tuition; rather, it involves those other costs associated with room and board, books, travel and other expenses. Indeed, tuition represents less than 25 percent to 30 percent of the cost of a college education to Michigan residents.

Concern: *Increasing tuition levels are pricing higher education out of reach of all but the wealthy.*

Response: Again, this statement is incorrect. In fact, a college education today is probably more affordable to more Americans than at any period in our history. This is due in part to the availability of effective financial aid programs used to assure access to public higher education for those without adequate financial resources. For example, the University of Michigan has long had a policy that guarantees all Michigan residents enrolling in the University that they will be provided adequate financial aid to meet their needs until graduation. Roughly 60 percent of UM students receive some form of financial aid. This amounted to over $240 million in 1996 in the form of grants, loans, and work-study support.



The irony here arises from the fact that one of the primary sources of financial aid is from the revenue generated by tuition, since state support is inadequate for this purpose. In a sense, public universities in our state, just as other universities across the nation, have asked those more affluent families to pay a little bit more of the true cost of education for their students in order to provide the opportunity for those less

fortunate to attend. Hence, by artificially constraining tuition levels to unrealistically low levels, state government in fact cripples financial aid programs, thereby excluding those students who are less fortunate.

Concern: *Tuition rates are increasing faster than the Consumer Price Index, evidence of the fact that universities are inefficient and exploiting the marketplace.*

Response: One of the frustrating facts about modern economics is that the value of the dollar is not constant; it is continually eroding over time through the effects of inflation. Consequently, the price of essentially everything in our society increases from year to year, reflecting the fact that the dollar has less value. It would be unrealistic to expect that tuition—or the price of a car, groceries, or anything else—would remain constant from year to year (unless, of course, costs held steady or actually declined, which they almost never do).

When considering various ways to measure increases in costs, it is important to identify the appropriate index that measures cost increases on a national basis. The most common cost indicator is the Consumer Price Index (CPI), which is designed to measure the cost-of-living increase for urban wage and salary earners. This index measures the increase in costs of meeting fundamental needs, including housing, food, and clothing. The CPI shopping cart does not reflect the kinds of goods that a university typically purchases. Instead, our institutions must fill our carts with Apples (computers)—not apples (fruit). We also must hire top-flight faculty, equip labs with sophisticated scientific instruments, and acquire specialized journals to sustain the scholarship in our institutions. Our instructional programs must evolve to reflect a rapidly expanding knowledge base in most fields.

Concern: *The taxes paid by families should be sufficient to offset tuition charges in public colleges and universities.*

Response: Very few families pay an amount of state taxes earmarked for education that would cover the costs of educating their children. When families send their children to public universities, they are being heavily subsidized by the taxes paid by others who do not participate in this societal benefit.

As an illustration, consider the case of the University of Michigan. Roughly 10 cents of each dollar paid in state and local taxes goes to finance higher education in Michigan. Hence, a family with an Adjusted Gross Income of $100,000 would pay about $4,000 in total state taxes and hence $400 per year in taxes earmarked for higher education. Over an earning career of 30 years, they would therefore pay accumulated taxes for higher education of $12,000, which is not even the true cost for one

year of a college education, which amounts to roughly $18,000 at the University of Michigan. It is clear that others are shouldering the real costs for educating the children of state residents in a Michigan public university.

Concern: *The price of a college education is no longer worth it.*

Response: It is clear that money invested in a college education results in one of the highest returns of any investment a student or a family can make. College graduates will earn roughly three times as much during their lifetimes as high school graduates. Across all fields, the net return (after tax) of an undergraduate education is estimated to exceed 10 percent per year. In professions such as medicine, law, and engineering, the rate of return is far higher.

Separating Myth from Reality

The facts therefore suggest a more complex situation than most people are aware of.[2] During the decades following World War II, public support of higher education significantly increased, through appropriations to public universities from state and local governments and from major federal programs aimed at supporting campus-based research, student financial aid, and specific disciplines such as the health professions. As a result, the fraction of the costs of a college education paid by families through tuition declined steadily until about 1980.

However, as we noted earlier, there was a major policy shift in the 1970s toward high-cost/financial-aid subsidized higher education along with an erosion in public support as other social priorities such as health care and corrections began to compete for state and federal appropriations. This has shifted more of the burden for the support of higher education from the taxpayer to the student (or parent).

More specifically, the average tuition per student, adjusted for inflation, has roughly doubled over the past twenty years. One can clearly see that as public support has stagnated in the face of rising costs per student, tuition has been used to close the gap between revenues and expenditures.[3]

Although the share of the costs of a college education borne by students and parents today has only returned to levels more typical of the 1950s than the 1970s, the increase in tuition associated with declining public support of higher education has stimulated strong public concerns. Although this shift from public to private support of higher education has not limited access to higher education, it certainly has constrained the choice of institutions available to lower-income students.

To separate myth from reality, we need to examine carefully two issues relating to the cost of a college education. First, we must understand the relationship between:

- What it costs a university to operate
- The price a student actually pays
- The value received by students through this education

Second, we need to consider the issue of just who should pay for a college education:

- Parents
- Students
- State taxpayers
- Federal taxpayers
- Private philanthropy
- The ultimate consumer (business, industry, or government)

As we analyze these two questions in more detail, the following conclusions will become apparent: In general, quality and cost are positively correlated in higher education—as they are with most other activities. In the end, someone must pay the true costs of quality in higher education. The real debate today is less about cost than about who should pay for a college education. In this context, the University of Michigan posed two questions for state government:

Question 1: *How good do we want public education to be in the State of Michigan?*

Higher education is one of the most competitive industries in America, with over 3,600 institutions competing for students, faculty, and funds— not to mention competition faced from the international marketplace. Hence, if we decide how good we want our institutions to be, then we can arrive at a quite accurate estimate of how much we will have to invest to achieve that quality. This estimate then will determine an investment per student and per faculty necessary to achieve a certain level of quality.

Do we want the University of Michigan to be as good as Harvard or Stanford? To compete economically would take about $50,000 per year, per student. Do we want the University of Michigan to compete with Berkeley or UCLA or North Carolina? That will require about $30,000 per year. Should we compete with Ohio State or Minnesota? Then it will take about $18,000 per student, per year. Perhaps we would like to see the University of Michigan compete with institutions of somewhat lesser reputation and distinction, such as Mississippi or Montana? Then this would require only about $10,000 per year. It is clear that if our state wants to pay only bargain-basement prices for education, then we are clearly going to end up with bargain-basement quality.

Question 2: *Who is going to pay for this quality?*

Will the state taxpayer pay for it? The federal taxpayer? Parents? The student (through loans and deferred payments)? Private philanthropy from industry, foundations, alumni, and friends?

Try as we might, we have been able to find no other options. Someone has to pay to achieve quality. And unfortunately, it seems that whether it is public tax dollars or the private dollars of parents and their students, fewer and fewer people are willing to step up and accept this responsibility.

The Costs of a College Education

In the previous chapter we considered the costs associated with higher education in some detail. Here we summarize several of the most important conclusions from that discussion.

A number of factors drive the costs of a college education: salaries paid to faculty and staff; costs of building and maintaining instructional facilities; infrastructure costs, such as libraries, computer centers, and laboratories; and costs of various support and administrative services. Costs of a college education are increasing for a number of reasons. Colleges are both labor- and energy-intensive operations; costs associated with these operations have increased most rapidly over the past two decades. In addition, colleges must compete in a professional labor market, which always sees costs increasing somewhat more rapidly than the Consumer Price Index. The more selective colleges also face an intensely competitive marketplace as they compete for the best faculty, the best students, and the resources to fund their activities from the federal government and the private sector.

The price of goods and services needed by higher education has also increased rapidly. The cost of books and periodicals rose by roughly 130 percent during the 1980s. The cost of supplies and materials also increased by roughly 70 percent, and services provided by outside contractors increased by 90 percent.[4] Add to this the rapidly escalating costs of sophisticated technology such as computers, laboratory equipment, and medical equipment, and it is clear that higher education is particularly sensitive to rapidly increasing costs.

Federal financial aid programs eroded dramatically during the 1980s, dropping in real terms by roughly 40 percent.[5] Colleges have coped with this steep decline in student financial aid by allocating more institutional funds to financial aid support. They have raised this extra money by cutting other costs, increasing fund raising, and, of course, by increasing tuition.

Because of their wide array of activities, universities are particularly vulnerable to cost increases driven by state and federal regulations in areas such as Occupational Safety and Health Administration requirements, Americans with Disabilities Act requirements, and financial and audit controls. Furthermore, most universities have undertaken a series of initiatives to respond to the needs of society across a wide range of fronts, including affirmative action, economic development, and K-l2 education.

Another reason for the rising costs of education is simply that as the knowledge base expands, universities must expand and shift their activities and investments. In many fields we are finding the amount of new knowledge doubles every few years, and we must reflect this in our education. Therefore, the costs associated with the educational infrastructure in many of these fields, such as computers and laboratory instrumentation, all necessary for the training of tomorrow's professionals, also have escalated dramatically. Since both the amount and the nature of education provided to students moving into the professions are changing dramatically, the cost of education will reflect these changes.

Most universities have taken steps such as total quality management and restructuring in an effort to contain costs, though such efforts are rarely acknowledged by critics of higher education. The media, too, sends a mixed message; even as they criticize the high cost of a college education, they are most complimentary of just those institutions with highest costs.

A case in point: Each year *U. S. News and World Report* devotes an issue to ranking the quality of the undergraduate education offered by various universities.[6] These rankings, based on a complex weighting of quantitative comparisons of universities, are taken very seriously by students and parents. They also represent a lucrative source of income for *USN&WR*. Yet, when one analyzes the ranking scheme in detail, it becomes evident that those institutions with the highest rankings are inevitably those institutions with the highest costs and highest tuition levels. The *USN&WR* rankings are so strongly correlated with measures of university expenditures on a per-student or faculty basis that public universities have essentially dropped entirely out of their rankings of leading institutions. It is ironic that the same magazine, *USN&WR*, has been one of the most strident critics of the increasing costs of higher education. Even as they voice such criticism, they send the message through their rankings that the more a university spends—and charges—the more highly it will be ranked. In a perverse sense, the magazine itself has become one of the more significant cost drivers in higher education!

The Price Paid by Students

A variety of factors determine the cost of a college education to students and their parents: the tuition charged for instruction, room and board, the cost of books, travel, and other incidental expenses. However, the most immediate concern here is the cost of tuition itself, since this represents the price that the institution charges for the education it provides.

Public and Private Subsidies of Educational Costs

At the outset, it must be recognized that no student pays the full cost of a college education. All students at all universities are subsidized to some degree in meeting the costs of their education through the use of public and private funds. For example, through the use of private gifts and income on endowment, many private institutions are able to set tuition levels (prices) at one-half or one-third of the true cost of the education. Public institutions manage to discount tuition "prices" even further to truly nominal levels—to 10 percent or less of the real cost—through public tax support and financial aid programs.

For example, the 1996-97 resident undergraduate tuition at the University of Michigan was about $6,000. This represents 30 percent of the roughly $18,000 it costs to educate a student for one year, with most of the subsidy coming from state taxpayers

and private giving. Furthermore, when this tuition is discounted by the financial aid available to in-state students, the true average tuition is only about $3,000! Out-of-state students, with much larger tuitions of $17,000 per year, are paying about 90 percent of the cost of their education. Even these students are subsidized, but in this case through private giving.

Hence, the price charged to students, i.e., tuition, is directly dependent upon the subsidy of educational costs from public and private sources. As we have noted, during the 1950s, 1960s, and 1970s, the rapid growth in the population of college-age students, the baby boomers, coupled with a social agenda that gave high priority to education, stimulated strong public support for higher education at the local, state, and national level. As a result, educational costs were heavily subsidized and tuition levels remained relatively low. As the relative share of college costs financed from public sources fell during the 1980s and 1990s, tuition levels have inevitably increased, and the share of college costs borne by families has returned to levels more typical of the 1940s and 1950s.

But over a longer term, another economic change has had a profound effect on tuition subsidies. Historically, while the costs of higher education have generally increased somewhat more rapidly than the inflation, the average family income has tended to keep pace with these increases. As long as family income increased at about the same rate as tuition, the costs of a college education were tolerable since they remained at roughly the same fraction of family expenses. In the 1980s, however, just at about the time that the public subsidy of higher education began to slow, the rate of increase of family income began to decline as well. Hence, the shift of the burden for meeting the costs of a college education from the taxpayer to the family occurred at a most inopportune time.

Financial Aid

While many families can still afford the costs of a college education for their children at public or even private universities, many others are not so fortunate. Yet, despite increasing tuition levels, today a college education is more affordable to more Americans than at any period in our history, as evidenced in part by the fact that enrollments have never been higher with over two-thirds of Americans currently receiving some form of higher education. This is due in part to the availability of effective need-based financial aid programs. In truth, the real key to providing access to a college education for Americans has not been through low tuition, that is, prices, but through need-based financial aid programs.

A case in point: The University of Michigan has long had a policy that guarantees that all Michigan residents enrolling in the University will receive adequate financial aid to meet their needs until graduation. Roughly 60 percent of UM students receive some form of financial aid. By the mid-1990s, this amounted to more than $240 million per year in the form of grants, loans, and work-study support.

Hence, perhaps a better way to look at the true cost of a college education is to contrast the publicized (or "sticker price") tuition with the average actual "net" tuition, calculated by subtracting out University financial aid. For Michigan resident undergraduates, the "sticker price" tuition in 1994-95 was $5,500. On average, the University provided $1,650 in scholarship aid per student and another $1,950 in work-study-loan aid from centrally administered accounts. As a result, the average "discounted" tuition paid by Michigan resident undergraduates was $1,900.

"Sticker Price" Tuition for 1994–95:	$5,500
– Average scholarship aid	$1,650
– Average work-study/loan aid	$1,950
"Discounted" Average Tuition	$1,900

Even this estimate is conservative, since the University provides extensive financial aid through its individual schools and colleges in addition to centrally administered programs.

Carrying out a similar analysis for the past decade, it is clear that strong financial aid programs kept the actual tuition paid by most undergraduates quite low throughout the 1980s. If constant rather than current dollars are used, the "average net tuition" paid by resident undergraduates has actually dropped since the 1980s because of strong financial aid programs.

As we have noted, *all* students at *all* universities, public and private, are heavily subsidized by both public and private funds. As state and federal support of financial aid has deteriorated, it has been necessary to compensate by raising tuition levels, particularly to protect the financial aid programs critical to low income families. Put another way, public universities, just as private universities, have asked more affluent families to pay a bit more of the true cost of education for their students so that they can avoid cutting the financial aid programs that enable less fortunate students to attend.

Hence there is another rationale for increasing tuition levels in public institutions. When public tax support for higher education declines and becomes inadequate to provide broad access to quality education, then in effect tuition serves as a surrogate and highly progressive tax. This tax is levied on those with the capacity to pay more than their fair share of the costs so that those less fortunate are not denied access. Those who in the past would have been supporting higher education through stronger tax support are today asked to provide this support through higher tuition payments instead. Of course, since these higher tuition levels still do not cover the full cost of educating their children, higher income families are not subsidizing the education of lower income students. Rather, they are simply paying through tuition that which they had previously paid through taxes for the support of education.

Unfortunately, students and parents have also been caught by a significant shift in the nature of federal financial aid programs at the same time as tax support of public higher education has declined. In 1979 two-thirds of federal assistance to students came in the form of grants and work-study jobs, with the remaining one-third in the form of subsidized loans. Today, the reverse is true; grants typically comprise only one-third of a student's federal aid award, and the remaining two-thirds is extended in the form of loans. Although federal financial aid remains important, most of the growth over the past decade has been in the form of loans rather than grants. The percentage of tuition covered by federal financial aid for low-income students has decreased over time, while institutional grants have increased rapidly for students from both low- and middle-income groups.

The nature of the federal loan program shifted during the early 1990s when Congress made the rules of eligibility for loan subsidies more lenient so that middle- and upper-middle-income students could participate.[7] At the same time, the real funding declined for federal grant programs such as the Pell grants, which were targeted to low-income students. In effect, this conversion of federal financial aid programs from grants to loans has shifted support away from low-income students and toward the middle class.

Of course, a long tradition of American higher education has been the use of private gifts, including income on endowment, to provide student financial aid. Since this support has generally been provided by alumni, it represents an effort by members of one generation to provide the next with the same opportunities that they enjoyed. Some colleges have attempted to formalize this "generational responsibility" by asking all scholarship recipients to sign statements acknowledging their moral obligation to repay the support at a later time through private giving, but these approaches have enjoyed only limited success. Private support of financial aid, while very important, continues to be a voluntary and rather random phenomenon.

Most recently, as part of the agreement reached between Congress and the Clinton administration on balancing the federal budget, major new tax credits and deductions have been introduced to help middle-class students and families meet the costs of a college education. Yet, while these actions amount to more than $40 billion of national investment in higher education, some contend that it is misplaced, since these tax benefits will flow to those who already have adequate capacity to pay for a college education. Although the size of the Pell grants to economically-disadvantaged students was also increased, for the first time in many years, the share of the dollars flowing to low income students and families in the new agreement is relatively small.

Setting Tuition Levels

Determining tuition rates involves a complex set of considerations including:

- the actual costs of instruction at the institution
- the availability of other revenue sources that can be used to subsidize instructional costs (tax support, private giving, and income from endowment)
- competition with other institutions
- political factors

These factors can be woven together in the determination of tuition levels in several ways:

Traditionally, tuition levels have been determined by:

1. First, estimating the operating costs for the academic programs of the institution

2. Next, estimating the available revenue from other sources such as state appropriation, federal support, interest income, and private giving

3. Finally, determining that level of tuition necessary to make up the difference between projected operating costs and available income from other sources

For the purposes of illustration, consider how the University of Michigan has traditionally set its tuition. One of the frustrating facts of life about modern economics is that the value of the dollar is not constant; it is continually eroding over time through the effects of inflation. Consequently, the price of essentially everything in our society increases from year to year, reflecting the fact that the dollar has less value. The same is true for the costs faced by colleges and universities. As a research-

intensive university, the University of Michigan has generally experienced cost increases of 1 percent to 2 percent above the CPI. For purposes of this narrative, let us assume a CPI of 4 percent for a typical year in the mid-1990s; our projected cost increase would be 6 percent.

That means that if the University were to continue to do all of the things that it did in the previous year—educate the same number of students, maintain the same number of programs, and support the same number of faculty and staff, it would have to achieve an increase in total revenue of 6 percent. Assume that the state appropriation increases by only 3 percent and assume further, as is presently the case, that tuition revenue, when financial aid is netted out, is roughly comparable to the state appropriation. In this case, a 9 percent increase in tuition would be necessary to achieve the 6 percent total revenue increase target.

There are other factors that can artificially constrain tuition. Market forces constrain non-resident tuition levels to levels similar to those at peer private institutions. While there are not strong market pressures on Michigan resident tuitions because of their relatively low levels, political factors such as public opinion and government intervention often constrain tuition levels.

Using this model, tuition is related to the costs of conducting the activities of the university and the resources available. Revenue from tuition fits together with other revenues in a carefully balanced structure. When any one source of income falls behind, other sources must take up the slack. In fact, the erosion of support from other sources, especially falling state appropriations and reductions in financial aid, has driven increases in tuition rates.

The availability of state appropriation and the responsibilities characterizing public institutions suggest a somewhat different way to set tuition levels for these institutions. Suppose that the real cost of a University of Michigan undergraduate education is roughly $18,000 per year. Let us further assume that the State of Michigan earmarks roughly 60 percent of its appropriation of $280 million for the support of undergraduate instruction, with the remainder going to graduate and professional education, research, and public service. This would provide state support for undergraduate education at a level of roughly $168 million. At $18,000 per student, the state would be entitled to 9,000 fully funded undergraduate student positions. However, the University can offer the state a "discount" price by taking into account in-state tuition, say at the current level of $6,000. That means that the actual cost to the state would be $18,000 minus $6,000 tuition which results in a cost of $12,000. At this reduced price, the state funding of $168 million divided by $12,000 would support 14,000 undergraduate student positions.

In fact, the University of Michigan currently educates 16,000 resident undergraduates. From this perspective, the State of Michigan is not paying its share of the true costs of a Michigan education. To put it another way, for the State to really be able to afford 16,000 resident undergraduate student positions, one would be forced to readjust the tuition charge for resident undergraduates to more than $8,000. In this approach, one can imagine a negotiation in which the University would "sell" the state undergraduate positions at the actual costs discounted by tuition. If the state wished to have lower tuition for state residents without increasing its appropriation, then the number of available positions would have to be decreased.

A similar calculation can be applied to determine the relationship between tuition and enrollment levels for non-Michigan students. Here one would take into account the current state policy that tax dollars paid by Michigan citizens would not be used to subsidize the educational costs of non-Michigan residents. The University would be required to operate as a private institution as far as non-Michigan students are concerned. From this perspective, tuition costs for out-of-state students at the University of Michigan would be set at a rate comparable to those at private universities across the nation.

So far we have considered only "cost-driven models" for setting tuition. This has been the most common approach used in higher education for many years. There is an alternative approach in which an institution determines available revenue—first setting tuition at some reasonable amount reflecting market demand—and then ensures that operating costs not exceed the dollars available. This "revenue-driven" model assumes that the variables that can be adjusted are not tuition or other revenue sources, e.g., prices, but rather institutional characteristics such as enrollment, program quality, and program breadth and diversity. Such an approach, of course, assumes that the institution has the management flexibility to cut costs.

While such revenue-driven models are most appropriate for consumer products where price is truly determined by the marketplace, they may be not quite as adaptable for higher education where the marketplace is rarely allowed to operate in a free fashion to determine tuition levels. Indeed, if it were allowed to do so, tuition levels at the most selective private institutions would be far higher than even their present levels, since there would clearly be a demand for such high-priced educations.

There are constraints on the internal actions an institution can take to control costs. The impact of tenure or collective bargaining agreements limits the institution's capacity to reduce faculty size. Political pressures can influence the maintenance enrollment levels and program breadth. And, as a matter of fact, many institutions

are already operating at the margin in terms of cost reduction—at least within the current higher education paradigms. Ironically, the only unconstrained variable that many institutions can adjust is quality. Efforts to reduce costs to stay within a given budget can sometimes only be achieved by accepting lower quality standards. In sharp contrast to the business sector, revenue-driven models of higher education could well lead to significant erosion in program quality.

Finally, it must be noted that such revenue-driven models simply may not be applicable to public institutions such as the University of Michigan. In these institutions, tuition levels are set by political factors—not by actual cost, level of state appropriation, or by the market. We have seen that determining tuition levels by discounting actual costs by the amount received in state appropriations would yield resident tuition levels of more than $7,000 per year, significantly higher than their present level of $5,500.

As we have noted, public universities remain committed to providing access to a quality education for all students with the ability to succeed. However, the capacity to honor this commitment has shifted from adequate public support through tax revenues to the use of strong financial aid programs, sustained in part by higher tuition levels.

Political Factors

While the determination of private university tuition is determined largely by the marketplace, those of public universities involve a host of complex political factors. Indeed, one of the most difficult, dangerous, yet essential tasks of public university leadership in these days of eroding public support is to persuade the powers-that-be that tuition levels must be increased, both to protect quality and, ironically enough, to preserve access. As traditional local, state, and federal tax support of higher education wanes, it is essential that those students and families who can afford to support most of the cost of a college education be asked to do so. Otherwise, those who are simply not able to afford these opportunities will never receive the financial aid to make a college education possible.

Each spring during my presidency of the University of Michigan, we would once again fight the battle to raise tuition for in-state students. While we were committed to constraining costs, we also were not prepared to sacrifice the quality of the University in an effort to maintain bargain basement prices for Michigan residents. Indeed, the only way that we were able to honor our tradition of meeting the full financial need of Michigan resident students was to ask those students and families who could afford it to pay a somewhat larger fraction of the cost of their education.

Yet this philosophy was rarely understood—and never accepted—by most of our constituents. Students and parents, particularly from middle- and upper- income backgrounds, campaigned strongly against tuition increases. State leaders, both in the Legislature and the Governor's Office, found that public condemnation of tuition increases made eminently good politics. The media, in their perceived role as watchdogs for the public interest, took it upon themselves to demand that the University keep tuition at nominal levels. Even some members of our Board of Regents, usually those from affluent backgrounds, fought vigorously against tuition increases.

As we have noted, all students are subsidized to some degree, from both public and private sources, in meeting the costs of their education. It is simply wrong to suggest that wealthier students who pay full tuition levels subsidize the financial aid that enables low-income students to attend college. Rather, by asking higher income students and families to pay a bit more of the true costs of a college education (that is, to be subsidized to a lesser extent) more funds are then available for financial aid programs (that is, to subsidize less affluent students). This makes abundant sense from the viewpoint of economic efficiency.

In fact, many go still further and question whether the very principle of low tuition levels at public universities is not, in reality, a highly regressive social policy that in effect subsidizes the rich at the expense of the poor. As we have noted, few families will ever pay sufficient taxes to cover the educational costs of their children at a public university. Rather, low tuition levels are subsidizing many middle- and upper-income families who could afford to send their students to far more expensive institutions. This subsidy is, in reality, being provided through the tax dollars paid by many lower income families whose children may never have the opportunity to benefit from a college education at four-year institution, public or private, because of the inadequate availability of financial aid.

The Value of an Education

Nationwide the money invested in a college education results in one of the highest returns of any investment a student or family can make. It is estimated that the lifetime earnings of a person with a college degree are about three times that of a person without this education—$1.5 million versus $500,000. Across all fields the net after-tax rate of return of an undergraduate education is in excess of 10 percent.

More specifically, the U.S. Census Bureau has estimated that college graduates earn on the average $40,478 a year while those with a high school diploma make a salary of $22,895 a year. Furthermore, according to data released by the Census, the earnings gap between college graduates and people with a high school diploma is continuing to increase.

Another way to look at this is to note that the typical Michigan undergraduate will spend roughly $200 per day during his or her enrollment for a baccalaureate degree. Earning capacity, due in large measure to this degree, will be, on the average, $2,000 per day for every day spent in college—a factor of ten times larger!

Furthermore, there is strong evidence to suggest that the lifetime earnings are considerably higher for graduates of more selective and prestigious institutions—perhaps as much as $500,000 on the average. And of course, the earnings in professions such as engineering, medicine, and law are far higher.

This gap between the earning capacity of college graduates and others in our society appears to be widening. But this is to be expected in a society that is becoming ever more knowledge-intensive, and therefore more dependent upon college graduates and the knowledge they possess.

For the sake of brevity, I will not try to discuss the countless intangible benefits of a college education: a deeper comprehension of the world and its peoples; perceptions into how our own culture developed and its place in the world; the disposition to question, to think logically and critically; a deeper understanding and enjoyment of literature and the arts; the development of new skills, abilities, and understanding; and the desire to make all of life a learning experience. These benefits will continue to improve and enhance the quality of our graduates' lives long after commencement. To many people, this growth and enrichment is of far greater worth than the financial advantages provided by a college education.

Access and Choice

The erosion in public support which has occurred during the past decade has shifted more responsibility to parents for meeting the costs of a college education in public and private institutions. Beyond this, we have seen a gradual erosion in the fundamental principle of public education: since society as a whole benefits from educating our citizens, the costs of such education should be supported primarily through

general tax revenues. Instead, today both the public and our elected representatives have come to view a college education as just another consumer purchase that should be paid for through user fees—tuition—by those who benefit most directly. It is no longer viewed as a long-term investment in human potential and the future of our nation, which merits strong public support.

Despite the fact that students and families have been asked to bear an increasing share of the burden for financing higher education, enrollment rates in our colleges and universities are at an all-time high. Enrollment rates of high school graduates have climbed from 50 percent in 1980 to 64 percent in 1995. Much of this increase in enrollment has occurred among low-income and minority students, despite a decade of declining public support for higher education evidenced at all levels of federal, state, and local government.

To some degree this demonstrates the success of our financial aid programs, which have compensated for increasing college costs for lower-income students. It also suggests that, despite the rhetoric, students and families realize the value of a college education, particularly in an increasingly knowledge-intensive world. However, while enrollment levels in American's colleges and universities continue to rise despite the increase in costs, it is also clear that at least for some students, increasing costs are beginning to constrain the choice of institutions. The opportunity to attend a flagship public university or indeed any four-year public institution appears to be more and more limited for lower-income students. The data suggests that the combined effects of tuition increases and limitations on federal student aid may be impairing the relative ability of lower-income students to gain access to institutions other than community colleges.

At the same time, there is little evidence of price sensitivity on the part of affluent students. They continue to enroll in the most expensive public and private institutions. Indeed, the proportion of upper-income students attending private universities has actually increased over the past decade. These affluent students are clearly continuing to seek to enroll in the most expensive public and private institutions, with choice determined by academic quality, prestige, and social status. Further, there is no decline in enrollment of middle-income students in either private colleges or the more expensive public universities. The only noticeable shift among middle-income students has been away from two-year community colleges to more expensive four-year institutions.

Alternative Ways to Finance a College Education

Traditionally, we have depended upon a "pay-as-you-go" approach to higher education. That is, most students—or their parents—have paid tuition on a term-by-term basis as they receive their education. And yet, as the cost, value, and price of education have risen, this traditional approach has become more and more of a burden to students and their families.

Perhaps it is time that we looked at a college education not as a temporary additional expense or consumer product but rather as a major investment, similar to those we make for other important goals in our lives—a house, a car, or a retirement nest egg. For most people, a college education has more value than any of these other objectives. In this spirit it seems useful to examine several alternative strategies for financing a college education.

As we have noted, the traditional approach has been to view a college education as a temporary additional expense for a family (or a student), to be paid for by tightening the family budget and perhaps relying on additional resources through part-time student employment. In fact, "working one's way through college" has been a very important and very American tradition.

Unfortunately, the rising costs of a college education, coupled with the eroding public support of higher education, have made the pay-as-you-go approach increasingly problematic. The costs of a college education at a private institution—typically ranging from $15,000 to $25,000 per year—cannot be accommodated within most family budgets. Even at public universities, where the costs range from $8,000 to $12,000 per year, financing a college education becomes a significant burden.

Work-Study Programs

Students have more difficulty working their way through college these days because wages for most student employment have not kept pace with the rising costs of education. "Work-study" programs, in which the work experience also has educational benefit, are still important. However, the minimum-wage type of employment available to most students is no longer an effective way to pay for college.

Cooperative education is a term used to refer to programs in which students alternate between full-time study and full-time work. These programs have played important roles in certain programs and institutions (e.g., the General Motors Institute and

Northeastern University). For example, beginning in their sophomore year, engineering students at many universities can choose to participate in cooperative programs with industry in which they will alternate between two terms of study and one term of employment with a particular company or government agency. The employment experiences are carefully designed to serve as an important component of the educational program, becoming increasingly more challenging as the student's academic program progresses. In practice, the compensation earned during the work period is at market rates for experienced professionals and sufficient to cover a very major part of the cost of the student's education. The cooperative programs typically add one additional year to the length of the baccalaureate degree program.

Such cooperative programs are very attractive, not only as a mechanism to assist the student in supporting the costs of his or her education but also as a way to enhance the quality of the educational experience. Unfortunately, they are generally only feasible in high-demand areas such as engineering where students develop technical competence early in their studies and are of significant value to employers.

The Reserve Officers Training Corps also provides a "co-op" style financial aid program for students willing to commit to future military service.

College Savings and Pre-Paid Tuition Programs

Saving for a college education has always been one of the professed goals—and responsibilities—of the American family. Yet very few parents manage to save more than token amounts toward this end. In fact, this inability to save may be one of the big factors driving public concerns about the rising costs of a college education.

For that reason, there has been great interest in the development of more formal programs to assist families in adopting a more systematic and disciplined approach to setting aside the resources necessary to educate their children. Such plans are available in both the public and private sector and range from pre-paid tuition plans to guaranteed tuition plans.

For some time many institutions have provided families with mechanisms to prepay tuition costs at the time of enrollment, thereby avoiding concerns about rising tuition levels during the actual time spent in college. While these are occasionally financed by the institutions themselves, more frequently arrangements are made with commercial organizations. The general idea is that one pays either a lump sum or a set of installments at a fixed rate throughout the period of education. The interest earned on the payments then covers any increase in tuition costs.

More recently, a number of states have developed similar pre-paid tuition plans in which a family can purchase "tuition futures," tuition credits at today's prices redeemable at any future date. For example, a family would use either lump sum or installment payments to purchase a contract for a four-year college education at present prices. This contract then would allow the child to attend at any time in the future, regardless of tuition levels at that time. Again, the premise behind such programs is that the rate of increase in tuition is roughly comparable to the interest earned on the pre-payments.

The State of Michigan has taken a somewhat different approach known as the Michigan Education Trust (MET). As with other pre-payment plans, MET contracts could be purchased to cover future costs of a college education. In an effort to gain early acceptance, the contracts were initially underpriced at low levels corresponding to 60 percent to 70 percent of present tuition levels, thereby acquiring a certain bargain-basement flavor while building up a significant liability. Although it was billed as a "guaranteed" plan, the Legislature did not accept financial responsibility for the program. Because of these flaws, Michigan suspended the sale of MET contracts after one year in favor of more financially viable approaches, including the education savings bond plan.

In the fall of 1995, the State of Michigan experimentally reopened the Michigan Educational Trust for a short period to see if there was interest in a more realistic program. This new investment plan costs more, and it does not guarantee the coverage of future college tuition bills. At the time of this writing, it is still being evaluated.

Traditionally we have looked at a college education as a consumer good, requiring payment of the costs of tuition, room, board, and other expenses upon enrollment. Since these costs frequently exceed the resources that most students or families can generate during the actual period of enrollment, either savings or loan plans must play an increasingly important role in the future.

With this in mind, Peter Drucker has suggested that we really should think about financing a college education in a much different way:

> *The basic problem of American higher education is that traditionally it has been priced no differently from the way food, soap, or shoes are priced. Customers pay in full when they take delivery of the merchandise. But a college education is not a consumer good that will be used up and gone within a short time. It is a long-term investment in the lifetime earning power of the graduate.*[8]

To the degree that a college education is in reality a long-term investment in the future, perhaps we should look at it as we would other major investments we make in our life. For example, we borrow money to buy an automobile and a house, and we pay off these loans over long periods of time, even as we enjoy the purchase. A college education improves one's quality of life and earning capacity, thereby enabling the borrower to pay off the loan.

Drucker proposes shifting the payment for a college education from the "front end," when most students have no money and next-to-no earning power, to a later period when their incomes are sizable and rapidly rising. In particular, those students choosing to pay later rather than now would agree to have the installments paid through payroll deduction. They also would be required to take out twenty-year term life insurance for the amount of the outstanding liability; premiums for such insurance at the age of young college students are minimal.

With these steps, the repayment claim for the investment made by the college in the future earning power of the student becomes an eminently salable security, bearing little risk and a fair rate of return. The college could be sure of being paid. The former student, now a wage earner, could easily carry the annual payment. The graduate's family would have little or no financial burden at all; colleges could charge what they need to build faculty and curriculum and still not price themselves out of the market.

To carry this one step further, perhaps as a society we should look upon a college education as we do our social security system. Perhaps we should restructure federal student loan programs to facilitate payment through payroll deduction, just as we do payment for social security programs. An alternative would be to use tax assessment strategies, using the Internal Revenue Service as the collection agency.

Such approaches would require a major change in public attitudes toward the value of a college education. But in a knowledge-based society, perhaps one's personal investment in education has become as important an investment as investing in one's security during old age.

Without significant reform of our nation's college financing system, the steady enrollment gains of low- and middle-income Americans may well peak far short of those students' rightful representation on our college and university campuses. Over the past fifteen years, strong financial aid programs mounted by colleges and universities have resulted in campus populations being more ethnically and socially diverse than ever before. But demand for these resources is rapidly outpacing what institutions can provide.

Over the long term, we must renew and affirm our commitment to the ideal of publicly supported higher education. In the short term, one way to ease the financial burden on students and families is to create a more cost-effective and efficient system for delivering the federal funds we already have.[9]

A Broader Perspective

The current debate about the cost, price, and value of a college education, suggests three quite different approaches to restructuring the financing of higher education in America. All three approaches begin with the premise that the university must get its house in order by better controlling costs, eliminating unnecessary or redundant programs, and transforming itself to serve society better.

Approach 1: Higher Education as a Public Good: The first approach would reestablish the principle of higher education as a public good, with strong public support to provide sufficient access to low cost, high quality higher education to meet the growing needs of a knowledge-driven society. This approach would abandon the high tuition/high financial aid policies that have dominated American higher education for the past several decades for several reasons. First, such a high-tuition/high-aid model portrays higher education primarily as an individual benefit and contributes to public concerns and misunderstanding concerning the affordability of a college education. The high tuition model does not contain sufficient incentives for cost controls. It furthermore drives a wedge between public and private higher education, since although both public and private institutions are heavily subsidized by federal financial aid programs and tax policy, private colleges and universities are constrained only by market concerns in setting their very high tuition levels, while public tuition levels are kept at low levels by political constraints.

Instead, as a nation we would reaffirm that higher education represents one of the most important investments a society can make in its future, since it is an investment in our people. We are fortunate today to have one of the finest systems of higher education in the world, but we also remember this has resulted from the willingness of past generations to look beyond the needs and desires of the present and to invest in the future by building and sustaining educational institutions of exceptional quality—institutions that have provided many of us with unsurpassed educational opportunities.

We have inherited these marvelous institutions because of the commitments and sacrifices of previous generations. It is our obligation as responsible stewards—and as responsible parents—to sustain these institutions to serve our children and our grandchildren. It seems clear that if we are to honor this responsibility to future generations, we must re-establish the priority of both our personal and our public investments in education, in the future of our children, and in the future of our nation.

It is in our national interest to provide educational opportunity to all with the desire and the ability to learn. It is time to halt the erosion in public support of higher education and once again reaffirm the commitment from one generation to the next that has characterized our nation. Yet there is a formidable challenge to this approach. The fiscal constraints faced by local, state, and federal governments will lessen in the years ahead, since there continues to be strong public resistance against further taxation.

Approach 2: Raising Prices to Reflect True Costs: A sharply contrasting approach would be to depend more heavily on market forces by removing hidden subsidies in higher education and raising prices to levels more accurately reflecting true costs. Such an approach would depend even more heavily on financial aid to provide access to those unable to pay.

Such an approach would be motivated, in part, by the evidence that raising prices for middle- and upper-income students in higher education does not discourage enrollments. In a similar sense, using federal dollars to subsidize the lending costs of middle- and upper-income students does little to create new opportunities for college enrollment. Hence, if the intent is to utilize increasingly limited public dollars for higher education, there is some justification for raising the price of a college education so that it more accurately reflected its true costs, particularly in public colleges and universities.

In fact, some go still further and suggest that the very principle of low tuition levels at public universities is, in reality, a highly regressive social policy that subsidizes the rich at the expense of the poor. Few families will ever pay sufficient state taxes to cover the educational costs of their children at a public university. Low tuition levels subsidize many middle- and upper-income families who could afford to send their students to far more expensive institutions. This subsidy is being provided through the tax dollars paid by many lower-income families whose children may never have the opportunity to benefit from a college education at four-year institutions, public or private, because of inadequate availability of financial aid.

This issue becomes even more serious when it is recognized that public higher education has increasingly become the choice of higher income students. In 1994, 38 percent of students from families earning more than $200,000 were enrolled in public institutions, compared to 31 percent in 1980.[10] Parents and students from wealthy backgrounds are increasingly asking why they should attend the elite private colleges when they can get an education almost as good for one-third the price. In fact, in several states, the average income of students enrolling in public universities is now higher than that of private colleges. Clearly this raises a public policy issue, since these wealthier students, who could afford to attend more expensive private institutions, are displacing students from less fortunate economic circumstances in public higher education. While holding tuition to nominal levels in public higher education may be good politics, it is questionable social policy. In effect we ask those who cannot afford a college education to pay taxes to subsidize those who can—welfare for the rich at the expense of the poor.

Approach 3: Shifting the Burden from One Generation to the Next: The third approach would change radically the very assumptions and values underlying the support of higher education in America. Rather than viewing the support of higher education as an obligation of one generation to the next, an investment in the future, instead we would take steps to allow this burden to be born directly by those who benefit most directly, the students. This approach would acknowledge the increasing value of a college education in a knowledge-intensive world, as well as the increasing resistance of parents and taxpayers to support this activity in the face of limited resources and other social priorities. As we have noted, this approach would shift the perspective of a college education from that of a duty or obligation of parents to that of a personal investment on the part of the student. Such an approach would require a quite different financing scheme such as the direct-lending/income-contingent payback program developed by the Department of Education during the 1990s. Recasting the financing of higher education as an investment opportunity rather than a social obligation might be more consistent with the realities of the market-driven politics of our times.

While these are dramatic departures from the current paradigms for financing higher education, it is clear that our present course may lead to crisis in the years ahead. The dilemma has been described earlier: if colleges and universities continue to compensate by increasing tuition to compensate for the imbalance between societal demand for higher education and rising costs on one hand, and stagnant public support on the other, millions of Americans will find a college education priced beyond their means.

While cost containment and renewed public investment are clearly needed, it seems increasingly clear that entirely new paradigms for providing and financing higher education are required for the longer term.

[1] "Anxiety over Tuition: A Controversy in Context," *A Special Report, The Chronicle of Higher Education*, May 30, 1997, pp. A10-A21.

[2] Michael McPherson and Morton Schapiro, "Are We Keeping College Affordable: The Most Recent Data on Student Aid, Access and Choice" (Stanford Forum for Higher Education Futures, The Aspen Institute, 1996); also "Are We Keeping College Affordable? Student Aid, Access, and Choice in American Higher Education," Princeton Conference on Higher Education, March 21, 1996.

[3] Joseph L. Dionne and Thomas Kean, *Breaking the Social Contract: The Fiscal Crisis in Higher Education*, Report of the Commission on National Investment in Higher Education (Council for Aid to Education, New York, 1997).

[4] Joseph L. Dionne and Thomas Kean, *Breaking the Social Contract: The Fiscal Crisis in Higher Education*, Report of the Commission on National Investment in Higher Education (Council for Aid to Education, New York, 1997).

[5] "Anxiety over Tuition: A Controversy in Context," *A Special Report, The Chronicle of Higher Education*, (May 30, 1997): A10-A21.

[6] *U. S. News and World Report*, "America's Best Colleges: What School Is Right for You?," 1997 Annual Guide (September 16, 1966 and earlier years).

[7] P. M. Callen and J. E. Finney, eds., *Public and Private Financing of Higher Education: Shaping Public Policy for the Future* (Phoenix: Oryx Press, 1997).

[8] Peter Drucker, *Wall Street Journal*, op-ed, (1992).

[9] *Making College Affordable Again*, National Commission on Responsibilities for Financing Postsecondary Education, (1993).

[10] Michael McPherson and Morton Shapiro, *New York Times*, (August 12, 1997).

Chapter 14 *The External Environment of the University*

The modern university interacts with a diverse array of external constituencies—alumni and parents, local communities, state and federal government, business and industry, the media and the public at large. All depend on the university in one way or another, just as it depends upon each of them. The management of the complex relationships between the university and these many constituencies is one of the most important challenges facing higher education.

But the nature of these relationships is continually changing. If ever there were ivied walls around universities, protecting us against the intrusions of politics or the economy, these walls have long since tumbled down. The environment beyond our campuses is very different today than it was even a decade ago. Today we are neither isolated nor protected. We are very much engaged and exposed in the world. If you doubt it, you have only to read the headlines. Hardly a day passes without some news story on higher education; state budget cuts and college closings; or some legislative committee out to regulate, legislate, or fact-find in areas that were once privileged academic territory.

It is important that we understand the changing relationship between the university and the society it serves. In this chapter we will examine these relationships, the ties that bind us to the many constituencies who depend upon us, who support us, and who—not all infrequently these days—criticize us.

An Abundance of Clients . . . and of Critics

Few of society's institutions face a broader range of constituencies than the American university, and each of these constituencies has distinct needs and expectations. Students and parents want high-quality but low-cost education. Business and industry seek high-quality products: graduates, research, and services. Patients of our hospitals seek high-quality and compassionate care. Federal, state, and local governments have complex and varied demands that both sustain and constrain us.

And the public itself sometimes seems to have a love-hate relationship with higher education. They take pride in our quality and revel in our athletic accomplishments, but they also harbor deep suspicions about our costs, our integrity, and even our intellectual aspirations and commitments.

Many of these same constituencies, those whom we serve, are among our most strident critics. Some perceive the modern university as big, self-centered, and greedy with spoiled, misbehaving students and even more spoiled faculty. Others portray the university as gouging the parents with high tuition and overcharging the government for inappropriate expenditures of research overhead. To them, our campuses seem plagued by a long list of "isms," including racism, sexism, elitism, and extremism. We have even been criticized for a deterioration in intellectual values, as manifested in several highly publicized cases of scientific fraud and the perceived lack of concern on our campuses for undergraduate education.

It is paradoxical that the extraordinarily broad public attention and criticism of the academy should come at a time when the American university is more deeply engaged in society, when it has become a more critical actor affecting our economy, our culture, and our well-being than ever before. But, then again, perhaps it is not so paradoxical that just as the university is becoming a key player in our society, it should come under much closer scrutiny and be subjected to greater accountability.

America's universities touch the lives of a great many people in a great many different ways. Our society has assigned to the university an increasing number of roles. Beyond the classical triad of teaching, research, and service, society has assigned to us an array of additional roles: health care, economic development, entertainment (intercollegiate athletics), enabling social mobility and change, and sustaining national security. Today's society is asking us to assume additional new roles such as revitalizing K-12 education, securing economic competitiveness, providing models for multicultural society, rebuilding our cities, and preparing the way for internationalization. As a consequence, the contemporary university becomes ever more complex and multi-dimensional.

The relationship between the university and the society it serves both determines and is determined by the characteristics of the American university. Our universities have always been granted unusual autonomy from external influence, particularly from government. Despite this autonomy, American universities are unusually responsive to society. The very independence and competitive nature of universities cause them to pay close attention to the needs of various constituencies: students, parents, faculty, alumni, government, corporations, foundations, local communities,

and the public at large. As Eric Ashby put it, "The great American contribution to higher education has been to dismantle the walls around the campus."[1]

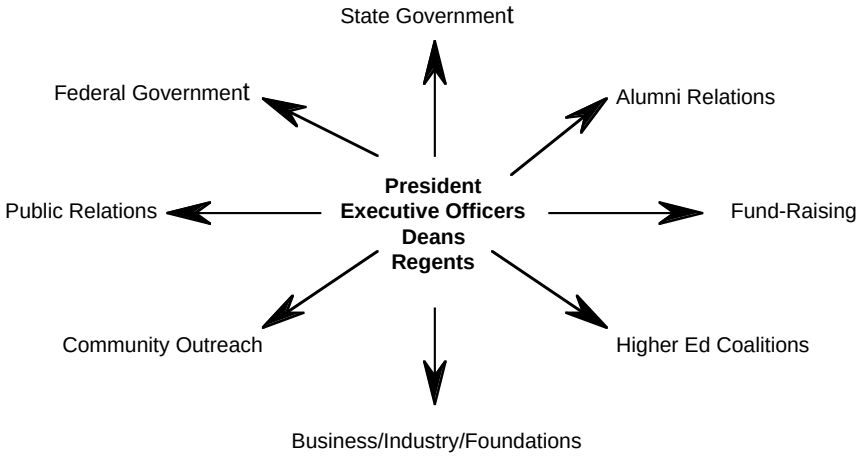
As we have become ever more dependent upon a broad range of constituencies, we face increasing pressures to establish our relevance and credibility to this array of interests while at the same time sustaining our fundamental values and purposes. This balancing act poses several serious problems. We must continually grapple with the extraordinary diversity—and incompatibility—of the values, needs, and expectations of the various constituencies who all view higher education through quite different lenses. There is a continuing tension between our role as servant to and critic of society, between our obligation to be responsive to society's needs and to be a place where all ideas can be freely questioned in light of reason. And, in today's world of more sharply defined expectations and special interests, we are evaluated and supported increasingly based on how we answer the question "what have you done for us lately."

Higher education faced a paradoxical situation as it approached the 1990s. On the one hand, it was clear that the university was becoming a more critical player in a society increasingly dependent upon knowledge, upon educated people and their ideas. As the university moved front and center stage, it also came under attack for many reasons: the cost of education, political activities on campus, student and faculty behavior. The American university became for many just another arena for the exercise of political power, an arena for the conflict of fragmented interests, a bone of contention for proliferating constituencies. It was increasingly the focus of concern for both the powerful and the powerless.

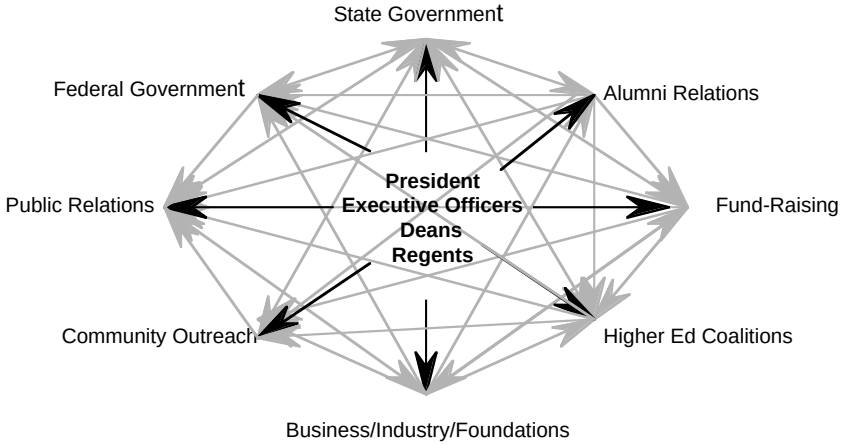
It is within this context, of changing societal needs and expectations, that we consider how the university relates to its many external constituencies.

Cosmic Confusion

The array of external constituencies of the modern university can be illustrated by this skeletal diagram:

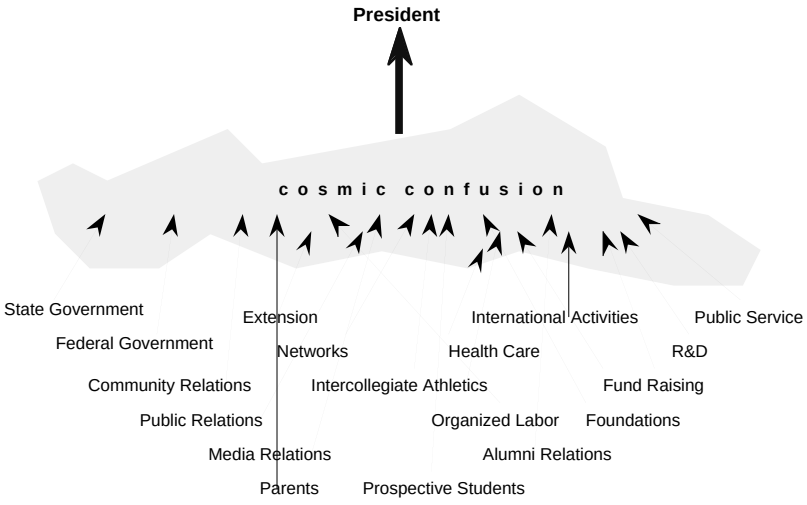


This particular diagram is, however, too simple since it ignores the strong coupling among the agendas of these various constituencies. For example, relationships with the state government increasingly involve interactions with Washington, with alumni, and with the public at large through public relations.



Many universities have made significant progress in building and strengthening some of these relationships. But these are generally highly focused and discrete efforts. For example, while great effort is usually directed at building strong alumni organizations and using these as a base for private fund raising, the effort to use key alumni for influence in federal relations has been rare. So, too, few universities have made the commitment toward building sophisticated public relations effort that extends beyond their local region.

It is clear that the university today needs to pay far more attention to developing broad-based, external relations strategies capable of addressing the radically changed circumstances in which we find ourselves. Universities need to understand and appreciate the importance of the sophisticated and effective operations necessary to strengthen our relationships to the range of constituencies. In particular, while the internal activities of the university are organized along the well-defined lines of schools, colleges, and other operating units, the organization of our external relations can best be characterized by the diagram below.



No matter how a university structures its external relations activities, in the end the primary responsibilities come to rest on the desk of the president. The management of this complex web of relationships requires clear goals, a carefully developed strategy, and an effective organizational structure.

Much of my attention as president of the University of Michigan was directed at building far stronger and more strategic relationships with the multitude of external constituencies served by and supporting the University. Efforts were made to strengthen bonds with both state and federal government, ranging from systemic initiatives such as opening and staffing new offices in Lansing and Washington to developing personal relationships with key public leaders. A parallel effort was made to develop more effective relationships with the media at the local, state, and national level. These included major media campaigns such as the Big Ten Conference public service announcements and national organizations such as the Science Coalition. Additional efforts were directed toward strengthening relationships with key communities including Ann Arbor, Detroit, and Flint.

State Relations

Compared with higher education in other nations, American higher education has been relatively free from government interference. We have never had a national ministry of education, although the federal government is both a significant patron and a formidable regulator of higher education in America. However, most public universities find their relationship with state and local governments far more challenging.

The relationship between public universities and state government is a complex one, and it varies significantly from state to state. Some universities are structurally organized as components of state government, subject to the same hiring and business practices as other state agencies. Others possess a certain autonomy from state government through constitutional or legislative provision. All are influenced by the power of the public purse—by the nature of state tax support.

In Michigan, the state's constitution defines the autonomy of the University of Michigan, vested in its board of regents, as firmly founded as that characterizing the legislature, governor, and judiciary. The University, in effect, is a coordinate branch of state government, with full powers over its designated field of state endeavor, i.e., higher education.

Yet it is also the case that even in those states like Michigan that have a strong constitutional basis for institutional autonomy, state government exerts a web of influence over the universities. Through a developing history of state policies, legislation, and judicial decisions, university autonomy is never absolute. Nor should it be. Certainly, the state should have some role in higher education beyond simply providing adequate funding. Public policies are necessary not only to protect universities but to ensure they are responsive to the public interest. Yet states can—and do—sometimes intrude too far into the operation of their universities, threatening their efforts to achieve quality and serve society.

The most frequent cause of tension between the university and the state has to do with the multiple missions of the contemporary university. This diversity of missions corresponds to a complex array of constituencies, and engenders a particularly complex set of political considerations. As universities strive to serve broader segments of society, they occasionally encounter the political wars over affirmative action and racial preference currently raging across America. In their efforts to stimulate economic development, they run afoul of private-sector concerns about unfair competition from tax-exempt university activities, whether these be local commercial enterprises or equity interest in high-tech spin-offs. Those institutions with selective admissions policies frequently face pressure from elected public officials responding on behalf of constituents who are disappointed when their children are not admitted.

One of the most difficult issues in many states involves achieving an appropriate division of missions among state colleges and universities. Although most states have flagship state universities, they also have many other public colleges and universities that aspire to the full array of missions of the comprehensive public research university. Community colleges seek to become four-year institutions, undergraduate colleges seek to add graduate degree programs, and comprehensive universities seek to become research universities. Since all colleges and universities generally have regional political representation, if not state-wide influence, they can frequently build strong political support for their ambitions to expand missions. Even in those states that are driven by "master plans" such as California, there is evidence of politically driven mission creep, leading to unnecessary growth of institutions and wasteful overlap of programs.

Another cause of intrusion is simply the desire within the state bureaucracy to exercise power. State administrative agencies attempt to include higher education under their jurisdiction, even when issues of autonomy are involved. Sometimes universities are successful in making the case that their special requirements and

history justifies independence in many areas such as hiring and contracting. But there is also a sense on the part of many—particularly elected public officials—that state government should have some role in managing the affairs of publicly funded institutions if they are to be responsive to the public interest.

In recent years there has been a trend toward expanding the role of state governments in shaping the course of higher education, thereby lessening the institutional autonomy of universities. In many states, public universities are caught in a tight web of state government rules, regulations, and bureaucracy. Statewide systems and coordinating bodies exercise greater power than ever over public institutions. Ironically enough, this trend toward increasing state control of higher education is in sharp contrast to the pattern of deregulation in other enterprises such as health care and telecommunications. There are numerous examples from other sectors to suggest that deregulation leads to more flexibility, more competition, and more cost-effectiveness.

Even if state government can be persuaded to back away from excessive regulation of higher education, there will always be the political temptation for government officials to become involved. A legislator can always demonstrate that he or she is working hard by landing a new building or a budget increase for the local college or university—whether they need it or even want it. The more powerful the legislator, the stronger the opportunity for pork barrel politics. Even those legislators without a home college can get into the act, simply by using higher education as a convenient scapegoat. By decrying the costs of education or student behavior on campus, they can unleash a torrent of concerns that not only gains attention but also votes. Even the very efforts of many of our public universities to achieve excellence lays them open to charges of "elitism."

We should not underestimate the growing frustration on the part of many state leaders about what they perceive as higher education's lack of accountability and its unwillingness to consider the changes taking place in other parts of society. This erosion in political support is becoming more serious in many states. Whether hostile or not, it is clear that with other priorities, such as entitlement programs, K-12 education, and corrections, higher education faces an uphill battle in making a strong case for increased public investment.

Michigan provides an interesting example of the changing environment for public higher education. In earlier times, when the state provided the bulk of our budget, the University of Michigan enjoyed a privileged position. Many members of the

legislature were alumni of the University. Alumni also held other key positions in government and communities across the state. Political parties were relatively disciplined and predictable, and special interests had not yet splintered party solidarity. In that environment we had little need to make a special effort to cultivate broad-based understanding on the part of the public or political parties. A few leaders from the University would meet each year with the governor and leaders of the legislature to negotiate our appropriation. That was it. We were valued and appreciated. There was a historic and intense public commitment to the support of public higher education, and our principal task was simply to reinforce this spirit.

Gradually that world has disappeared. Michigan began experiencing a profound economic transformation in the late 1970s, away from a state dominated by a single large industry with unusually high prosperity to one far more diverse in economic activity, yet far more average in prosperity. Political parties declined in influence. Special interests and constituencies proliferated and organized to make their needs known and their influence felt. Even as the University's role in responding to the needs of the state became more central, it was also held more accountable to its many publics. Compounding the complexity of this situation was a growing socio-economic shift in priorities at both the state and federal level. In Michigan, as in many other states, priorities shifted from investment in the future through strong support of education to a shorter-term focus, as represented by the growing expenditures for prisons, social services, and federal mandates such as Medicare and Medicaid. This was compounded by legislation which earmarked a portion of the state budget for K-12 education, leaving higher education to compete with corrections and social services for limited discretionary tax dollars. As a result, Michigan's support for higher education declined rapidly in real terms during the early 1980s and continued to drop, relative to inflation, throughout the remainder of the decade.

This situation was made even more difficult by strong political pressures that threatened to constrain the University's primary alternative revenue stream, student tuition and fees. Through political polling surveys in the 1980s, leaders of state government learned of strong public concerns about rising tuition. Of course, many state leaders understood well that tuition increases were directly correlated with the decline in state appropriations as the state's public universities tried to compensate for the loss in state support. Despite this, state government launched a major political effort to constrain tuition. This was a cheaper alternative in the effort to gain votes than providing adequate support for the state's universities. In parallel, the state established a prepaid tuition plan, the Michigan Education Trust that portrayed itself as a state-guaranteed program to help parents meet the cost of a college education.[2] Since the financial—and political—integrity of the Trust was heavily depen-

dent on maintaining sufficiently low tuition levels, state government intensified its efforts to force universities to freeze tuition levels.

The responsibility for resisting this effort of the state to control tuition levels fell to the presidents of the state's public colleges and universities. At stake was not only institutional autonomy, but achieving adequate resources to sustain the quality and health of higher education in Michigan during a period of declining state support. This battle over tuition control was made even more difficult by the fact that the governing boards of the state's institutions were determined politically, by gubernatorial appointment or popular election, and were thus sensitive to political pressure.

In this situation, as in many other efforts to advance the interests of higher education within the state, the key was to build effective mechanisms to interact more broadly both with state government and the people of the state. Working closely together, the presidents of the state's public colleges and universities developed a strategy both to resist the assault of state government on institutional autonomy and to make the case about the importance of adequate public funding for higher education. A very important aspect of this strategy was to build a new state-wide outreach effort based on a network of committed alumni and friends to help build grassroots understanding and support for the public higher education system. With the help of this network we were able to increase the interaction of students, faculty, and leaders with people in communities across the state. This network was helpful in rebuilding our ties to schools and to civic and professional groups.

Federal Relations

The post-World War II period has witnessed a dramatic growth in the federal support of higher education. Higher education became a national priority, and the federal government launched numerous programs to support colleges and universities in the areas of research, housing, student financial aid, and key professional programs such as medicine and engineering. Universities developed the capacity not only to seek and obtain federal funding, but to deal with the complex rules and regulations that are the hallmarks of the federal government.

The research university has become particularly dependent upon its relationship with the federal government. Many universities receive hundreds of millions of dollars every year for research, financial aid, or specific academic programs, funding that has become critical to their survival. Faculty cultures have evolved which stress

grantsmanship in salary and promotion decisions. Universities have become sophisticated in lobbying for federal funds and policies.

At the University of Michigan, roughly one-third of the support of our academic programs comes from Washington, primarily through the support of our research activities. Our faculty's success in attracting federal support for their research activities, while certainly a key factor in determining the quality of our academic programs, also places us at considerable risk during a period of shifting federal priorities and attitudes. As one of America's leading research universities, we are generally targeted by every federal effort to restructure the long-standing partnership between the nation and its universities. For example, congressional efforts to transfer more of the expense of federally procured research to universities through artificial constraints on overhead payments or excessive cost-sharing requirements hit Michigan harder than most institutions. More complex regulations in areas such as occupational safety, environmental impact, unrelated business income, foreign student enrollment, handicap access, and affirmative action make working with Washington a continuing challenge.

Fortunately, Michigan also benefited from unusual resources and connections in Washington. It established a permanent office in Washington, one block from Capital Hill, staffed with one of the strongest federal relations staffs in higher education. Further, several of the senior officers of the University were unusually experienced in the mysterious ways of Washington: I served as the chair of the National Science Board, the nation's principal body for research policy and the board of directors of the National Science Foundation; Vice President Homer Neal served on numerous national boards and commissions; and Vice President Farris Womack was very experienced in Washington politics. The University also worked closely with other Washington-based alliances of universities such as the American Association of Universities and the National Association of State Universities and Land-Grant Colleges. The University not only managed to weather most of the storms generated by changing federal policies, but it continued to thrive and retain the highest level of research activity among universities in the nation.

Community Relations

Many years ago, Esquire magazine ran an article on what it called "academic womb" communities. These were small cities dominated by major universities, places like Madison, Berkeley, Cambridge, Chapel Hill, and, of course, Ann Arbor. The cultural, economic, and social characteristics of these communities were determined largely by the universities within them. The term "womb" referred to the fact that, after living in one of these academic communities for an extended period, one found it difficult to return to "the real world," and tended to move from university town to university town.

On the plus side is the fact that the university provides the community with an extraordinary quality of life. It stimulates the development of outstanding schools, provides rich opportunities in the visual and performing arts and athletic events, and generates an exciting and cosmopolitan community. The income generated by the university insulates these communities from the economic roller coaster faced by most other cities. Without such universities, these cities would be like any other small city in America; with them they become exciting, cosmopolitan, richly diverse, and wonderful places to live and work.

But there are also drawbacks. The presence of such large, non-profit institutions takes a great amount of property off the tax rolls. The impact of these universities, whether it be through parking, crowds, or student behavior, can create inevitable tensions between town and gown. Frequently cultural conflicts can result since many members of the city community who are not directly associated with the university view themselves as outsiders in the life of both the university and the city.

The presence of a large, dynamic, and politically active university has given the City of Ann Arbor both unusual character and some particular challenges, just as universities have created similar challenges in cities such as Berkeley and Madison. It seems clear that both the City and the University suffered for several decades from what might be regarded as the "hangover of the 1960s," which saw a dramatic rise in political activism that stressed rights rather than responsibilities. The unusual political activism of the University in the community sometimes leads to a "let's save the world, but to hell with our town" attitude. At times the University becomes preoccupied with the cosmic, when we really need to focus on problems in our own backyard. Both the University and the City are guilty of spending a great deal of time developing their "foreign policies" when they should probably be paying more attention to the domestic concerns of their citizens.

Most people fail to understand or appreciate the rapidly changing nature of the City, particularly its interaction with its broader regional environment. The extraordinary changes of demography, the world community, the age of knowledge—all of which affect the University of Michigan and Ann Arbor—create great but largely unacknowledged challenges. We see this in the apparent inability to pull together a leadership group, either within or outside City government, capable of thinking and dealing strategically with the future of the City and its relationship with the University. In most meetings assigned to explore strategic issues, almost inevitably the first subject which arises, either within the community or on the campus, is parking. As Clark Kerr once noted, this seems to be about the only unifying theme in the modern university and apparently it also is in town-gown relations.

It is clear that the most important thing a university can do to help its surrounding community is to continue doing what it does best: It can attract exciting, talented people as students, faculty, and staff. It can continue working closely with the community to attract new companies. It can continue its efforts to spin off its research activities as independent companies. It can continue to serve as a cultural center through its extraordinary array of activities in the performing arts, the visual arts, and intercollegiate athletics. Many universities provide their communities with world-class health care. Universities can play a vital role in strengthening K-12 education.

Beyond these traditional activities, there are other things the university can do. Our institutions should be open to the consideration of a broad array of possible joint ventures. The university, working hand in hand with the city, might be of assistance in going after federal or state financing for projects of major importance to the city, such as development of the downtown area, mixed use of facilities, or transportation systems. The university might well consider participation in a variety of other types of activities. It should at least consider possible participation in commercial ventures adjacent to the campus area (*on* the tax rolls, of course). It could initiate efforts to develop high-quality hotel space in the campus vicinity or efforts to develop convention center facilities suitable for both university and city purposes.

Perhaps of greater importance, the university could assist the city in the development of a strategic vision of the future. Universities have the resources, both on their campuses and through their reputations, to attract to their communities an extraordinary array of leaders in critical areas such as urban planning, public financing, and business development.

During my administration, we were able to establish a broad range of strategic efforts designed to improve relationships with the local community. The University intensified its outreach efforts with other Michigan communities. Its Schools of Education, Public Health, and Social Work intensified their activities with the metropolitan Detroit area. Many other units and individual faculty became engaged in research and service in Detroit and worked to strengthen relations with the city's leadership. Efforts with other Michigan cities also gained momentum. Of particular note here were the efforts of UM-Flint and UM-Ann Arbor to work closely with city government, industry, labor, private foundations, and private leadership to address a wide range of issues facing the City of Flint, including education, public health, and economic development.

Public Relations

Universities are clearly accountable to many constitutents. We have an obligation to communicate with the people who support us—to be open and accessible. For many years the university was not the object of much public or media interest—aside from intercollegiate athletics. Many of our institutions essentially ignored the need to develop strong relationships with the media. Our communications efforts have been frequently combined with development and focused on supporting fund raising rather than media relations.

But things are different now. People want to know what we are doing, where we are going. We have an obligation to be forthcoming. But here we face several major challenges. First, we have to be honest in admitting that communication with the public, especially via the media, does not always come easily to academics. We are not always comfortable when we try to reach a broader audience. We speak a highly specialized and more exacting language among ourselves, and it can be difficult to explain ourselves to others. But we need to communicate to the public to explain our mission, to convey the findings of our research, to share our learning.

Second, as noted earlier, the public's perception of the nature and role of the modern university is inconsistent with reality. Sure, we remain a place where one sends the kids off to college. Public concerns such as cost, student behavior, athletics, and political correctness are real and of concern to us just as they are to the public. But the missions and the issues characterizing the contemporary university are far more complex than the media tend to portray them.

A couple of examples illustrate the challenge of public perception. In surveys conducted several years ago,[3] few people knew what the term "research university" meant, a term academics take for granted. Nobody seemed to know what an "academic medical center" was either.

Another set of surveys[4] revealed an interesting paradox. In a series of interviews it was found that those without a college education and only a vague understanding of the nature of the university were generally very positive about higher education. In contrast, a series of interviews with leaders of business, journalism, and government—people who knew a great deal about higher education—revealed strongly negative attitudes.

This leads to the third challenge. The torrent of criticism now deluging higher education is coming from just the people who used to defend us in the past—business leaders, public officials, and the press.

This is not to say we should shy away from criticism; we certainly deserve it from time to time. But much of the criticism now inundating us is both uninformed and simplistic. While well-intentioned, the press, public leaders, and even business leaders propose simplistic remedies to our problems. If only professors would do more teaching. If we eliminated tenure, then perhaps the faculty would work harder. If we just focused on our "core competencies," and "restructure our operations," we could thrive just as the business world. They contend we should accelerate "throughput," meaning students should be rushed through our programs more rapidly.

One of the curses of the American public is our willingness to embrace the simplest possible solutions to the most complex of problems. Higher education is certainly an example. People seem eager to believe that our system of higher education—still the envy of the world despite massive budget cuts—is wasteful, inefficient, and ineffective, and that its leaders are intent only on protecting their perquisites and privileges.

Most public university presidents recognize there is a very simple formula for popularity with the public:

1. Freeze tuition and faculty salaries
2. Support populist agendas such as sunshine laws
3. Sustain the status quo at all costs
4. Win at football

Most also recognize this as a Faustian bargain, since it would also put their university at great risk with respect to the academic program quality, diversity, and their capacity to serve society.

With our former advocates, such as business leaders and the press now either sitting on the sidelines or leading the cheers against us, we are having great difficulty in getting the word out that, despite all of its shortcomings, American higher education is still the envy of the world. Indeed, higher education today remains one of America's few truly world-class enterprises.

The Fourth Estate

Much has been made of the fact that in recent surveys, journalists tend to rank only slightly above lawyers in public respect and credibility. I suspect that if such a survey had been taken among university presidents, journalists would be ranked even lower on the scale.

To some degree this is understandable since one of the curses of a modern university president's life is the public nature of these positions and the intrusive nature of the press. But it is also a perspective shared by an expanding number of those responsible for leading any social institution due in large part to the increasingly hostile, intrusive, and abusive nature of contemporary journalism as it merges with the entertainment industry and trades off journalistic values and integrity for the sake of the quarterly earnings statement.

At Michigan, while we experienced all of the frustrations of other public officials with the press, there were a few issues that were unique and of particular concern. First, the degree to which our local newspapers, the city newspaper, and the student newspaper became the primary source of information received by the campus community was always very alarming. In survey after survey, we found that most students, faculty, and staff got their information about the University from these sources. Try as we might, we were unable to break this stranglehold. Although we had numerous communications devices including a popular statewide FM radio station, a PBS television station, a weekly University news publication, access to the Internet (indeed, we even managed the United States' backbone of the Internet for several years), electronic mail, and a host of other communications devices, we were never able to use these strategically to get our message across to the University community.

The second issue has been discussed earlier: the curse of the state's sunshine laws. Poorly drafted and poorly interpreted by the courts—who, as elected public officials, were subject to the political pressure of the Michigan press—the state's sunshine laws were slowly and insidiously extended into every aspect of the University's operations. In the latter years of my presidency, one could never be certain just what materials would next be subject to a fishing expedition because of the state's Freedom of Information Act. The Open Meetings Act was eventually applied in such a broad way to the operations of the state's universities that critical activities such as presidential searches became all but impossible.

Allowing the press to use these poorly written laws to strangle public institutions was in part the institution's fault. Rather than challenging the laws, the University tended instead to take the expedient way out and simply release the requested material rather than mount vigorous legal challenges. But much of the blame must be placed squarely on the shoulders of the Michigan press, which demonstrated a considerable lack of integrity and concern for the state's welfare in this matter. The press had campaigned hard for these laws and then used every opportunity to extend them through the courts. Whenever an effort would be made in the State Legislature to modify the laws, several of the more powerful newspaper editors in the state would launch a campaign of threats, intimidation, and coercion aimed at those legislators favoring the modification. Their hostile attacks were not confined simply to political figures. When several university presidents in the state spoke out about the harm that the sunshine laws were doing to Michigan's universities, we too came under personal attack.

This latter activity illustrates one of the most sinister aspects of a new editorial culture that has developed within some of the media over the past several decades. We are all too familiar with the trend toward "investigative journalism" that developed following (or perhaps as a result of) the great social upheavals of the 1960s—the attitude spawned among many journalists during this period was that "the truth should never stand in the way of a good story." Beware the reporter who writes the story before getting the facts—a characteristic all too common these days.

Far more dangerous are those editors who believe that the press should be used as a tool to achieve certain objectives, well beyond simply reporting the facts or contributing to the corporate bottom line. We have seen an alarming tendency in recent years on the part of editors and newspapers to attempt to control social institutions through the powerful tools at their disposal. While we have long grown accustomed to this type of social control through editorial pages, the more direct political manipulation—including threats and intimidation—is a more recent and disturbing

development. Threatening elected public officials with editorial retaliation if they oppose sunshine laws is one example. At Michigan, we have seen efforts to control our affirmative-action policies, our athletics programs, and most recently, our presidential searches.

Of course, there is a certain self-righteous nature to this effort. The press always tries to hide behind its First Amendment freedoms, even if this shields it from public accountability for the most irresponsible actions. Many editors argue further that since a public university is owned by the people, the press has every right to exert control on behalf of the public. But, as we all know, the public is rarely represented by the press with any accuracy. And for the editors of major papers to presume that they speak for the public when they attempt to control public institutions is dangerous indeed to a democratic society.

A Strategic Marketing Plan

The Challenge

The fundamental problem here is the degree to which the universities have allowed others to set the agenda, to determine the issues concerning higher education. The attacks launched against higher education in the ensuing years can be roughly classified into three areas:

1. The portrayal of universities as big, self-centered, and greedy: Included in this class of concerns are the rising costs of education—first launched by the media, but rapidly embraced by politicians; "price-fixing" charges leveled at private universities that were engaged in consultation on financial-aid packages and tuition; and the charges of inappropriate use of federal research grants.

2. The social climate on college campuses: The charges leveled at colleges include racism on the campuses, fueled by the growth of a new generation of student activists generating their power base from ethnic tensions; and concerns about excessive alcohol and drug use.

3. The intellectual integrity of universities: Here, the charges include the faculty's preoccupation with "useless" research at the expense of teaching; the political correctness debate; and scientific fraud.

As long as higher education allows others to determine and control the agenda, it will continue to find itself on the defensive, responding to first one negative issue and then another. This continued siege of the academy will continue to erode public confidence and trust in the American university at just that moment in our history when we have become even more dependent on these institutions.

It is clear that higher education must take steps to regain control of the agenda, to begin to control the public debate, changing or reshaping the context of the debate to achieve a more positive emphasis. Key will be a well-conceived campaign to turn people's attention to what higher education is really all about: educating the young people of our nation for the challenges ahead, doing the research that will determine our prosperity and quality of life, and providing the leadership necessary for our nation in a rapidly changing world.

The strategic marketing process, begins with an effort to develop key themes and objectives, while simultaneously determining both the nature and views of key constituencies, and finally attempting to better shape these views and align them with the objectives of higher education. Three levels of activity can be identified:

- A national effort, dealing with the American public at large (and the national media)

- A broad outreach effort across local regions, dealing with public perception, the media, as well as with a more focused political agenda

- Local efforts, aimed both at the various constituencies on campus (students, faculty, staff) and those in the surrounding communities

The basic approach at all three levels are similar, but implemented by different groups:

- To first take some highly visible action to respond to some of the criticisms and concerns—since they do contain some truth, and our public credibility requires demonstrating that we take criticism quite seriously. Here, however, we need to choose the battlefield carefully, responding only to a few of the more critical issues, and neutralizing others of less relevance or importance.

- At the same time, we need to launch a parallel effort to push several positive themes relating to how the university is needed by our society in the 1990s and beyond. Examples might include: K-12, economic competitiveness, and health care.

- We need to take steps to build more permanent structures or organizations capable to continuing this effort for the long term. For example, at the national level, it is clear that the public relations efforts of the Washington-based associations (Association of American Universities, National Association of State Universities and Land-Grant Colleges, American Council on Education) must be completely overhauled.

Concluding Remarks

Things will never again be as they once were. We have entered a new and quite different world. But discipline, confidence, self-reliance, and determination to serve the public interest—all those qualities that have served us so well in the past two centuries—will see us through now as we prepare for the future.

Our country is on the brink of a profoundly important debate about the future of higher education in America. It is impossible to predict the outcome at this point. But it is clear that the extraordinarily productive partnership that universities have built with federal and state government and our society is unlikely to continue on the same terms and conditions we have enjoyed since World War II.

The University of Michigan made significant progress during the 1990s in addressing many of the issues being raised by our critics. We are improving undergraduate education; fostering interdisciplinary research and social importance; investing in technology to support teaching, research, and service; raising more than a billion dollars of private support, cutting costs and streamlining administration to free money for our basic mission; rebuilding our physical plant; and improving our communication with significant constituents. Our faculty and student body are outstanding, and the ratings of our academic programs are the best ever.

In recent years, we in higher education have taken steps to reinforce our foundations: refining our mission; improving the quality of teaching, research, and service; and refocusing our energies on those things most central to our purpose. We have ventured further and made fundamental changes through such initiatives as diversity, international initiatives, and technological infrastructure. All of these lay the groundwork for far-reaching institutional change in the years ahead.

[1] Eric Ashby, *Any person, any study; an essay on higher education in the United States (McGraw-Hill, New York, 1979).*

[2] Jeff Lehman, "The Michigan Education Trust" (Michigan Law Review, Ann Arbor, 1991).

[3] John Immerwahr, *The Price of Admission: The Growing Importance of Higher Education* (Washington: The National Center for Public Policy and Higher Education, Spring, 1998).

[4] John Immerwahr and Steve Farkas, *The Closing Gateway: Californians Consider Their Higher Education System* (San Jose: California Higher Education Policy Center, 1993).

Chapter 15 *Preparing for the Digital Age*

We have stressed in earlier chapters the fact that today our society is undergoing a dramatic shift in fundamental perspective and structure. We are experiencing a transition in which intellectual capital—that is, knowledge and educated people—is replacing financial and fiscal capital as the key to our strength, prosperity, and social well-being. The key element in this remarkable transformation is the emergence of knowledge itself as the new strategic commodity, as important as mineral ores, timber, and access to low-skilled labor were at earlier times. But, of course, this new commodity knows no boundaries. It is generated and shared wherever educated, and creative people come together. And, as we have learned, it spreads very rapidly.

Computers, communication networks, and related digital devices are the infrastructure supporting the modern knowledge-based society. Modern digital technologies have vastly increased our capacity to know and to do things. They allow us to transmit information quickly and widely, linking distant places and diverse areas of endeavor in productive new ways. Today information and data flow quickly around the world. We learn about events almost as they occur. The world has become linked electronically. A researcher can have more computing power on a desk-top than existed in the largest supercomputers only a few years ago. And a student can have access to the vast knowledge and culture contained in the libraries and museums of the world through the Internet.

It is of particular note that 40 percent of all new investment in capital facilities in our society today goes to purchase information technology. Needless to say, this need for investment in information technology applies to universities just as much as it does to the commercial or government sector. And it poses just as much of a challenge.

The University in the Digital Age

In Michigan, in the industrial midwest, we have had 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, space. Transportation determined prosperity, national security, even our culture and facilitated 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*,[1] suggested that the impact of information technology will be even more radical than the harnessing of steam and electricity in the nineteenth century. Rather it will be more akin to the discovery of fire by early ancestors, since it will prepare the way for a revolutionary leap into a new age that will profoundly transform human culture.

These rapidly evolving technologies are dramatically changing the way we collect, manipulate, and transmit information. Needless to say, the implications for our universities are profound. Three themes illustrate this impact.

Theme 1: The University as a Knowledge Server

One frequently hears the primary missions of the university referred to in terms of teaching, research, and service. These roles can also be regarded as simply the 20th Century manifestations of the more fundamental roles of *creating*, *preserving*, *integrating*, *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 roles of the university do not change over time, the particular manifestation of these roles does change—and change 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 "digital generation." They have spent their early lives surrounded by robust visual electronic media—Sesame Street, MTV, home computers, video games, cyberspace networks, MUDs, MOOs, and virtual reality. As we noted earlier, they approach learning as a "plug-and-play" experience, unaccustomed and unwilling to learn sequentially–to read the manual, 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 21st Century university will find it necessary to set aside their roles as teachers and, instead, 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, but also likely having less control over the intellectual content of academic programs.

Further, our old notions of faculty activity may have to be reworked. Old standards of merit such as student-to-faculty ratios are becoming meaningless. Information technology is shifting the focus of the discussion from productivity and contact hours within the classroom paradigm, to the effectiveness and quality of the student-teacher interaction.

One can easily identify other similarly profound changes occurring in the other roles of the university. The process of creating new knowledge is also evolving rapidly away from the solitary scholar to teams of scholars, often spread over a number of disciplines. Indeed, is the concept of the disciplinary 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"? Who needs such specialists when intelligent software agents will soon be available to roam far and wide through robust

networks containing the knowledge of the world, instantly and effortlessly extracting whatever a person wishes to know?

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—will likely move 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, and 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. The library is becoming less a collection house and more a center for knowledge navigation, a facilitator of information retrieval and dissemination. In a sense, the library and the book are merging. One of the most profound changes will involve the evolution of software agents, collecting, organizing, relating, and summarizing on behalf of their human authors. As Minsky puts it, a future scholar may observe, "Can you imagine that they used to have libraries where the books didn't talk to each other?"

Theme 2: A Shift from Analysis to Creation

The professions that have dominated the late 20th Century—and to some degree, the late 20th 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 increasing clear that the driving intellectual activity of the 21st Century will be the act of creation itself. Again, Jacques Attali effectively summaries this point:

> *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.*[2]

Perhaps the determining characteristic of the university of the 21st Century will be the shift in intellectual focus from the preservation or transmission of knowledge to the process of creation itself. The tools of creation are expanding rapidly in both

scope and power. Today we have the capacity to create objects atom-by-atom. We are developing the capacity to create new lifeforms 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. We should consider forming strategic alliances with other groups, organizations, or institutions in our society whose activities are characterized by great creativity (e.g., the motion picture industry or Madison Avenue).

Theme 3: Shifting Social Structures

A third theme lies in the implications for existing social structures of knowledge-based organizations such as universities. It is clear that although the digital age will provide a wealth of opportunities for the future, we must take great care not simply to extrapolate the past, but instead to examine the full range of possibilities for the future.

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 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, 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 of the 1950s is to today's corporate structure. There is clearly a need to explore new social structures capable of sensing and understanding change, as well as capable of engaging in the strategic processes necessary to adapt or control change.

In the last three decades, computers have evolved into powerful information systems with high-speed connectivity to other systems throughout the world. Public and private networks permit voice, image, and data to be made instantaneously available across the world to wide audiences at low costs. The creation of virtual environments where human senses are exposed to artificially created sights, sounds, and feelings liberate us from restrictions set by the physical forces of the world in which we live. Close, empathetic, multi-party relationships mediated by visual and aural digital communications systems are becoming common, leading to the formation of closely bonded, widely dispersed communities of people interested in sharing new

experiences and intellectual pursuits created within the human mind via sensory stimuli. Computer-based learning systems are also being explored, opening the way to new modes of instruction and learning. New models of libraries are being explored to exploit the ability to access vast amounts of digital data in physically dispersed computer systems; these can be remotely accessed by users over information networks.

New forms of knowledge accumulation are evolving: written text, dynamic images, voices, and instructions on how to create new sensory environments can be packaged in dynamic modes of communication never before possible. The applications of such new knowledge forms challenge the creativity and intent of authors, teachers, and students. Technology such as computers, networks, HDTV, ubiquitous computing, knowbots, and other technologies may well invalidate most of the current assumptions and thinking about the future nature of the university.

We should pay far more attention to evolving new structures more appropriate for the evolving information technology. One example would be the "collaboratory" concept, envisioned as an advanced, distributed infrastructure which would use multimedia information technology to relax the constraints of distance, time, and even reality. It would support and enhance intellectual teamwork. In fact, there is a growing consensus that the next major paradigm shift in computing is in the direction of the collaboratory and that not only research but a vast array of human team activities in commerce, education, and the arts would be supported by variants of this vision. Some form of the collaboratory may be the appropriate infrastructure ("tooling") for the "learning organization" becoming popular in the business world; perhaps it is the basis for the world universities in the next century. It could well become the generic infrastructure on which to build the work place of the emerging information age.

There is an important implication here. If information technology will indeed allow—perhaps even require—new paradigms for learning organizations, going beyond old-fashioned structures such as research universities, federal research laboratories, research projects, centers, and institutes, then it would seem that we should place a far higher priority on moving to link together our students and educators among themselves and with the rest of the world. This would seem to be a modest investment compared with the massive investments we have made in the institutions of the past—university campuses, transportation and urban infrastructure. It is none too early to consider an overarching agenda to develop deeper understanding of the interplay between advanced information technology and social systems. In some future we may have the knowledge to synthesize both in an integrated way as a total system.

The Digital Age

The Evolution of Information Technology

Information technology is evolving rapidly; in the next decade we are likely to see yet another one thousand-fold increase in the power of computers and networks. In the same time frame, massive parallel computation servers will offer tera-operations per second, while the price to performance ratio of workstations will continue to improve. Efforts are already underway to build a "petaflop" supercomputer, with a million times more computing power than today's machines. 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.

Already a modern $1,000 notebook computer has more computing horsepower than a $20 million supercomputer of the late 1980s. For the first several decades of the information age, the evolution of hardware technology followed the trajectory predicted by "Moore's Law"—that the computing power for a given price doubles every eighteen months.[3] However, in recent years, with new computer architectures and chip design, the evolutionary curve has become even steeper, with roughly a thousand times increase in computing speed, storage capacity, and network transmission rates every decade. At such rates, by the year 2010, the $1,000 notebook computer will have a computing speed of 1 terahertz, a RAM memory of hundreds of gigabits, extended optical storage of terabits, and linkages to networks at data transmission speeds of gigabits per second.

The Nature of Human Interaction

But the most dramatic impact on our world today is not in the continuing increase in computing power. It is in a dramatic increase in "bandwidth," the rate at which we can transmit digital information. From the 300 bits-per-second modems of just a few years ago, we now routinely use 100 megabit-per-second local networks in our offices and houses. Gigabit-per-second networks now provide the backbone communications to link local networks together, and with the rapid deployment of fiber-optics cables and optical switching, terabit-per-second networks are just around the corner.

As a consequence, the nature of human interaction with the digital world—and with other humans through computer-mediated interactions—is evolving rapidly. We have moved beyond the simple text interactions of electronic mail and electronic conferencing to graphical-user interfaces (e.g., the Mac or Windows world) to voice to video. With the rapid development of sensors and robotic actuators, touch and action-at-a-distance will soon be available. The world of the user is also increasing in sophistication, from the single dimension of text to the two-dimensional world of graphics to the three-dimensional world of simulation and role-playing (MUDs and MOOs). With virtual reality, it is likely that we will soon communicate with one another through simulated environments, through "telepresence," perhaps guiding our own software representations, our "avatars," to interact in a virtual world with those of our colleagues.

This is a very important point. When we think of digitally mediated human interactions, we generally think of the awkwardness of e-mail or perhaps videophones. But as William Wulf puts it, "Don't think about today's teleconference technology, but one whose fidelity is photographic and 3-D. Don't think about the awkward way in which we access information on the network, but about a system in which the entire world's library is as accessible as a laptop computer. Don't think about the clumsy interface with computers, but one that is both high fidelity and intelligent."[4] It is only a matter of time before information technology will allow human interaction with essentially any degree of fidelity we wish—3-D, multimedia, telepresence. Eventually, we will reach a threshold of fidelity sufficient to allow distance education (and most other human activities) that will be comparable to face-to-face interaction.

Computer-mediated human interaction could eventually evolve to the point at which natural and artificial intelligence begin to merge. Our interaction with each other could be mediated by intelligent software agents, which would allow our real and virtual worlds to begin to merge across the carbon-silicon interface.

Virtual Environments

Virtual reality—the use of visual, audio, and tactile sensations to create a simulated total sensory experience—has become common both in training and simulation and in gaming. But higher education is more likely to first make use of distributed virtual environments, in which computers create sophisticated three-dimensional graphical worlds distributed over networks and populated by the representations of people interacting together in real time.[5] Such software representations of people in virtual worlds are known as *avatars*. Here the goal is not so much to simulate the physical world, but to create a digital world more supportive of human interaction.

The software required for such distributed virtual environments is social in nature. It is not so much designed to simulate reality as to enable conversation and other forms of human collaboration.

These shared virtual worlds could radically alter the way we work, learn, and play. For example, one might imagine teaching a course in French language and culture through a distributed virtual environment representing a street in Paris. The virtual street could be lined with buildings, shops, restaurants, museums, and apartments. Language students and teachers would be represented by avatars in this world, along with native speakers or even software agents. Students entering this virtual world could practice a foreign language and experience its culture by speaking with other people in a non-threatening environment.

One can imagine a host of other virtual environments that could support the human interactions necessary in learning communities. Even today we already have environments that simulate university campuses, complete with registration offices, classrooms, coffee houses, and recreation facilities.

The Need for Agents in a Knowledge-Rich World

This tendency of digital information to multiply and propagate rapidly through digital networks can also be a challenge. Already the vastness of the Internet and the access it provides to storehouses of information threaten to overwhelm us. As anyone who has "surfed the Net" can testify, it is easy to be amused but usually difficult to find exactly what you need. Further, living and working in a knowledge-rich—indeed, knowledge-deluged—world will overload our limited human capacity to handle information.

The Net is already a complex and interesting organism, something which has evolved far beyond the comprehension of any human. It is more than just a media incorporating text, graphics, and sound. It incorporates ideas and mediates the interactions among millions of people. It already can do things no human can.

As a result, it will become necessary to depend on intelligent software agents to serve as our interface with the digital world. Many already use primitive constructs such as filters for electronic mail or web-crawlers to search through databases on the Net. But with the use of artificial intelligence and genetic algorithms, one can imagine intelligent agents dispatched by a user to search the digital networks for specific information. These agents can also represent their human user, serving as avatars, in mediating the interaction with the agents of other human users.

There are a couple of interesting possibilities here. Since software agents are easy to reproduce, one can imagine a cyberspace quickly flooded with billions of agents, similar to the software viruses that can propagate and cripple computer systems. There is already evidence of "wars" between software agents, where agents from one group of users seek out and destroy those from others. Perhaps the most significant evolutionary stage will occur when the distributed processing power of networks allows the appearance of "emergent behavior," wherein agents begin to exhibit self-organization, learning capability, and intelligent behavior. The predictions of science fiction of Clarke's HAL 9600 in *2001: A Space Odyssey* or Gibson's *Neuromancer*, and the possibility that we may be unable to distinguish which of our colleagues in cyberspace are flesh-and-bones and which are silicon, may be only decades away.

The Implications for Higher Education

Imagine the reactions of a 19th-Century physician, suddenly transported forward in time to a modern surgery suite, complete with all of the technological advances of modern medicine. Yesteryear's physician would recognize very little—perhaps not even the patient—and certainly would not be able to function in any meaningful way. Contrast this with a 19th-Century college professor, transported into a contemporary university classroom. Here everything would be familiar—the same lecture podium, blackboards, and students ready to take notes. Even the subjects—literature, history, languages—would be familiar and taught in precisely the same way.

Universities are supposed to be at the cutting edge of both knowledge generation and transmission. Yet their primary activity, teaching, is conducted today much as it was a century ago. Technologies which were supposed to drive radical change—television, computer-assisted instruction, wireless communications—have bounced off the classroom without a dent. To be sure, information technology has had great impact on the efficiency of administrative operations. It has revolutionized the conduct of research and the storage and synthesis of knowledge. But it has only had a marginal impact on instruction and learning, primarily being used only at the margins to extend the current classroom-centered paradigm.

Today there are good reasons to believe that digital technology will indeed transform the university, perhaps beyond recognition. Why? What is different? Is it the ability of the new technology to cut the bonds of space and time? Is it its ubiquitous nature? No, it is the ability of the rapidly evolving digital technology to enable new forms of human interaction, to mediate communication, to stimulate the formation of

new types of human communities. It will drive the focus of higher education from teaching to learning, and it will transform universities from faculty-centered to learner-centered institutions.

So what are possible paradigms for the "cyberspace university"? How can we create digitally mediated environments for learning?

Virtual Universities

Perhaps the most popular new approach is the so-called "virtual university," most commonly conceived as the Internet extension of conventional distance learning. In cybertalk, "virtual" is an adjective that means existing in function but not in form. A virtual university exists only in cyberspace, without campus or perhaps even faculty. Sophisticated networks and software environments are used to break the classroom loose from the constraints of space and time and make learning available to anyone, anyplace, at any time.

For many years universities have utilized passive telecommunications technology such as television to extend teaching to people unable or unwilling to attend campus-based classes. In its simplest form, such distance learning is really a "talking heads" paradigm, in which faculty lectures are simply delivered at a distance, either through live transmission or videotape. There have been efforts to broadcast such instruction on public television ("sunrise semester") augmented by written correspondence. A more effective approach utilizes on-site teaching assistants to work directly with the students. Recently, technology has allowed the use of feedback via electronic mail, chatrooms, or two-way video interaction.

The simplest conception of the virtual university uses multimedia technology via the Internet to enable distance learning. Such instruction could be delivered either into the workplace or the home. In one form, this Internet-mediated instruction would be synchronous—in real time with the instructor and the students interacting together. The more interesting teaching paradigms of the virtual university involve asynchronous interactions, in which students and faculty interact at different times. In a sense, this latter form would resemble a correspondence course, with multimedia computers and networks replacing the mailing of written materials.

The initial driving force behind the formation of virtual universities is related both to cost and market. By using an inexpensive delivery mechanism such as the Internet to reach a potentially vast audience, many hope that a virtual university can provide instruction at costs far lower than campus-based instruction. There are presently for-

profit entities such as the University of Phoenix and Caliber Learning[6] that compete directly with traditional colleges and universities in the higher education marketplace through virtual university structures.

Already more than seven hundred virtual universities are listed in college directories, with over one million students taking courses from these colleges.[7] The attractiveness of virtual universities is obvious for adult learners whose work or family obligations prevent attendance at conventional campuses. But perhaps more surprising is the degree to which many on-campus students are now using virtual university communities to augment their traditional education.

Learning Communities

Many believe that effective computer-network-mediated learning will not be simply an Internet extension of correspondence or broadcast courses. John Seeley Brown and John Duguid of Xerox PARC believe that this model of the virtual university overlooks the nature of how university-based learning actually occurs.[8] They suggest that it is a mistake to think of learning as information transfer, the act of delivering knowledge to passive student receivers. Brown and Duguid see the learning process as rooted both in experience and social interaction. Learning requires the presence of communities.

This is the value of the university—to create learning communities and to introduce students into these communities. Undergraduates are introduced to communities associated with academic disciplines and professions. Graduate students and professional students are involved in more specialized communities of experience and expertise. From this perspective, one of the important roles of the university is to certify through the awarding of degrees that students have had sufficient learning experience with a variety of communities.

Distance-Learning Paradigms

Once we have realized that the core competency of the university is not simply transferring knowledge, but developing it within intricate and robust networks and communities, we realize that the simple distance-learning paradigm of the virtual university is inadequate. The key is to develop computer-mediated communications and communities that are released from the constraints of space and time.

Distance learning based on computer-network-mediated paradigms allows universities to push their campus boundaries outward to serve learners anywhere, anytime.

Those institutions willing and capable of building such learning networks will see their learning communities expand by an order of magnitude. In this sense, the traditional paradigm of "time-out-for-education" can be more easily replaced by the "just-in-time" learning paradigms, more appropriate for a knowledge-driven society in which work and learning fuse together.

Here we should recognize the importance of asynchronous learning.[9] Face-to-face conversation is both geographically local and temporally synchronous. In asynchronous communications, words are not heard as they are spoken but repeated at some point later. This delay allows thought and consideration to mediate the asynchronous communication. Such asynchronous interactions are ideally suited to the Net, since it allows low-cost ways to hold many-to-many conversations among people who are distributed in both space and time. Beyond simple interactions through e-mail and bulletin boards, role-playing games such as MUDs, MOOs, and MUSEs seem ideal for learning.[10] These software constructions not only provide a virtual environment where interactions occur, but also provide common objects for participants to observe, manipulate, and discuss, making the Net both a medium for conversation and for circulating digital objects.

Such Net-mediated communities allow open learning in which the student decides when, where, and how to interact with the learning community.[11]

Implications for Higher Education

Of course, the use of information technology is already quite pervasive in higher education. Courses are increasingly being offered, both on campus and off, via the Internet. Students in geographically dispersed virtual communities meet together electronically. It is also clear that in most cases this information technology is underutilized, serving as extensions rather than transformations of the ways we learn and teach.

The university will have to accept the network as the fundamental architectural element of the 21st Century, knowledge-driven society. Successful institutions will increasingly focus on their core responsibility of building learning environments, whether campus-based or distributed across networks. They will rely upon networks of other organizations, some similar, some quite different, to perform the other functions of today's comprehensive, vertically-integrated university. And perhaps most significant of all, they will have to accept the reality of an educational future focused on learners rather than in learning institutions.

To be sure, the current concept of distance learning, even if implemented via the Internet through virtual universities, is still bound to traditional ideas and approaches.[12] But as true learning communities are constructed in cyberspace, traditional educational institutions will feel increasing competition and pressure to change. The university will continue to be the primary source of "content" for educational programs, but other organizations more experienced in "packaging" content, e.g., entertainment companies, may compete with universities to provide educational services to the mass market. Similarly, it could well be that faculty may become members of design teams developing content for broader markets.

These changes could well force a structural reorganization of the university, breaking it up into its component functions such as credentialling, guidance, research, and instruction. The traditional lecture system, intrinsically inefficient in knowledge transmission, will decline in importance as robust electronically mediated technology becomes available. This technology, ironically enough, may enable an expansion of other activities requiring direct human contact, such as guidance, tutorials, and hands-on mentoring.

Ironically, the cyberspace paradigm of learning communities is a mechanism that will return higher learning to the older tradition of the scholar surrounded by disciples in an intense interrelationship. In a sense, it recognizes that the true advantages of universities are in the educational process, in the array of social interactions, counseling, tutorial, and hands-on mentoring activities that require human interaction.

Some Operational Issues for Universities

All universities face major challenges in keeping pace with the profound evolution of information and its implication for their activities. Not the least of these challenges is financial, since as a rule of thumb most organizations have found that staying abreast of this technology requires an annual investment of roughly 10 percent of their operating budget. For a very large campus such as the University of Michigan, this amounts to hundreds of millions of dollars per year!

Historically, technology has been viewed as a capital expenditure for universities. In the future, however, higher education should conceive of information technology as an investment. The following are possible guidelines for such investments, gleaned from many years of experience at Michigan and other universities:

Invest in "Big Pipes"

While the processing power of computers continues to increase, of far more importance to universities is the increasing bandwidth of communications technology. Both Internet access to off-campus resources and "intranet" capability to link students, faculty, and staff together are the highest priority. The key theme will be "connectivity," essential to the formation and support of digitally mediated communities.

Universities are straining to keep up with the connectivity demands of students. Today's undergraduates are already spending hours every day interacting with faculty, students, and home while accessing knowledge distributed about the world. Simply keeping pace with an adequate number of modem ports to meet the demands of off-campus students for access to campus-based resources and the Internet is overloading many universities. Installing a modern on-campus network—a "wire plant"—has become one of the most critical capital investments faced by the university.

The Internet itself is evolving rapidly as a result of various efforts. University research initiatives such as the Internet II project and broader federal efforts such as the National Information Infrastructure project are contributing to this growth. This will compel universities to move rapidly to keep pace with the bandwidth of available backbone networks.

Strive for Multi-Vendor, Open Systems Environments

Universities should avoid hitching their wagons to a small set of vendors. As information technology becomes more of a commodity marketplace, new companies and equipment vendors will continue to appear. The great diversity in needs of various parts of the university community also will demand a highly diverse technology infrastructure. Humanists will seek robust network access to digital libraries and graphics processing. Scientists and engineers will seek massively parallel processing. Social scientists will likely seek the capacity to manage massive databases, e.g., data warehouses and data mining technology. Artists, architects, and musicians will require multimedia technology. Business and financial operations will seek fast data processing, robust communications, and exceptionally high security. And the list goes on . . .

Linking these complex multi-vendor environments together will be a challenge, since they use different equipment for varying purposes, and diverse software and

operating systems. For this reason, it is important to insist on open-systems technology rather than relying on proprietary systems. Fortunately, most information technology is moving rapidly away from proprietary mainframes ("big iron") to client-server systems based on standard operating systems such as Unix, Linux, or Windows-NT. There is a vast array of commercial off-the-shelf software available for such open systems.

As digital technology becomes increasingly ubiquitous, universities will have to make intelligent decisions as to just what components they will provide and which should be the personal responsibility of members of the community. While networks and specialized computing resources will continue to be the responsibility of the university, other digital devices such as personal digital communicators will almost certainly be left to the student, faculty, or staff member.

Universities will need to strive for synergies in the integration of various technologies. Beyond the merging of voice, data, and video networks, there will be possibilities as well to merge applications across areas such as instruction, administration, and research. The issue of financing will become significant as institutions seek a balance between institution-supported central services and point-of-access payments through technologies such as smart cards.

Student Participation

There continues to be debate about whether students should be required to purchase their own computers. Student experience with and their access to information technology is evolving rapidly. In 1997 surveys, the University of Michigan found that over 90 percent of its first-year students arrived on campus with at least three years of computer experience, and essentially all graduating seniors indicated they made extensive use of computers during their education. Over 60 percent owned computers when they first arrived on campus, and a far higher percentage owned personal computers by the time of graduation. This was in part because of instructional needs and university discount purchase opportunities. Our students currently spend about twelve to fourteen hours a week on a computer, with roughly half of this on the net. By way of comparison, faculty indicated that they spend about twenty hours a week working on computers; a significant fraction of this work was done at home. Over 90 percent of faculty own computers.[13]

Universities should be prepared to support the personal computing needs of students by providing robust network linkages both in residence halls and student commons areas. They should negotiate with community telecommunications

companies—both telephone and cable television companies—to facilitate off-campus communications, while at the same time providing sufficient network communication ports to facilitate off-campus students.

The role that universities can play in negotiating deep discounts with hardware manufacturers for student personal computers is more controversial. Local retailers complain that this represents unfair competition (although, in reality, most will benefit significantly from consequent software and peripheral sales). It is my belief that universities have an obligation to assist students in acquiring the hardware and software that has become essential for their education. At Michigan, each year we arrange a fall "Computer Kickoff Sale" where students, faculty, and staff can purchase computer systems from an array of vendors at substantial discounts.

As personal computer technology saturates the student body, universities should continue to build and maintain public computer sites where students can have access to more powerful technology. In a very real sense, these computer cluster sites are becoming analogous to the role that libraries played in the past. They provide students with the technology necessary for their studies, as well as places to study, gather, and collaborate.

Cultural Issues

An important strategic issue most universities face is the degree to which the evolution of information technology should be carefully coordinated and centralized or allowed to flourish in a relatively unconstrained manner in various units. Perhaps because of our size and highly decentralized culture, Michigan has encouraged islands of innovation, in which certain units are strongly encouraged to move out ahead to explore new technologies. This has allowed some entities to move into leadership roles and serve as pathfinders for the rest of the University.

A decade ago, the University of Michigan encouraged the College of Engineering to build its own Computer-Aided Engineering Network (CAEN), and provided them with the connectivity they needed to link them into the rest of the University. Today, CAEN is viewed as one of the most sophisticated computing environments in the nation. It would have been inappropriate and counter-productive to have held this unit back while the rest of the University caught up.

Another cultural issue involves just who within the university community will drive change. Our experience tells us that it is often not the faculty or staff but rather the students themselves. As members of the digital generation, they are far more comfortable with this emerging technology. They are also a fault-tolerant population, willing to work with the inevitable bugs in "Version 1.0" of new hardware and software.

As one example of this phenomenon, many students are already moving rapidly to embrace Net-based learning and take increasing control over their own education. They are still enrolling in traditional academic programs and participating in time-tested pedagogy such as lecture courses, homework assignments, and laboratory experiments. But many students approach learning in very different ways when they work on their own. They use the Net to become "open learners," accessing world-wide resources and Net-based communities of use to their own learning objectives.

The Michigan Strategy

At Michigan we have been convinced for some time that the computer has evolved far beyond simply a tool for scientific computation or information processing. It is now a robust technology, absolutely essential for the support of all knowledge-based activities and knowledge-based organizations such as universities, corporations, and indeed, knowledge-intensive societies. Hence, it was natural that several years ago the University of Michigan would accept the challenge of embarking upon an adventure to turn the institution into a gigantic laboratory—an experiment in the development and application of information technologies—in an effort to build a university appropriate for the 21st century. In many ways the University represented the ultimate challenge since it has long been viewed as both the prototype and indeed the flagship of the comprehensive public research university. It is a very large, a very complex, and a very decentralized institution. If we were capable of undergirding this complex, knowledge-intensive institution with an appropriate infrastructure of information technology, then surely we would be well on our way toward reinventing the nature of the university for the 21st century.

Our goal was straightforward but ambitious: to build the most sophisticated information technology environment of any university in the world, an environment that would continually push the limits of what could be delivered in terms of power, ease of use, and reliability to students, faculty, and staff. We sought to design a distributed intelligent, hierarchical computing system linking personal computer workstations, mini-supercomputers, mainframe computers, function-specific machines, library access, and a host of various servers along with gateways to international networks and facilities such as the National Science Foundation supercomputer centers and international data centers.

Our underlying philosophies were equally straightforward:

- We were determined to stay at the cutting edge, but with a very strong focus on service.
- We were determined to remove all the constraints, placing no limits whatsoever on student and faculty use of the technology.
- We recognized the importance of moving to a multi-vendor environment in which we chose whatever technology was most appropriate and most powerful.
- We would rely heavily on the "fault-tolerant" nature of the university community to develop an entrepreneurial spirit, a "go-for-it" philosophy.

During the 1980s, the University had recruited some of the nation's university leaders in these areas, including Doug Van Houweling from Carnegie-Mellon University, Lynn Conway from Xerox, Doug Hofstadter from Indiana University, and Randy Frank from the University of Utah, joining with campus leaders such as Dan Atkins, Bernie Galler, John Holland, and Gary and Judy Olsen. Drawing from the experience of major projects such as the Computer Aided Engineering Network (CAEN) in Engineering, Van Houweling led a major effort that resulted in the University joining with corporate partners IBM and MCI to manage the NSFnet, the backbone of the rapidly developing Internet. This positioned the University to play a key leadership role in the evolution of the "information superhighway," as it evolved into a world-wide network linking hundreds of millions of people. Even as the University provided this national leadership, it was continuing to make substantial investments in its on-campus information technology environment that kept it at the cutting edge for students, faculty, and staff.

Rather than focusing its efforts to develop sophisticated computing capability for a handful of scholars, as did many other universities who invested in supercomputers and such, Michigan instead brought "power to the people." We intended to provide as much computer and networking capability as possible to as many members of the University community as we could. We were determined to provide students and faculty with maximum flexibility and minimal constraints, so they could let their creativity and curiosity drive their use of these resources.

Through close cooperation with industrial leaders such as IBM, Apple, Sun, MCI, Xerox, and Hewlett-Packard, the University established itself as a clear leader in the quality of its information technology environment for teaching and research. It played a key role in developing much of the technology used in modern network, and it managed the transition from time-sharing mainframe systems to client-server networks. Through innovative programs such as the Fall Kickoff Computer Sales by

which sophisticated computer systems were sold to students at deep discount; the Rescomp program that placed numerous clusters of sophisticated computers directly into the residence halls; and the unusual array of on-campus computing resources and centers, including massive facilities such as the Angell-Haven Computer Center and the Media Union, it provided students with extraordinary access to this technology.

Michigan helped lead the nation into the digital age with such projects as the development of the national digital library project. In the 1990s, the campus saw its School of Library Science evolve into the School of Information, now focused on the management of digital information. The Media Union on North Campus established Michigan as a leader in the development and use of multimedia technologies. It also developed and provided to faculty and students one of the most comprehensive closed-circuit television networks, called "UMTV," and placed dozens, and eventually hundreds of television broadcasting stations in the hands of students for use over the University's broad-band networks.

By the mid-1990s, Michigan achieved world-wide recognition as one of the true leaders in the development, application, and use of digital technology. It was exceptionally well-positioned for leadership as this rapidly evolving technology revolutionized the nature of an increasingly knowledge-driven civilization.

Concluding Remarks

The digital age poses many challenges and opportunities for the contemporary university. For most of the history of higher education in America, we have expected students to travel to a physical place, a campus, to participate in a pedagogical process involving tightly integrated studies based mostly on lectures and seminars by recognized experts. Yet, as the constraints of time and space—and perhaps even reality itself—are relieved by information technology, will the university as a physical place continue to hold its relevance?

Many view the computer as a symbol of the depersonalizing nature of modern science and technology. Yet, if ever there was a tool for empowering the individual, it is information technology. It not only frees us from the mental drudgery of routine tasks, but links us together in ways we never dreamed possible, overcoming the constraints of space and time. In part, it is our collective challenge as scholars, educators, and leaders to build greater public understanding and support for this

extraordinary tool, which is so key to the welfare of our nation and the world. We are on the threshold of a revolution that is making the world's accumulated information and knowledge accessible to individuals everywhere. This has breathtaking implications for education, research, and learning. It is a profoundly democratic revolution which must and which will involve us all.

Those universities which understand their strengths in building learning communities, providing students with the capacity to interact and learn within these communities, and then certifying the learning process may well find the coming digital revolution an extraordinary opportunity. Universities that understand both their unique role and the profound nature of the new technology could well evolve into truly global institutions, using cyberspace to provide educational services to an increasingly knowledge-dependent world.

A Final Observation

No one knows what this profound alteration in the fabric of our world will mean, both for academic work and for our entire society. As William Mitchell, Dean of Architecture at MIT, stresses, "the information ecosystem is a ferociously Darwinian place that produces endless mutations and quickly weeds out those no longer able to adapt and compete. The real challenge is not the technology, but rather imagining and creating digitally mediated environments for the kinds of lives that we will want to lead and the sorts of communities that we will want to have."[14] It is vital that we begin to experiment with the new paradigms that this technology enables. Otherwise, we may find ourselves deciding how the technology will be used without really understanding the consequences of our decisions.

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Part IV

Vision 2000: Positioning

Part IV Vision 2000: Positioning

The vision, strategy, and tactics associated with Vision 2000 were the result of seven years of strategic planning activities involving hundreds of people and many groups within and outside the University. We set a course toward a vision that would position the University of Michigan to be the leading university in America. By the mid-1990s there was strong evidence that the University had made significant progress toward this goal.

But Vision 2000 strategy was very much a positioning effort. It was designed to position the University of Michigan as a leader of higher education by the end of the decade. But this strategy did not propose a specific direction beyond this point. Rather, the vision and strategy of Vision 2000 was an intermediate phase and not as final goals. Put another way, the strategy for the 1990s was 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 21st Century was still in an early stage of development.

Chapter 16 *Vision 2000*

In the early years from 1986 to 1988, our strategic planning efforts placed more emphasis on the process of planning than on the detailed plan itself. We sought to engage faculty and staff in a variety of planning experiences with the central administration as well as in individual academic and administrative units. The goal was to trigger a shift in perspective so that we ceased to simply react to our changing environment. Instead, we developed plans aimed at moving the University toward well-defined goals, seeking to shape our environment in the process.

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, its role and mission, for the 21st Century. This effort was augmented by the development and implementation of a flexible and adaptive planning process. Key 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.

We also recognized that other institutions possessed a vast amount of knowledge and experience. Hence, we viewed part of our early efforts as benchmarking, a process of identifying the best practices in higher education in a variety of areas, ranging from resource acquisition and management to human resources to student affairs. We then selected those models most appropriate to the University of Michigan and wove them into our planning process.

The planning process culminated in the development of a set of goals and strategies for the 1990s known as *Vision 2000*. We viewed the *Vision 2000* strategy as an effort to position the University of Michigan for leadership, but very much within the institutional framework of the last years of the 20th Century. *Vision 2000* was not designed to create a new model for higher education, but rather to achieve leadership and excellence within the existing paradigm of the research university.

Vision 2000: The Leaders and Best!

Like many large organizations, strategic planning exercises at the University proceeded through a variety of mechanisms, formal and informal, centralized and distributed among various units. Most efforts during the decade began with an effort to articulate a vision of the University's future. The general sense among those who participated in these planning exercises was that the quality of the University and its leadership—both as an institution and in the achievements of its people—would determine its impact on society, the state, the nation, and the world.

The Mission

The University of Michigan's mission is complex, varied, and evolving. Broadly speaking, this mission requires the creation, preservation, integration, transmission, and application of knowledge to serve society. In this sense, the University produces not only educated people but knowledge and knowledge-intensive services such as research and development, professional consultation, health care, and economic development. Yet all of these activities are based upon the core activity of learning.

> Mission
> The mission of the University is *learning* . . . in the service of the state, the nation, and the world.

The University serves a vast array of constituents—students at the undergraduate, graduate, professional, and continuing education levels; patients; local, state, and federal government; business and labor; and communities, states, and nations. Most importantly, it also serves society at large. The University of Michigan is one of the few universities in the world that can claim society at large as its primary client. Throughout its history, the University's enduring impact has been through its full array of activities rather than through one subcomponent of its triad mission of undergraduate teaching, research, and public service. Indicative of this unusually broad role is the array of stakeholders in the University, including state and federal government, students and parents, patients, business, foundations, and, of course, alumni and friends of the University.

The Vision

We attempted to capture the heritage of our past and our aspiration for the future in a simple vision statement that borrowed a phrase from the University's famous fight song, "The Victors":

> *Vision 2000*: "The leaders and best"
> The University of Michigan should position itself to become a leading university of the 21st Century, through the quality and leadership of its programs, and through the achievements of its students, faculty, and staff.

Note that this vision emphasized both leadership as an institution and the development of leaders among members of the University community, all based on a foundation of excellence in our programs. This leadership vision required a comprehensive strategy to improve and optimize all of the key characteristics of the University: quality, size, comprehensiveness, excellence, and innovation. *Vision 2000*, enabled the University of Michigan to make considerable progress toward these goals over the course of a decade.

Developing the Strategy

The unusual complexity of the University dictated a similarly complex strategy. In particular, because of the strong coupling between many University activities, we needed to move forward on a number of fronts simultaneously in order to effectively position the university.

The detailed design and execution of the strategy were the responsibilities of many different University leaders—the executive officers, deans and directors, chairs, and so on. However, as president, I believed it was important to stay closely involved in the process, to promote the vision, and to coordinate and knit together the many elements of the strategic process. We targeted the following elements as key to the development of the *Vision 2000* mission.

Elements of the Vision 2000 Strategy

Academic Programs

Though the University of Michigan has long been known for academic programs of unusual quality, breadth, and size, we took a number of steps to sustain and enhance the quality of these programs during the past decade. We paid particular attention to strengthening the University's financial support of its core liberal arts college, the College of Literature, Science, and the Arts. This effort also succeeded in renovat-

ing or building anew essentially all of its academic facilities during the 1990s. Major investments were made in the basic sciences, including new or renovated facilities for chemistry, physics, biology, geology, and mathematics.

The University's professional schools, including Business Administration and Engineering, saw major investments in both facilities and faculty. Both schools soon were ranked among the top five in the nation as a result.

Several of the health science schools also benefited significantly during this period. The Medical School built impressive new research facilities (MSRB I, II, and III) in addition to the massive building program for new clinical facilities. Nursing and Pharmacy, too, benefited from new facilities. The Dental School underwent a major restructuring. The School of Information and Library Studies evolved into a school of knowledge resource management, responding to the demands of the digital age. Social Work, already ranked as the nation's leader, moved into a major new complex. And the Institute for Public Policy Studies was elevated to the School of Public Policy to recognize the growing importance of its instructional and research programs.

Energetic new chancellors oversaw extensive academic program and facilities development on our two regional campuses, UM-Dearborn and UM-Flint.

Education

No more compelling—nor challenging—issue has faced the University in recent years than reaffirming its commitment to undergraduate education. In the late 1980s, we took several steps to enhance the quality of our undergraduate programs, including committing $1 million per year to a University-wide Undergraduate Initiatives Fund. We began an effort to upgrade all of the classrooms on the central campus by including ongoing financing in our base operating budget. We built major new facilities for undergraduate education including the Shapiro Library, the Angell-Haven Computer Center, and the Media Union. The University also implemented strong incentives for undergraduate teaching, e.g., by establishing the Thurnau Professorships for Undergraduate Education and stressing the importance of teaching in faculty promotion and tenure decisions.

Similar efforts occurred within each of our various schools engaged in undergraduate education. LS&A took important steps to revise and improve its introductory courses, receiving national recognition for many of these efforts, including those in chemistry, biology, and mathematics. It introduced a broad array of seminar courses

taught by senior faculty for first-year students. The University made significant efforts to create more learning experiences outside of the classroom by introducing the Undergraduate Research Opportunity Program, community service programs, and living/learning environments in the residence halls.

So, too, many of our professional schools moved rapidly to restructure their educational programs. Of particular note were the massive transformation of the medical curriculum, the innovative changes in the M.B.A. program, and the evolution of library science into the new profession of knowledge-resource management. Several of these schools developed innovative, high-quality continuing education programs. The School of Business Administration developed a world-class Executive Management Education program. Similarly, Medicine and Law inaugurated an array of postgraduate professional education programs.

Michigan also played a national leadership role in graduate education, both through its efforts to reduce the time to degree in the humanities and to create more opportunities for interdisciplinary majors.

International education also received high priority. Following the planning efforts led in the late 1980s by the Provost's Office, the University's international activities were broadened and coordinated. Michigan joined its other Big Ten colleagues as a member of the Midwestern University Consortium for International Activities (MUCIA). It created a new International Institute to coordinate international programs, and it established strong relationships with academic institutions abroad. The Business School led the way with international outreach programs establishing overseas campuses in Hong Kong, Seoul, Paris, and London.

Research

Research done at the University of Michigan has had an immense impact on the state, the nation, and the world. During the 1980s, however, University leadership consciously set out to increase the already superior quality, scope, and impact of this important intellectual activity. By putting into place strong mechanisms to encourage and support research, by playing a major leadership role in determining national research policy, and by attracting and developing scholars of world-class quality, the University moved rapidly to a position of world leadership in its research activities. By the early 1990s the University led the nation not only in the sheer volume of its research activity, but also in the quality and diversity of specific research activities such as information technology, genetic medicine, ultra-fast optics, public policy, and humanistic studies. These activities have increased the excitement and impact of the research environment on campus.

The University also took a more aggressive stance toward technology transfer. In the late 1980s it modified its intellectual property policies to provide more faculty incentives for transferring knowledge developed on the campus to the private sector. The ongoing modification and fine-tuning of policies stimulated even more activity. Advisory groups were formed to assist in technology transfer and small business development. The University also worked to build strong partnerships with private sector companies, state, and federal government agencies to stimulate economic development. The Flat Panel Display Center, the Fraunhofer Institute, and the Tauber Manufacturing Institute all were products of such partnerships.

Diversity

Throughout its long history, the University's distinguishing commitment, as stated by President Angell, has been to provide "an uncommon education for the common man." It has aspired to provide an education of the highest quality to all the people of our state who have the ability and the will to achieve. Yet, despite the University's desire to extend its commitment to people from different races, religious beliefs, and nationalities and to women, it faced serious obstacles to accomplishing this goal. 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 University's educational opportunities.

To address this challenge, in the late 1980s the University of Michigan began an effort designed to bring all racial and ethnic groups more fully into the life of the University. Guided by a strategic plan known as *The Michigan Mandate* (see Chapter 12), our 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. *The Michigan Mandate* has resulted in a far more diverse campus. The number of students of color more than doubled, increasing to more than 25 percent of the total enrollment (with 9 percent African-American). Similarly, the number of faculty of color also doubled during this period to 16 percent (with 5 percent African-American). Furthermore, graduation rates of students of color became the highest among public universities in America, while the success (tenure and promotion) of faculty of color became comparable to that of majority faculty.

Drawing on this experience, the University of Michigan also launched a second major initiative aimed at increasing diversity: *The Michigan Agenda for Women*. The vision was both simple and yet compelling: By the year 2000, the University of

Michigan would become the leader among American universities in promoting and achieving the success of women as faculty, students, and staff. There was significant progress on a number of fronts for women students, faculty, and staff, including a number of women senior faculty and administrative appointments, campus safety improvement, and dependent care.

The University also took steps to eliminate those factors which prevented other groups from participating fully in its activities. For example, it extended its anti-discrimination policies to include sexual orientation and extended staff benefits and housing opportunities to same-sex couples. Massive investments in recent years were made in renovating University facilities in an effort to provide better access for the disabled.

Economic diversity has also been a long-standing goal of the University. Despite the need to raise tuition in the wake of deteriorating state support, we have been able to maintain effective financial aid programs that have preserved access to the University by students from all economic backgrounds. This was demonstrated by the high admissions yields in lower-income groups and rising student retention rates, which are now among the highest in public higher education.

Campus Life

Over the past several years, the University focused on improving the quality of campus life for students, faculty, and staff. A series of actions were taken to improve campus safety, including the development of a campus police organization; major investments in campus lighting and landscaping; and the implementation of special programs such as the Sexual Assault and Prevention Center, the Night Owl transportation service, Safewalk, and the Task Force on Violence Against Women. Student leadership joined with the administration in developing and implementing a new code of Student Rights and Responsibilities. Broad programs were undertaken to address the concerns of substance abuse on campus, with particular attention to alcohol consumption and smoking.

We saw increased efforts to enhance opportunities for learning in the student living environment and through extracurricular activities. Our intercollegiate athletics programs were restructured to broaden the participation of women, and to integrate student-athletes more effectively into the life of the broader campus community.

Financial Strength

During the early 1980s, state support of the University had declined in real terms by 23 percent. This continued a three-decade trend which had seen state appropriations drop from 70 percent of the University's operating budget in the 1960s to 11 percent in fiscal year 1995-1996. Despite this erosion in state support, the University managed not only to maintain but enhance its quality and capacity to serve through a three-tiered strategy:

1. effective cost containment
2. wise management of resources
3. aggressive development of alternative revenue sources

More specifically, the administrative costs of the University were reduced to a level that ranked among the lowest of our public and private peers. The implementation of sophisticated, effective programs for managing the assets of the University resulted in eight-fold growth in its endowment to over $2.0 billion. Further, the loss of state support was compensated, to some degree, by growth in revenue from tuition and fees, sponsored research grants, private gifts, income on endowment, and auxiliary activities such as hospitals, housing, and continuing education. As but one measure of the effectiveness of these efforts, in 1994 the University became the first public institution in history to have its credit rating raised to Aa1 by Wall Street (with its bonds trading at Aaa levels by 1996).

Private Support

For some time, the University had recognized that increasing private support, through both private giving and income from endowment, would be the key to adapting to a future of increasingly constrained state support. The conduct of successful fund raising campaigns and a sophisticated asset management strategy for endowment were especially important. The University set a goal for the year 2000 of building private support to a level comparable to state appropriation, roughly $300 million per year by 1995.

Through the Campaign for Michigan, with a $1 billion fund raising goal for 1996, the University was able to make very significant progress toward this goal. Private giving tripled to $160 million per year, and the endowment increased six-fold to $2.0 billion by 1996. Michigan became not only the first public university in history to successively mount a $1 billion fund raising campaign, but the $1.4 billion raised during the Campaign for Michigan exceeded that of all but three private universities.

From the perspective of our Vision 2000 goal, in 1996, private giving (including endowment distributions) amounted to $260 million—clearly on track to exceed our state appropriation by the end of the decade.

Financial and Organizational Restructuring

In order to respond to the precipitous decline in state support and the growing commitments of the University, our leadership took several steps to better attract, deploy, and manage resources. For example, broad strategic planning activities in the Office of the Provost and the Office of the Vice President and Chief Financial Officer and the transformation process of the University Hospitals led to the implementation of an effective University-wide total quality management program (M-Quality). The University restructured and repositioned the management of both its endowment and operating capital. It moved toward more realistic pricing of University services, through increased tuition and fees and the negotiation of indirect cost rates for sponsored research. And in 1996, we brought up the necessary administrative systems to allow the implementation of a new resource and cost allocation system, responsibility-centered management. This system provided both strong incentives and adequate management control at the unit level as a key step toward more efficient operation.

As evidence of the effectiveness of these efforts, financial comparisons ranked the University's administrative costs (as a percentage of total expenditures) third lowest among AAU universities. Yet another sign of the efficient use of resources is that while essentially all of the University's programs ranked among the top ten in academic quality, Michigan ranked 40th in the nation in terms of expenditures per student (or faculty). Indeed, the University was able to provide an education of the quality of the most distinguished private universities at about one-third the cost!

There was also a major restructuring of the auxiliary enterprises of the University, ranging from operations such as University Hospitals, University Housing, and Intercollegiate Athletics to University-owned corporations such as Veritas and M-Care.

Key in this first phase of financial restructuring was the building of effective leadership and management teams, extending from the Executive Officers to the lowest management levels. The restructuring of the University's Personnel and Affirmative Action programs into a far more sophisticated Human Resources operation was important to further progress.

Rebuilding the University

One of the great challenges the University faced through the 1980s was the need to upgrade an aging physical plant. A combination of low interest rates and construction costs, state capital outlay, private support, and support from auxiliary activities finally enabled the University to launch a massive effort to rebuild the Ann Arbor campus. The Medical Campus led the way with almost $1 billion of new construction over the past decade. The last remaining facilities necessary to complete the North Campus were built (the Francois Xavier Bagnoud Aerospace Building, the Media Union, and the Lurie Engineering Center). The South Campus saw great activity, with the renovation or construction of most athletic facilities now complete. In addition, major new facilities were provided to support business operations (Wolverine Tower, the Campus Safety Office, and the M-Care complex). The UM Medical Center developed a new campus in northeast Ann Arbor for primary care.

Perhaps most encouraging was the progress in addressing the needs of the Central Campus, with most of the major work completed by 1996 (the Shapiro Library; the Physics Laboratory; Tisch Hall for the Humanities; the Social Work Building; and major renovations of East Hall, West Hall, C. C. Little, and Angell Hall). Indeed by this time the remaining projects necessary to complete the entire rebuilding of the Ann Arbor campus had been reduced to less that $100 million—quite a realistic goal for the last several years of the decade. In fact, state funding was obtained for these projects in spring of 1996, while a financing plan to renovate Hill Auditorium and the Rackham building was developed.

Similar progress was made on our regional campuses, with major new academic facilities on both campuses. UM-Dearborn benefited from new classroom and laboratory facilities, while UM-Flint brought on line a new science laboratory, library, and administrative center. UM-Flint was given the AutoWorld site, along with funds for site preparation, by the Mott Foundation, as the first stage of a major expansion of the campus.

While the rebuilding and/or major renovation of most of the campus during the past decade was an extraordinary accomplishment, of comparable importance was the massive effort to eliminate the deferred maintenance backlog that arose during the 1970s and 1980s. Further, major efforts were made to provide ongoing support for facilities maintenance so that such backlogs would not arise in the future.

There was also substantial effort to improve the landscaping and appearance of the campus. With the completion of the major construction projects on the Central Campus and North Campus, new master plans for landscaping were developed and

launched, including the Ingalls Mall and Diag projects on the Central Campus and the "North Woods" landscaping plan for the North Campus.

Information Technology

Michigan played a significant leadership role in the use of information technology in higher education. Our management of NSFnet evolved into the NREN, the National Research and Education Network, the backbone of the Internet and the precursor of the "information superhighway." This effort linked together over three million computers, 25,000 networks, 1,000 universities, 1,000 high schools, and over twenty-five million people worldwide. Eventually, we spun off a for-profit company, Advanced Network Services, to manage the Internet, selling it in 1995 to America On-Line.

Moreover, the University achieved a position of national leadership in the quality of the information technology environment it provided for students, faculty, and staff. Through close cooperation with industry (e.g., IBM, Apple, MCI, Sun, and Xerox), the University was frequently among the first to develop and install major new technology. Its computing and networking environment became among the most sophisticated in the world. It managed the transition from time-sharing mainframe systems to client-server networks and continued to provide access to state-of-the-art technology.

Through innovative programs such as the Fall Kickoff Computer Sales, the Rescomp (Residential Hall Computing) Program, and the unusual array of on-campus computing clusters and centers—including massive facilities such as the Media Union—it provided students with extraordinary access to this rapidly evolving technology.

The University also played a leadership role in the digital age, through its leadership of the national digital library project, the evolution of its School of Information and Library Science into a new School of Information focused on digital knowledge management, and the Media Union which made Michigan a national leader in the development and use of multimedia technologies.

Strengthening the Bonds with External Constituencies

Much of the effort of *Vision 2000* was directed at building far stronger relationships with the multitude of external constituencies served by and supporting the University. We strengthened bonds with both state and federal government, ranging from

systemic initiatives such as opening and staffing new offices in Lansing and Washington, to developing personal relationships with key public leaders. A parallel effort was made to develop more effective relationships with the media at the local, state, and national levels. These included major media campaigns such as the Big Ten public service announcements and the Science Coalition. More recent efforts were directed toward strengthening relationships with key communities including Ann Arbor, Detroit, and Flint.

The major political changes occurring both in Congress and state government in fall of 1994, however, necessitated significant changes in our strategy, including major new investments of resources and time. This new political climate required a far more strategic effort by the University.

Transformation of the UM Medical Center

Some of the most significant accomplishments of the past decade occurred within the University Medical Center. Even as the new Replacement Hospital Project was being completed, the leadership of the Medical Center was already moving ahead with a dramatic transformation effort designed to reposition the UM Hospitals for the rapidly changing health care environment. Through efforts such as an award-winning total quality management program, cost reductions, incentive compensation, and the aggressive development of new health care delivery components such as M-Care, the UM Hospitals became one of the most successful academic health centers in the nation, as we noted in Chapter 9.

During the early 1990s, through the joint effort of the UMH Director, the Dean of Medicine, and the chairs of the clinical departments, a series of additional steps were taken that strengthened the UM Medical Center even further. These included the merging of the Clinical Service Plans and the UMH bottom line; the establishment of a nonprofit corporation, the Michigan Health Corporation, designed to enable equity investments with private sector partners; the development of a new medical center campus for primary health care; and the exploration of mergers or alliances with other major health care organizations in Michigan.

Intercollegiate Athletics

Intercollegiate athletics at Michigan are not only an important tradition of the University, but also attract as much public visibility as any other University activity. While Michigan had long been known for the success and integrity of its athletics

programs, here too a rapidly changing environment demanded significant changes. Indeed, the highly independent operation of the Athletics Department had led to serious problems in the 1980s, such as the major violations in the baseball program, the detachment of athletes and coaches from the rest of the University, and the increasing financial pressures on the programs.

To this end, in the late 1980s and early 1990s the University worked to better align Michigan athletics with the academic priorities of the University. Student-athletes were provided with the same educational and extracurricular opportunities as other Michigan students. Coaches were given more encouragement for their roles as teachers. And clear policies on admissions, academic standing, substance abuse, and student behavior were drafted to make student-athlete policy consistent with the rest of the University.

So, too, a series of steps were taken to secure the financial integrity of Michigan athletics. Cost-containment methods were applied to all athletics programs. We renegotiated the gate-receipt revenue-sharing agreements with other Big Ten institutions to provide more equitable treatment for Michigan. A major fund raising program was launched. More sophisticated use of licensing was developed. And major improvements in athletics facilities were completed, including Michigan Stadium (both a return to natural grass and infrastructure repairs), Canham Natatorium, Keen Arena, Yost Arena, a new Tennis Center, new fields for women's sports, and a new varsity track. As a result, the Athletics Department became the most financially successful program in the nation.

The University made an especially important effort to provide women with the same opportunities for varsity competition as men. Major investments went into existing women's programs as well as in the addition of new programs (women's soccer and women's rowing). Michigan became the first major university in the nation to achieve true gender equity, as measured by an equal number of men and women in varsity athletics in 1996.

Michigan also played an important leadership role in intercollegiate athletics at the conference and national level. It played a key role in restructuring revenue-sharing agreements within the Big Ten by helping to position the conference better with respect to television agreements and by building a stronger alliance with the Pac Ten. At the national level, Michigan strongly supported the effort to gain presidential control over intercollegiate athletics and to restructure the NCAA.

The impact of these efforts is visible on the field as well as in the financials. While Michigan was once content to be successful primarily in a single sport, football, today it competes at the national level across its full array of twenty-two varsity programs, as evidenced by the fact that it finished each year among the top five institutions nationwide for the national all-sports championship (the Sears Trophy). During the 1990s, Michigan went to five Rose Bowls (football), three Final Fours—including several NCAA championships (men's basketball, ice-hockey, and swimming), three ice-hockey Final Fours, won over fifty Big 10 championships, and dominated the Big 10 in men's and women's swimming (including winning the NCAA championship), men's and women's cross-country, women's gymnastics, men's and women's track, and women's softball. And it has provided some of the most exciting moments in Michigan's proud sports tradition—Desmond Howard's and Charles Woodson's Heisman Trophies, Steve Fisher's NCAA championship, the Fab Five, Mike Barrowman's Olympic Gold Medal, Tom Dolan's national swimming championships, and on and on . . .

Cultural Changes

Some of the most important changes at the University over the past decade have been cultural. For example, the student culture evolved far beyond the distrust and confrontation born in the 1960s and characterizing student-faculty-administration relationships throughout the 1970s and 1980s. Today there is a very strong sense of mutual respect and trust between students and the administration, particularly on the part of student government and, amazingly enough, even in student publications such as the *Michigan Daily*. Students have stepped up to important leadership roles, accepting responsibility and providing important visions for our future.

The University's commitment to diversity through major strategic efforts such as the Michigan Mandate and the Michigan Agenda for Women would not have been possible without a major change in the campus climate. Diversity is now not only tolerated but it is recognized as essential to the quality of the University. While this has brought the inevitable tensions associated with an increasingly diverse campus community, we have made a real effort to frame these as an opportunity for learning how to prepare students for an increasingly diverse world.

The University has seen major changes in values and attitudes. Michigan athletics has moved far beyond a simple focus on a winning football program to accepting the view of athletes as students and coaches as teachers. It has reaffirmed the importance of the integrity of its programs and committed itself to true gender equity for women's athletics.

Through both development and alumni relations, alumni of the University have come to understand the importance of their financial support as state support has eroded. Further, they have responded to our invitation to become far more actively involved in all aspects of University life.

Changes have occurred far more slowly in the faculty culture, because of its complexity and diversity. Fundamental academic values still dominate this culture—academic freedom, intellectual integrity, striving for excellence—as they must in any great university. However, there seems to be a growing sense of adventure and excitement throughout the University as both faculty and staff are more willing to take risks, to try new things, and to tolerate failure as part of the learning process. While we are not yet where we need to be in encouraging the level of experimentation and adventure necessary to define the future of the University, it seems clear that this spirit is beginning to take hold.

New Initiatives

During the past decade, a great many initiatives were launched that hold great potential both for the University and for higher education. Examples include:

- The Media Union
- The Institute of Humanities
- The Institute of Molecular Medicine (Gene Therapy)
- The Center for the Study of Global Change
- Community Service/AmeriCorps
- The Flat Panel Display Center
- The Tauber Manufacturing Institute
- The School of Information
- Living/Learning Environments: 21st Century Project, WISE
- The Davidson Institute for Emerging Economics
- The New Music Laboratory
- The Institute for Women and Gender Studies
- Rescomp/Angell-Haven
- The Federal Direct Lending Program
- Responsibility Center Management
- M-Quality
- Incentive compensation experiments
- Presidential Initiative Fund
- Undergraduate Initiative Fund
- The Millennium Project.

National Leadership

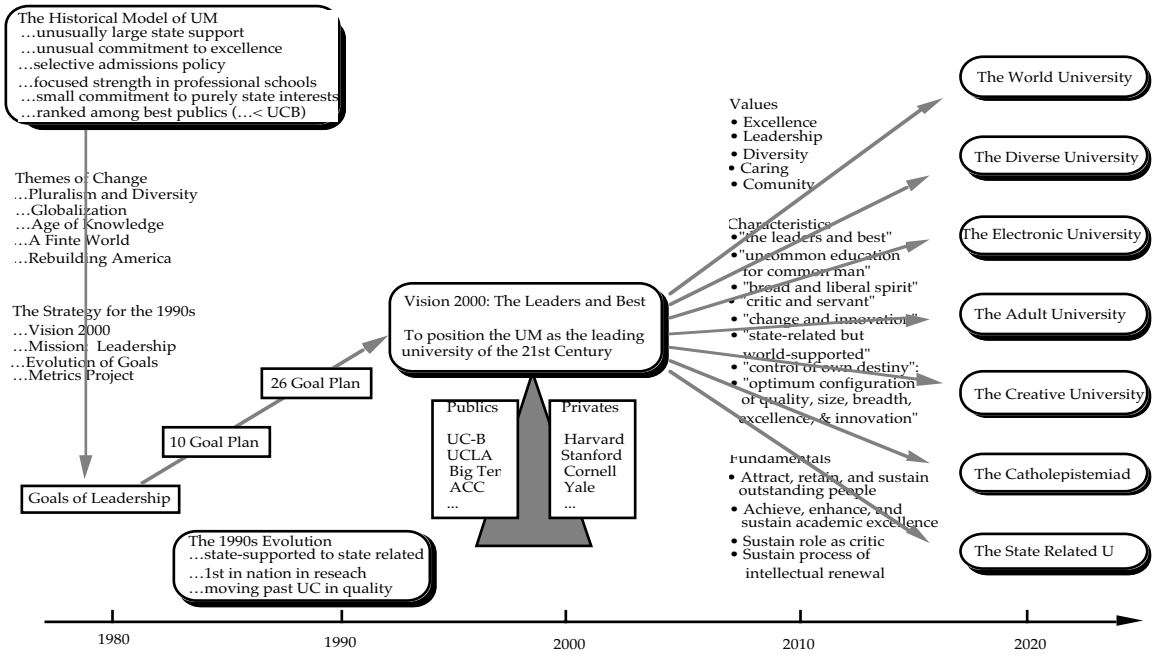
By the mid 1990s, the University of Michigan became recognized as a national leader in a number of important areas:

- Quality of academic programs across all academic and professional disciplines
- Quality achieved per resources expended
- Faculty salaries (among publics)
- Research activity
- Financial strength (among publics)
- Information technology environment
- Intercollegiate athletics
- Health care operations.

The Vision Beyond 2000

The vision, strategy, and tactics associated with *Vision 2000* were the result of seven years of strategic planning activities involving hundreds of people and many groups within and outside the University, all in an effort to position the University of Michigan as the leading university in America. By the mid-1990s there was strong evidence that the University had made significant progress toward this goal.

As I noted in the introduction to Part IV, the *Vision 2000* strategy was very much a *positioning* effort, designed to make the University of Michigan a leader of higher education by the end of the decade. As such, this strategy did not propose a specific direction beyond this point. Rather, the vision and strategy of *Vision 2000* were regarded as intermediate phases and not as final goals. But the task of determining just *where* the University will lead in the 21st Century was still in an early stage of development in 1990.



While the *Vision 2000* was exciting, compelling, and clearly attainable for the 1990s, it was still only a short-range vision. The development of a vision for the longer term—for the University of Michigan's third century—would pose an even greater challenge since the University is such a dynamic institution. During the 175-year history of the University of Michigan, its mission had evolved to include teaching, research, and service across an extraordinarily broad array of disciplines and professions. We were only beginning to sense the profound degree to which the comprehensive university is evolving rapidly once again during the 1990s, broadening considerably beyond its traditional teaching-research-service mission to a array of activities which could best be described as "knowledge-intensive." Yet even this evolutionary process might just be a transitional phase to institutional forms we cannot even imagine today.

From this perspective, it was a good thing that all the vital signs of the University were so strong. To face a future of rapid and dramatic change, the University would need this strength and momentum.

TABLE

Major Goals and Objectives of Vision 2000

Vision Statement: To position the University of Michigan as a leading university of the 21st Century.

Leadership Goals:

1. To enhance the quality of all academic programs
2. To sustain UM blend of broad access and high quality
3. To build more spires of excellence
4. To achieve more UM firsts
5. To become the leading research university in the nation
6. To achieve the objectives of the Michigan Mandate
7. To make the UM the university of choice for women leaders
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 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 quality of institutional advancement events/facilities
15. To increase private support to exceed state appropriation by 2000
16. To increase endowment to $2 billion by year 2000
17. To dramatically improve quality of UM facilities

Trail-Blazing Goals:

18. To restructure UM to better respond to intellectual change
19. To explore new models for the University of the 21st Century
20. To position UM as a "world university"
21. To position UM as model of the "electronic university" of 21st 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 develop and implement a plan for "restructuring" the state
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!

Chapter 17 *The Business Plan*

Key to any successful strategic effort is a plan to acquire and manage the resources necessary to achieve the goal. This was particularly important for the University of Michigan's *Vision 2000* strategy, since the institution had experienced a serious deterioration in its state support through the 1970s and 1980s.

The Premise

In order to develop a realistic planning context, during the late 1980s University officers conducted many separate meetings with public and private sector leaders to assess possibilities for enhanced state support. Each group was asked to challenge the following two premises:

1. Because of the limited will and capacity to support higher education, and in the face of a weakened economy and other social needs, the state would, at best, be able to support higher education at the level of a regional four-year college—not at the level of a world-class research university.

2. Further, political pressures would make it increasingly difficult for state leaders to give priority to state support for flagship institutions. Instead, strong forces would equalize state appropriation per student across all state universities.

In the end, few of these leaders were able to disagree with our premises. Further, all thought that the University's only prudent course was to assume that state support would continue to deteriorate throughout the 1990s.

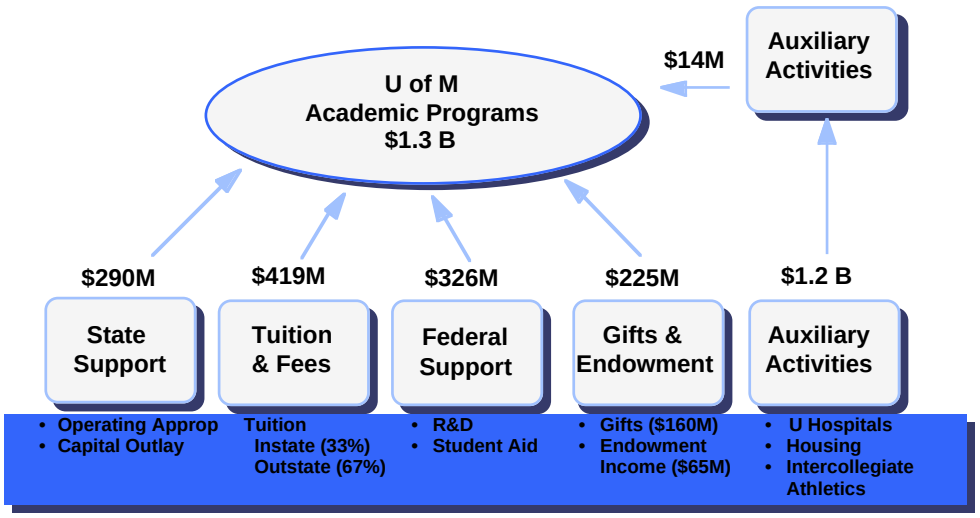
With this "reality check" behind us, we set out to develop a business plan based upon the following objectives:

- To build alternative revenue streams (tuition, federal grants and contracts, auxiliary enterprises, and private giving) to levels sufficient to compensate for the loss in state support.

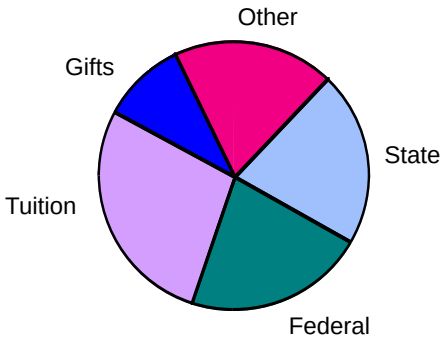
- To deploy our resources far more effectively than we had in the past by focusing on quality at the possible expense of breadth and capacity, and while striving to improve efficiency and productivity.

- To enhance the University's ability to control its own destiny by defending our constitutional autonomy and building strong political support for our independence.

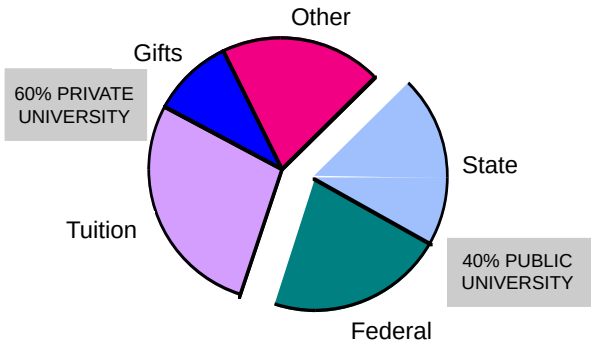
To lay the foundation for this discussion, the University of Michigan's revenue portfolio in the mid-1990s was as shown below:



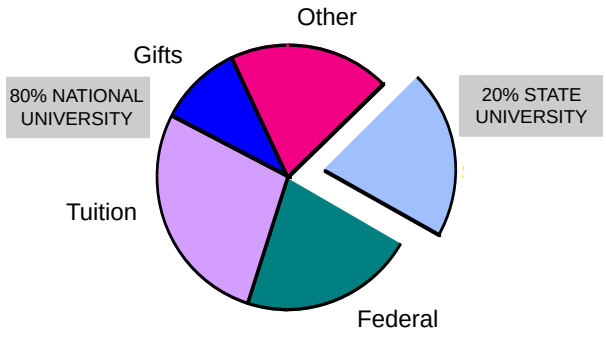
We can represent this portfolio as a pie-chart:



From this perspective, it is clear that the University was already primarily a "privately supported" public university:



Furthermore, from a somewhat different perspective, it was in many ways more a "nationally supported" than a "state supported" university:



These distinctions are important to keep in mind as we examine the various revenue and cost components of the University's financial base:

Revenues:

- State Support
- Federal Support
- Tuition and Fees
- Gifts and Endowment Income
- Auxiliary Activities

Expenditures:

- Enhanced Productivity and Efficiency
- Downsizing Strategies
- Growth Strategies, e.g., nontraditional education

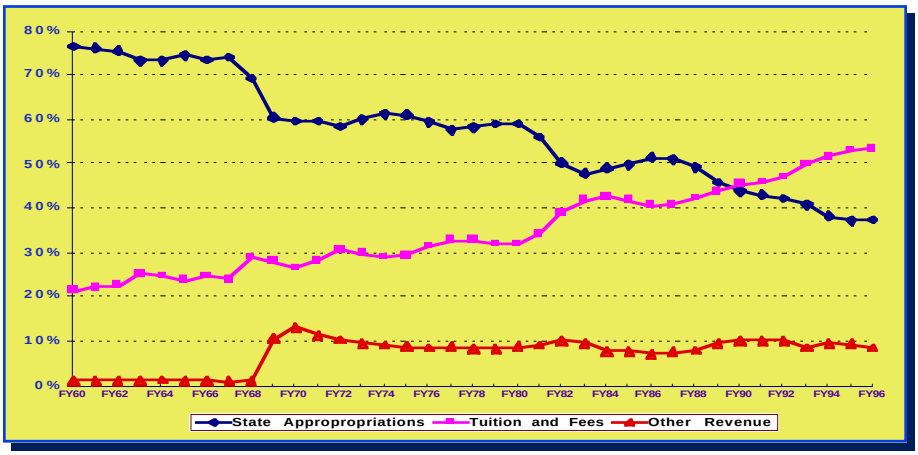
Hybrid Strategies
- Mixed Public/Private Strategies
- National University Strategies
- Unbundling Strategies

An assessment of each area is given below.

State Support

State appropriation had been a declining share of the University's revenue base for many years. The State of Michigan had fallen from among the top five states in the nation in its support of higher education in the 1960s to the bottom third of the states in the 1980s. More recently, during the decade of the 1980s alone, state appropriations had dropped from 60 percent of our General Fund (state appropriation plus tuition plus indirect cost revenue) to 40 percent, with the share provided by tuition rising accordingly.[1, 2]

The Changing Mix of General Fund Revenue



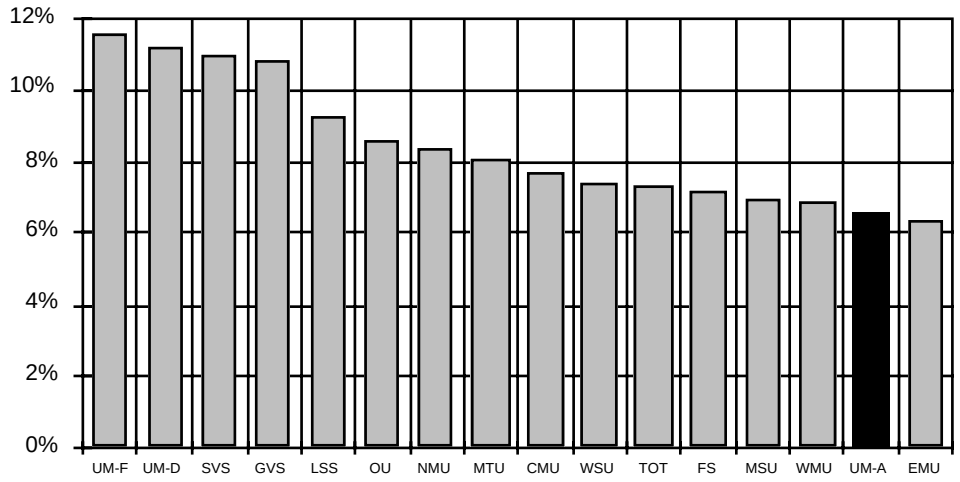
The outlook for the state's economy and the many competing demands for state support (including not only social services and corrections, but also K-12 education and the other state supported universities) all pointed to appropriations which would remain at or below the inflation rate for the foreseeable future. Cost shifting from the federal government through unfunded mandates, such as Medicare, Medicaid,

Americans with Disabilities Act, and Occupational Safety and Health Administration, had destabilized many state budgets. Furthermore, it was clear that public pressure would continue to drive increases in public support of corrections and K-12 education at the expense of higher education.

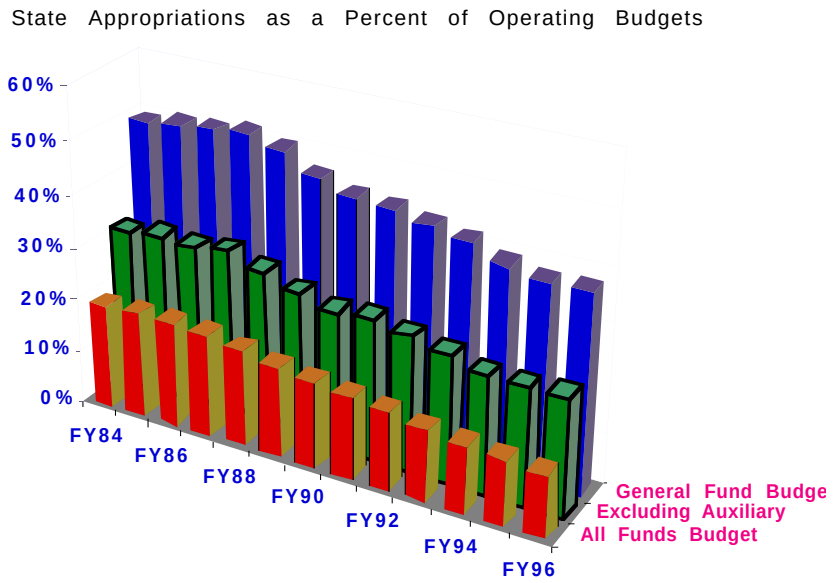
While education was a state priority, so too was a reduction in property taxes, which would likely require a reallocation of general tax revenue to compensate school districts and local communities. Further, powerful political forces prevented major reallocation within the existing tax expenditure priorities, e.g., from corrections to education or through the elimination of tax loopholes (so-called "tax expenditures"). Finally, the two-decade trend toward increasing public support of private colleges was likely to continue, again at the expense of public universities. It is worth noting that while the State of Michigan had fallen to the bottom third in its public support of public universities, it had risen to first in the nation in public dollars flowing to its private colleges, testimony both to the effective lobbying of these institutions and the absence of any public policy for prioritizing public support of higher education.

While we had some hope that we would be able to protect higher education in Michigan against the massive cuts experienced in other states such as California, Ohio, and New York, it was unlikely that we would see any real growth in state support. From a planning point of view, the very best we could expect was to see state appropriations track the inflation rate during the 1990s. Even this was likely too optimistic during the period 1992-1995. State support would continue to decline as a percentage of our resource base for the foreseeable future.

In the 1970s and 1980s, a combination of political factors placed the University of Michigan's Ann Arbor campus at the very bottom of state funding priorities. Below we have shown the compound growth in state appropriation for each of Michigan's fifteen public campuses during the two decade-period from 1970 to 1990:



For this two decade period, UMAA ranked next to last among the state's fifteen public campuses in both the increase in its annual state appropriation and the dollars per student provided for capital outlay.



The situation was slightly more optimistic for state capital outlay. Michigan had been quite unusual among the states in providing little direct support of capital facilities on public campuses. Largely due to a massive prison construction program launched in the early 1980, state funding of new campus projects had been frozen for almost a decade. The University of Michigan's Ann Arbor campus was particularly disadvantaged by this freeze, receiving state funding for only two new academic facilities ($70 M) over that twenty-year period. However, it should also be acknowledged that the administration's decision in 1978 to give the Replacement Hospital Project our highest priority pushed many urgent academic projects to the back burner.

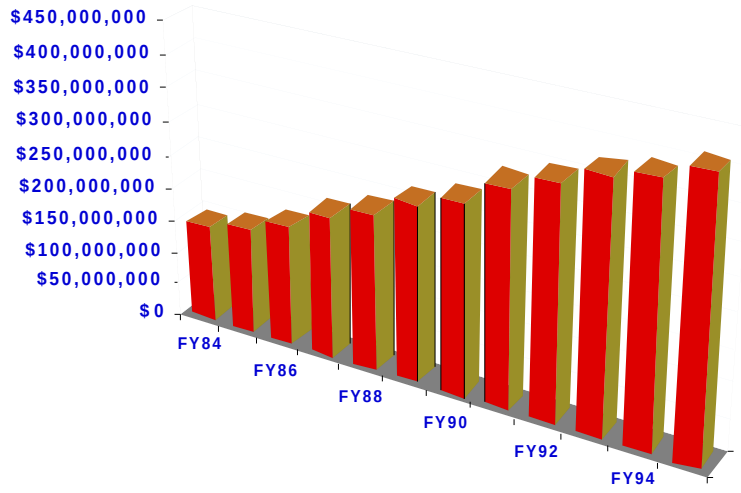
Eventually, state leaders began to acknowledge that the costs of further deterioration of campus facilities would be very high to the state, both in terms of institutional quality and future replacement costs. Further, given the state's economy, there were strong incentives for launching a limited capital program to stimulate jobs in the construction industry. These two factors pointed to an increasing likelihood that some limited state funds would be available for campus facilities during the 1990s, perhaps $200 million over the decade for the University of Michigan. This was quite small compared to other public institutions, but significant relative to the historical level of state support for Michigan.

About the only really good news from state government was a shift away from the tendency to interfere with university autonomy through efforts to constrain tuition, out-of-state enrollments, faculty hiring qualifications, and even to dictate curricula. Both the Republican administration and the leadership of the Legislature believed that such matters were best left to the governing boards of the universities. Lansing's willingness to let campuses determine their own strategies would prove to be critical during a time of financial hardship.

Federal Support

Sponsored research from both federal and industrial sources had grown rapidly during the 1980s and provided a major source of funding for the University. The major part of this revenue was channeled into the salaries and equipment needs of faculty researchers and their associates, greatly expanding the University's capacity to carry out its research mission. A smaller but still significant portion was used to help cover the indirect costs of this research. The bulk of this latter portion was budgeted in the general fund; it had been the single most rapidly growing component in recent years and had been a critically important source of budget flexibility on the margin.

Growth in Sponsored Research Expenditures
at the University of Michigan - Ann Arbor



In the late 1980s, the University's federal support (primarily sponsored research support and student financial aid) began to exceed its state support for the first time. In 1992, the University of Michigan passed MIT to become the nation's leading research university in total R&D expenditure. Hence it was clear that the University had not only been remarkably successful in competing for federal support, but that such support had now become the largest single component of the University's resource for academic programs.

Yet, while we were proud of the ability of our faculty to compete for these resources, we began to encounter the risks associated with becoming ever more dependent on federal support. First, it was likely that the effort to constrain or reduce the federal deficit would have an impact on the availability of sponsored research funds. Second, the effort to modify indirect cost reimbursement policies—which was, in reality, an effort to shift more research costs from the federal government to research universities—would have a serious impact on the University of Michigan because of the particular way we account for such indirect costs. Finally, as a leader in federal R&D, the University also had become a highly visible target for those in Washington and in the media who wished to attack research universities.

The prognosis for federal financial aid was also quite uncertain. We needed to consider the fact that the growing commitment to balancing the federal budget might, for instance, result in spending cuts in areas of importance to higher education, rather than in the constraint of entitlement programs. Furthermore, most scenarios suggested that with the retirements of the baby boom generation beginning in 2010, entitlement programs such as Medicare, Medicaid, and Social Security, could run wildly out of control, thereby putting even more serious pressure on federal expenditures in other areas.

Clearly, discretionary domestic spending, research and education programs, and federal support of the research university were all at great risk. Some leaders suggested that even the very viability of the research university paradigm might be at significant risk during the decade ahead.

We anticipated that the decade-long deterioration in federal financial aid programs, which saw federal aid decline by 50 percent during the Reagan and Bush administrations, would be likely to come to an end with the Clinton administration. However, we also speculated that the trend away from federal grants to federal loans would continue, with the possible introduction of new direct loan or income-contingent repayment plans. While such programs would clearly assist students in meeting the costs of a college education, they would only help the University if we could implement tuition rates which more closely reflected the real costs of education.

The tendency toward increasing federal regulation of health, safety, conflict of interest, scientific misconduct, and foreign involvement would likely continue. So too would the costs associated with compliance continue to rise.

Finally, we were concerned with the political influence of the Michigan congressional delegation itself, an important factor in both protecting and advancing the interests of the University during the 1990s. Several seats had been lost through reapportionment, and some key members of the delegation had retired. We feared that both factors would significantly erode the political strength of the state and, indeed, the entire midwest.

Tuition

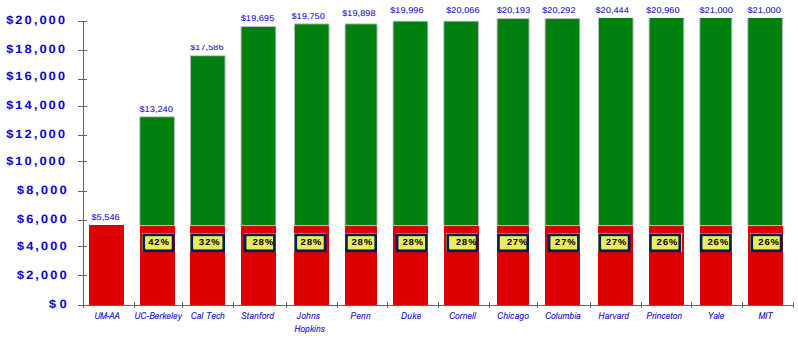
While state appropriation had been declining, the share of total revenue from tuition had been rising. The sometimes breathtaking increases of tuition rates were, of course, primarily responsible, though increases in enrollment and slight shifts in enrollment mix from in-state to non-resident students also contributed.

We believed it unlikely that tuition revenue could continue to grow so rapidly in the years ahead, or be relied upon to offset the continued deterioration in state support. Public concern over such increases had brought much negative attention and criticism regarding tuition rates, the most visible manifestation of college and university budgets. Students, parents, state government, and the public generally had become all highly sensitized to further increases in tuition, and resistance to such increases was likely to be effective. In fairness, University regents, administration, faculty, and staff were themselves concerned about continuing tuition increases, but in the face of declining state subsidies, we saw no other alternative that could guarantee the quality of higher education.

Another reason we could not rely on tuition increases was the fact that the gap between our tuition rates for non-resident students and those of our most important peer universities had now been virtually eliminated. We had begun the 1980s with a substantial margin between our rates and those of our peers, and we took advantage of that margin by increasing our tuition by above-average amounts for several years. Having effectively closed the gap, we were now constrained to rates of increase similar to those of our peers, at a time when all institutions, both public and private, were being constrained in tuition increases by public concerns and market pressures.

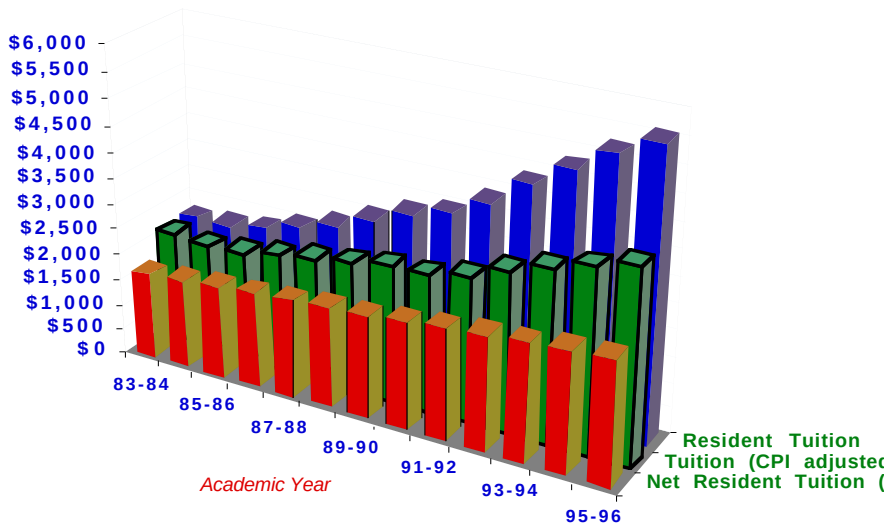
We did, however, see some potential for increasing tuition revenues. While non-resident tuition rates were essentially at private levels and therefore constrained by the private marketplace, in-state tuition rates were quite low, particularly when measured against the costs of institutions of comparable quality, as shown in the figure below.

UM Tuition Cost for a Michigan First Year Undergraduate in Relation to Tuition at Other Top Universities 1995-96



State support had by this time eroded to the point at which it could no longer compensate for the difference between in-state and out-of-state tuition for those Michigan residents enrolled in the University. The University's aggressive efforts to maintain strong financial aid programs in the face of rising educational costs had protected the principle that any Michigan residents academically qualified to enter the institution would have their demonstrated financial need met. Indeed, when the financial aid provided to in-state undergraduate students was taken into account, it was clear that the average discounted tuition had remained remarkably stable during a period in which state support had plummeted, as shown by the following figure.

Resident Undergraduate Tuition
(Actual, Discounted by CPI, and Further Discounted by UM Financial Aid per Undergraduate Student)



Clearly, given the inadequate subsidy of both the costs of education of Michigan residents and the needs of the University, we saw many compelling reasons why in-state tuition should be increased. We calculated the potential of this revenue source this way: If one assumes a difference of $17,000 - $6,000 = $11,000 between average out-of-state and in-state tuition levels, then the gross tuition potential for the roughly 22,000 Michigan residents enrolled at UM-AA is 22,000 x $11,000 = $242 million. Of course, the University's commitment to broad access would require that a certain fraction, say one-third, of these dollars go into increased financial aid. But even so, this would yield an estimated potential additional tuition revenue of $160 million per year. Note as well that one could realize additional tuition revenue either by increasing in-state tuition levels to a higher fraction of out-of-state levels, or by modifying the in-state/out-of-state enrollment ratio.

What was a realistic goal for additional tuition revenue? Although the present in-state tuition was less than 30 percent that of out-of-state, historically it had been closer to 40 percent to 50 percent, even with significantly higher state support. Further, although the in-state/out-of-state ratio of our undergraduate student body was at 70 percent/30 percent, it had historically averaged closer to 60 percent/40 percent. Thus a useful target for the near term would be to adjust:

In-state tuition —> 40 percent Out-of-state Tuition
In-state/Out-of-state undergraduate enrollments —> 60 percent/40 percent

The in-state/out-of-state enrollment adjustment would generate $24 million/year, while the increase in in-state tuition would generate $44 million/year.

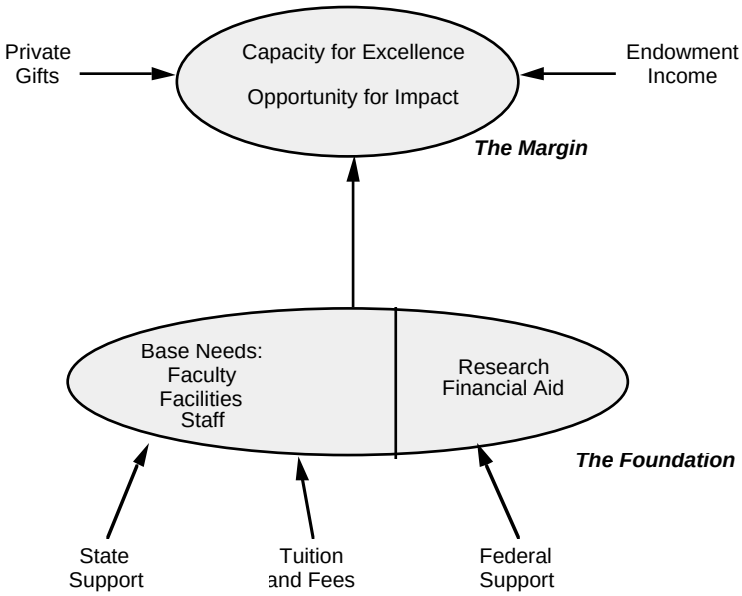
Private Fund Raising

Private giving was potentially the one bright spot in this revenue outlook. This source had shown encouraging growth in the past, and we anticipated even greater success in the future in response to expanded efforts. As important as this source was likely to be, however, it was unfortunately true that it rarely resulted in fully flexible resources. As we succeeded in gaining private support for some of our key new priorities, therefore, the need for continuing support for our ongoing core activities would remain.

Here, there were two components of private giving:

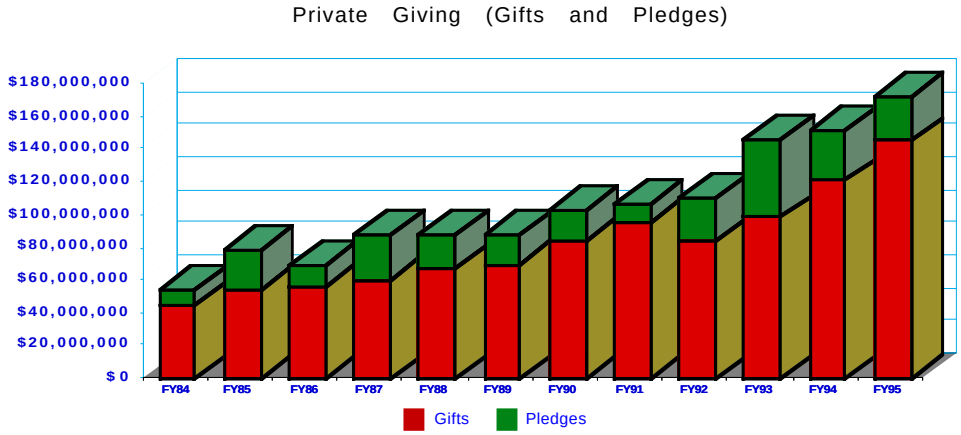
1. the annual gifts to the University
2. the distributed income on endowment

We had long assumed that private giving provided the margin of excellence for our academic programs. As illustrated in the diagram below, while state support, tuition and fee revenue, and federal government research support provided the foundation of our resource base, private support was a critical component to achieve excellence.

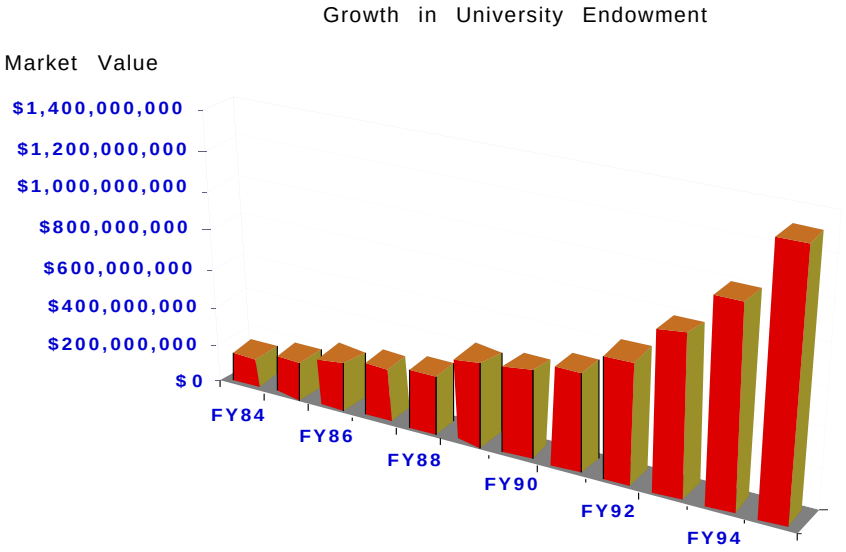


In 1990, the University began working toward the goal that by the end of the decade, the annual level of private support would exceed state appropriations. This would require increasing private support to more than $300 million per year by the end of the decade.

As of 1996, we were on course toward this objective. Private giving had almost tripled, from $60 million to $165 million (see chart below).



Aggressive efforts to solicit and manage endowment assets had resulted in growth from $250 million in 1988 to $2.0 billion in 1996.



By 1996, we were well on track to meeting our goal with private support at $165 M of gifts plus $90 M of endowment income or $255 M, compared to a state appropriation of $300 M. Our goal for the year 2010—the most ambitious of all—was to build an endowment with an income distribution exceeding our annual state appropriation. (Of course, it was also possible that a continuation in the erosion of state support might bring us to this goal sooner than we expected.)

Another Way to Finance UM

	1995	2000	2010
State Support	$280M	280	280
Endowment	1,300	2,500	6,000
Endowment Payout	65	125	300
Private Gifts	140	200	300

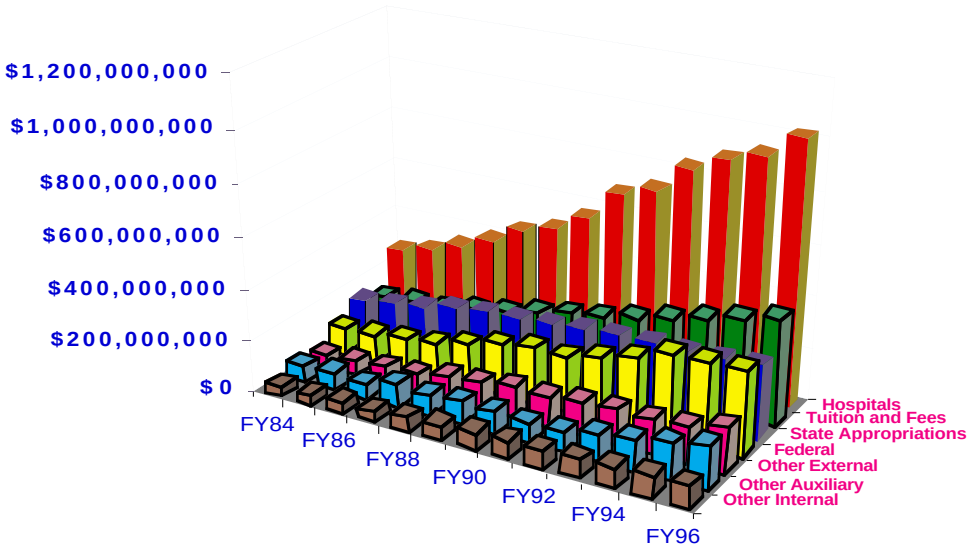
constant dollars

Goals: 2000 - private support>state support
2010 - endowment support>state support

Auxiliary Funds

The funds generated by auxiliary units of the University, particularly the University Hospitals, have been the fastest growing component of our resource base through the past decade.

Components of All Funds Revenue



Throughout the 1980s and early 1990s, the University Hospitals were able to generate very significant bottom-line margins in the range of $60 M to $100 M per year. Yet these were also the most uncertain of our resources because of the rapidly changing national health care environment. While we thought there might be an opportunity to utilize the short-term profitability of such activities to make important investments in those academic units that contribute to the bottom line of the UM Hospitals (e.g., clinical research facilities), we believed it would be unwise to make permanent base commitments based on these funds.

While most other auxiliary units such as Intercollegiate Athletics generated revenue only sufficient to cover their own operating expenses, there were two important opportunities beyond the UM Hospitals. First, University Housing rates were somewhat below those of peer private institutions. Hence, we anticipated some additional capacity here to generate additional revenue to cover the costs of academic programming activities associated with the residence halls.

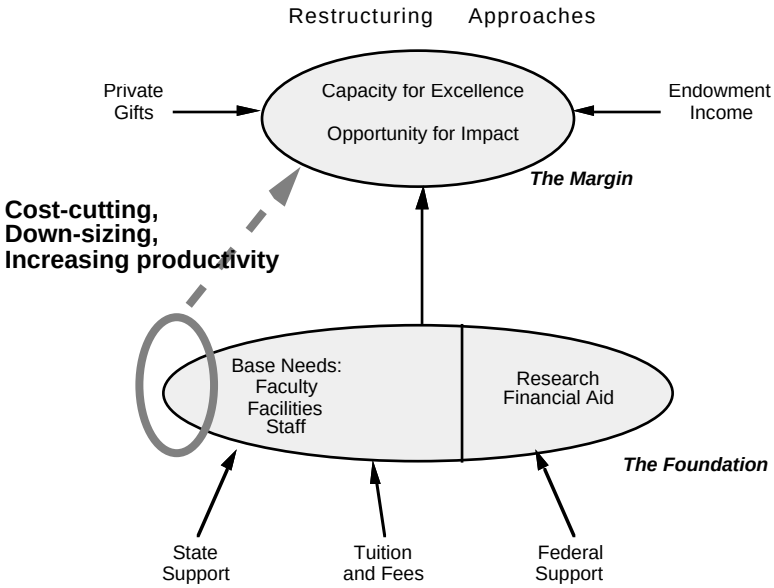
So, too, continuing education presented an excellent opportunity to generate additional revenue. Both the Executive Education Program in the School of Business Administration and the Continuing Engineering Education program in the College of Engineering provided examples of the degree to which high quality programs, aggressively marketed, could generate resources which directly benefit academic units, while responding to the teaching mission of the institution. Furthermore, there was also significant opportunity to build profitable summer sessions.

Other Strategies

Restructuring Approaches

As noted in the introduction to the business plan, we believed that the wise and efficient deployment of resources was just as important as the effort to generate enough revenue to compensate for eroding state support. To this end, we took a variety of steps in order to:

- Focus our resources to achieve excellence
- Implement the strategies of total quality management
- Ensure cost containment



In the previous chapter we discussed in some detail a variety of steps both to contain costs and more efficiently manage resources, including total quality management (the M-Quality program) and responsibility centered management.

Selective Growth Strategies

Although we generally thought of the 1980s and 1990s as a time for focusing resources on a more limited set of activities, of retrenchment, in fact, there were some opportunities for growth. After all, the knowledge business was a "growth industry," and universities were in an excellent position to take advantage of this.

We examined a number of such opportunities, including:

- More creatively integrating the activities of our regional campuses, UM-Dearborn and UM-Flint, into University-wide strategies

- Moving to year-round operation, since the massive effort to rebuild our campuses had resulted in essentially all academic facilities being equipped with modern air-conditioning systems, thereby becoming suitable for summer operation

- Better utilizing our capabilities in telecommunications and computer-mediated instruction (including our management of the Internet, experience in televised instruction, and our world-wide instructional experience)

- Developing a more strategic approach to life-long learning (both through our professional schools and our Alumni Association

- Cultivating a variety of niche markets, including seminars for government leaders, summer language institutions, and international efforts

- Exploring various alliances with industry, government, and other educational institutions

Unbundling Strategies

We believed it was important to understand better how we used resources to perform our many different missions. In a sense, the University was like a conglomerate, with many different business lines: education (undergraduate, graduate, professional), basic and applied research, health care, economic development, entertainment (intercollegiate athletics), international development, etc. Each of these activities was supported by an array of resources: tuition and fees, state appropriation, federal grants and contracts, federal financial aid, private giving, auxiliary revenues. Part of our challenge was to understand the cross-flows, e.g., cross-subsidies, among these various activities.

In our studies, we examined the possibility of decoupling or "unbundling" these activities:

- Unbundling products: mid-career training, nontraditional education, niche markets

- Unbundling pricing: differential tuition and fees

- Unbundling costs: linking specific revenues to specific outputs; restructuring labor deployment (teaching, research, and service)

- Unbundling distribution: telecommunications, networks, etc.

Mixed Public/Private Strategies

We examined the potential of allowing selected schools to become "privately supported" in return for increased autonomy. Leading candidates included our schools of Law, Business Administration, and Medicine.

Here, we examined a model similar to Cornell University's, which is comprised of "statutory" or state-supported components and "endowed" or privately supported components. Since the State of Michigan had no comprehensive private universities, we felt there might be some opportunity to make the case that by allowing the University of Michigan to become more "private-like" in its operation, the state could achieve a better balance between public and private higher education.

Finally, we conducted studies to understand the real costs of a Michigan education (at various levels), with the possibility in mind of offering state government the opportunity to purchase as many student positions for Michigan residents at whatever tuition level they chose—providing they offset the real costs with adequate appropriation subsidies.

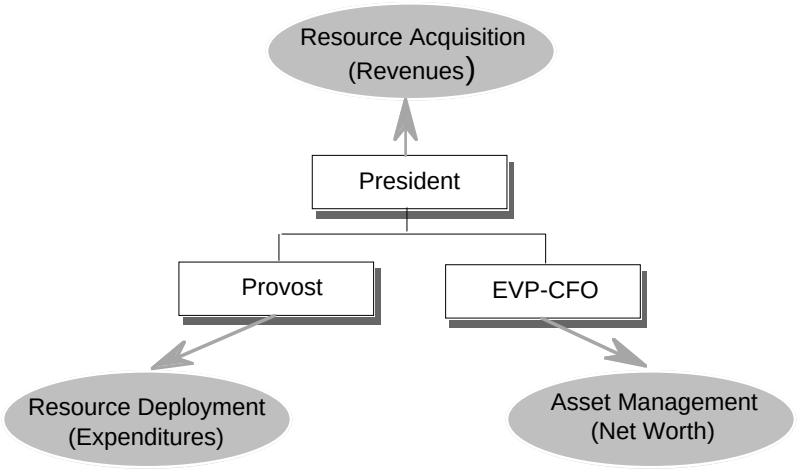
National University Strategies

We also explored political options. For example, the great public research universities of the midwestern United States were built during a time of great prosperity for this region, when agriculture and manufacturing were the economic engines of America. These universities had evolved into national resources, producing much of the leadership and research for the nation. Yet these institutions were at risk as the economic strength of the nation has shifted to the coasts, which are associated with international commerce. The Midwest had been overwhelmed by other priorities (unfunded federal mandates, corrections, health care, social services).

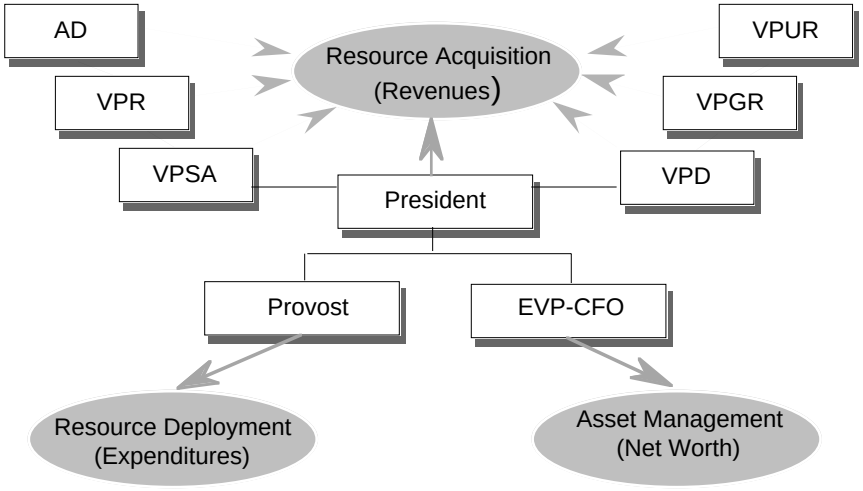
We thought that it might be time for another "land-grant act," to provide federal support for these institutions, thereby making them less subject to the vicissitudes of their regional economies. The key question was whether it was possible to assemble a political alliance to achieve such a federal priority.

Execution of the Business Plan Strategy

The Executive Officers of the University accepted the leadership responsibility for the various initiatives proposed by the business plan. Key in this effort were the roles played by the three senior officers, the president, provost, and chief financial officer:



Of course, it is true that all executive officers, to some degree, shared responsibility for generating the resources of the University, working closely with the President in the following activities:



Some General Observations Concerning the 1990s Business Plan

The results of the University's business plan for the 1990s were summarized in the previous chapter and need not be repeated here. However before leaving this discussion of the plan for resource generation and expenditure, it is important to make some more general observations. First, it should be noted that throughout the 1980s, there had been general agreement among the administration that the University was underfunded with respect to its present size, quality, and breadth of activities, relative to peer institutions, by roughly $200 million per year. Complicating this was our recognition that the University was entering one of the most competitive decades in its history—for outstanding students, outstanding faculty, and the resources necessary to achieve and sustain excellence.

We have noted that from a revenue perspective, we thought state support was unlikely to increase, and would probably continue to decline through the remainder of the 1990s. Federal support was also problematical, although the University would certainly continue to hold its own in competition with other leading research universities. Since resident tuition levels were seriously underpriced (with respect to actual costs, state "subsidy," or market competitiveness), there was some opportunity to generate significant additional resources through, both increasing in-state tuition levels, and shifting in-state/out-of-state enrollments ratios. However, the political difficulties of both approaches were apparent.

While more efficient use of resources was clearly a priority, we did not underestimate the difficulty of taking the necessary steps within a large, complex, and decentralized organization that had a management culture that can best be characterized as a voluntary anarchy. Further, unlike smaller private universities, the University of Michigan had already taken advantage of its vast scale to achieve high quality academic programs at only a fraction of the cost (typically one-half to one-third) of leading private institutions.

Hence, while greater efficiency was a priority, we realized that it would probably have only a marginal impact on the basic funding challenges faced by the University.

Finally, we kept in mind two lessons learned from the past: First, while the "smaller but better" strategy of the early 1980s did help position the University to deal with the loss of roughly 30 percent of its state support, in other respects it was a disappointment. The University did not get any smaller—indeed, it continued to grow.

Further, the reallocation process did not release significant funds for reallocation. Rather than creating a psychology of priority-setting and cost-effectiveness, the strategy undermined the morale of the University community and created a spirit of distrust and cynicism that we were only beginning to shed by the early 1990s. The moral of the "smaller but better" story: we had to be very careful in using "doom and gloom" strategies. It was preferable to base our efforts on building a sense of pride and leadership so that we could "restructure" our activities to enhance quality, innovation, and productivity. Put another way, we thought we should take the more positive approach represented by the "total quality management" (TQM) efforts we adopted from the private sector.

The second lesson of past experience concerned the importance of a balanced strategy. Our three primary objectives were to increase resources available to the University, to constrain costs and enhance the quality of the University, and to protect the assets (financial, physical, human) of the University. We needed to achieve a balance among the attention, energy, and effort directed at each objective.

In the development of the business plan, we also considered a number of other factors that might disrupt the strategy. For example, we had assumed a continued but gradual decline in real state support through the 1990s. We realized, however, that the State of Michigan's capacity to support higher education could deteriorate far more rapidly than we had assumed. For example, we believed that the elimination of the property tax for the support of K-12 public education could cause a crisis in Michigan's tax system with catastrophic consequences for those areas supported, in part, by state tax dollars, such as higher education. So, too, either a more rapid decline of the automobile industry in Michigan or further cost shifting from the federal government in areas such as Medicaid, could accelerate the decline in state support.

External public perceptions at the state level, and their consequent political implications, could seriously constrain our strategic efforts. For example, there seemed little understanding at the grassroots level of the importance of the University of Michigan and its impact on the state. Further, there was growing hostility toward the independence of the University, fueled, in part, by public concerns about the costs of education and the rise of populist, anti-intellectual attitudes. And, of course, there is remarkably little public awareness of either the true costs—not to mention the value—of a quality college education, or of the serious erosion in state support of this activity.

The ever-broadening mission of the University, along with its increasingly complex and interwoven array of constituencies, suggested that we need to rethink how we managed the institution. In the past, we had taken great pride in lean management, relying heavily on academic and relativedly inexperienced leadership. In reality, however, the University of Michigan in the 1990s was a $3 billion enterprise, comparable in size and complexity to a Fortune 500 company. Furthermore, for the past decade the University had grown at over a 10 percent per year compound rate. As our society became ever more knowledge-dependent, the University might be expected to grow even more rapidly in the years ahead. Hence, we needed to think more carefully and extensively about the management of the University. For example, we asked ourselves whether we needed to encourage the Board of Regents to evolve more rapidly into a true "board of directors," complete with a standard committee structure (Audit, Compensation and Organization, Finance, etc.). Did we need to intensify our efforts to ensure greater accountability across the University with additional audit operations, tracking and information-management systems? Did we need to recruit a more experienced management team to handle the complexities of the UM, Inc.? Did we need to provide more formal training for all faculty moving into key management positions (department chairs, directors, deans), e.g., through the Executive Education program in the School of Business Administration?

Were we focusing our revenue-generating efforts correctly? We had assumed that our priorities were ranked roughly in the order:

Tuition > Private Giving > Federal > State > Auxiliary

But, was this the right order? Thus far, we had followed a strategy of across-the-board cuts with selective reallocation to achieve the necessary reallocation of limited resources. However, we questioned whether such a strategy would really be adequate for the resource-constrained future we might face. Should we shift to more of a differential cuts strategy, similar to the early 1980s?

Much of the discussion of the 1980s and 1990s focused on narrowing the mission of the university back to the classic triad: teaching, research, and service. Should we now let it evolve naturally to respond to the increasing needs of a knowledge-driven society? In the 1990s, we were approaching the end of the demographic decline of young people associated with the post-war baby boom-and-bust cycles. Although we had thought in terms of downsizing the University to better align our activities with our resources, perhaps we needed to think, instead, of selective growth strategies.

After all, in a knowledge-driven society, the creation and transmission of knowledge was certainly a "growth industry." And, certainly, because of its quality, size, and breadth of activities, the University of Michigan was as well-positioned as any institution in the world to take advantage of the opportunities afforded by the age of knowledge.

Finally, we seriously questioned whether we were thinking boldly enough. While the business plan we developed and implemented moved the University forward quite rapidly, there was nevertheless a growing concern that we should have been more aggressive. Perhaps we were thinking too narrowly, constrained by the mindset of a university of some distant past which did not even resemble the university of today, much less that of the next century.

[1] P. M. Callen and J. E. Finney, eds., *Public and Private Financing of Higher Education: Shaping Public Policy for the Future* (Phoenix: Oryx Press, 1997)

[2] Mario C. Martinez and Thad Nodine, *Michigan: Fiscal Stability and Constitutional Autonomy* (San Jose: California Higher Education Policy Center, 1997)

Chapter 18 *Private Fund Raising*

The University of Michigan has an unusually diverse and balanced revenue portfolio, although this is due as much to the impact of the deterioration of our state support as our success in attracting other resources. It became clear in our development of a business plan for the 1990s that private giving would be increasingly important to our future, since this was one of the few sources capable of significant growth. However, building private support of the University would require not only a major investment in fund-raising capability, but as well a shift in the perception of the University, both on the part of our faculty and staff, and on the part of our donors and other interested publics.

In a sense, the University would have to acknowledge that it was evolving into a new paradigm, a "privately financed" public university. While remaining committed to retaining its public character—serving the people of the state of Michigan—the U-M would have to operate increasingly as a private university, earning much of its support in the competitive marketplace via tuition, research grants, and gifts and managing these resoruces much as a private university. As we have noted, by the early 1990s, almost 90 percent of Michigan's support already came from self-generated revenues.

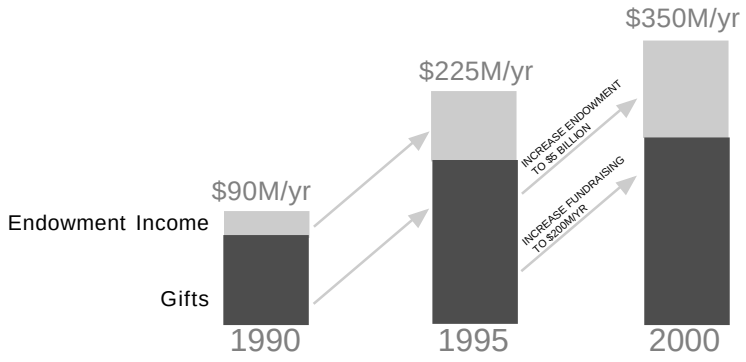
Hence, private fund raising had become key to the University's ongoing success. While the U-M's goal in the past was to use private giving to provide "the margin of excellence," today the goal is more basic: To recognize that private giving increasingly will replace—not augment—an eroding base of state financial support. The University of Michigan is not alone in such efforts, however. While it was one of the first public universities to see state appropriations drop to such a low fraction of its operating budget, the U-M is rapidly being joined by other major public universities also facing a privately financed future.

Fortunately, the University long ago recognized that private giving would be a resource with the potential for significant growth. In the early 1980s, under the leadership of President Harold Shapiro, the University moved aggressively to build an effective central development operation. The University raised more than $300 million during the major campaign of the 1980s, but more importantly, it began to build a network of volunteers and prospects that would lay the foundation for the

massive effort of the 1990s. Annual giving rose to $60 million, and the 1980s campaign established the nucleus of an endowment at $250 million.

In 1990, the University accepted the challenge of an even bolder goal: By the end of the decade, it would attempt to raise private support (private giving and distribution on endowment) to a level exceeding state appropriations to the University, roughly $300 million per year. This stretch goal demanded not only a significant increase in the effort directed toward private fundraising. It would also require a far more aggressive management of the University's endowment.

A Fund-Raising Goal for the 21st Century



We recognized, too, that successful fund-raising at Michigan would draw upon a number of strengths:[1]

1. The resource represented by the University's 400,000 living alumni, often leaders in their fields, with the capacity to give substantial gifts through the University's annual giving and major gifts programs.

2. Strategic planning involving deans, the president, vice president for development, and other executive officers.

3. An organizational structure that draws on the strengths of the deans and faculty of the University's eighteen schools and colleges and regional campuses.

4. A sequence of University-wide fund-raising campaigns to increase awareness among all alumni of the importance of private support.

5. A central development office that serves University-wide goals and academic objectives at the individual school and college level.

6. Advisory groups of dedicated alumni and friends who work closely with deans, faculty, and staff on fund-raising campaigns.

Each of these strengths contributes to the University's overall development success in the following ways:

Marketing to a national audience

People donate to institutions of higher education and charitable organizations for a number of reasons: because they believe in the mission of the institution and confidence in the administrative leadership, out of a personal need and involvement, a desire to follow the example of others, or because they are attracted by the magic of ideas. Most importantly, they give because they are asked!

Unlike major private universities that benefit from a small number of very large gifts, we tend to rely instead on a very large number of more modest gifts. Our approach therefore involved national mass marketing and followed through with a major gifts program that focused on highly personalized cultivation. The U-M also benefits from a deep well of goodwill on the part of the people of the state who identify with the University, including many who are not alumni. Academic reputation and a love of Michigan—not the ups and downs of athletic teams—are the wellspring of this support.

Thinking and planning strategically

Strategic planning for fund-raising efforts involving the president, the vice president for development and other executive officers, and the deans has helped spur the University's steady growth in institutional advancement.[2]

As the chief executive officer, the president provides both a vision and a strategy for the University. The president also provides the context to mobilize development plans and programs needed to elevate fund-raising efforts to new levels and to ensure critical involvement of all deans by working with these academic leaders to set goals and objectives.

Former President Harold T. Shapiro was one of the first to fully understand the economic challenges public universities would face in the closing decades of the 20th century. He concluded in the early 1980s that the U-M needed to embark on new levels of high-intensity fund-raising efforts to offset eroding state support. He recruited Jon Cosovich from Stanford as Vice President for Development, who brought with him knowledge of Stanford's highly successful organizational and volunteer recruitment strategies.

The importance of and need for strategic planning became apparent to us during my years as dean of the College of Engineering in the early 1980s. Later, as provost, we encouraged all of the University's schools and colleges to plan strategically and to look at private giving as a crucial part of their resource base. When I became president in 1988, we introduced a planning diagram that colleagues characterized as a "four-legged stool" to illustrate the University's four revenue streams: tuition and fees, federal support for research, state support, and endowment and gifts. Needless to say, the stool was very lopsided in 1988. The strategic plan called for making the four legs equal so the University would have a solid, stable base upon which to grow. Endowment and gifts made up only 5 to 6 percent of the University's total revenue eight years ago. Today endowment and gifts comprise more than 13 percent of the U-M's revenue portfolio.

Fund raising as an ongoing activity

We viewed fund-raising campaigns as not so much an end in themselves, but rather as a means to involve more alumni in support of students and faculty. Innovative endowment management has enhanced the value of gifts received. Through a series of campaigns, we also developed more sophisticated deferred giving programs and have increased awareness among alumni and friends of the importance of private support.

Creating synergy through cooperation and computers

Fund raising at Michigan can best be described as a partnership—a combination of University-wide efforts executed in conjunction and cooperation with deans, faculty, and staff. Each school and college is asked to develop the maximum level of volunteer and alumni involvement in promoting gifts to that unit for support of its programs, with special focus on Campaign priorities. The objective is to solicit each potential donor for the largest possible gift. Coordination is the responsibility of the central Campaign major gift staff, who adhere to the University's prospect solicitation coordination policies. Central staff help schools and colleges time their requests.

"Open communication" best describes the working style and philosophy behind solicitation at Michigan. Contacts with prospects are conducted in an open manner by respecting clearance guidelines and by keeping the University's Campaign prospect tracking system up to date; this task is the responsibility of the staff prospect manager. The University's successful prospect tracking system began as a central file of high-end donors and prospects that was installed in 1987 to store correspondence and other information. Four years later, a new campus-wide computer system, the Development and Alumni Constituent (DAC) system, went online. This modern distributed computing system gives deans and staff access to timely donor and alumni information in an easy-to-read format. With the DAC system, we greatly expanded the volume of information on prospects and donors that we store and track.

The adoption of responsibility-centered management throughout the University, including in the Development Office, created new challenges for all of our development staff. For instance, while providing greater overall incentives for fund raising, we realized that this change in management style might strain the Office since some of the University's schools and colleges would be reluctant to bear the costs of those central operations. The tradeoffs for the revenue-producing units, on the other hand, meant that they could keep the revenues they generated, but also must cover the costs of the centrally provided services they use. Schools and colleges therefore had greater incentives to generate resources and to spend wisely.

Drawing on the strengths of advisory groups

At Michigan, as at many public universities, the governing Board of Regents is determined by a statewide political process (elections) rather than by the capacity to participate actively in fund raising. Although the Board of Regents may approve a statement supporting or endorsing advancement efforts, Michigan does not have a board development committee, chair of development, or a foundation to promote advancement activities. Over the years, some Regents have worked individually on development activities, but the Board as a whole simply is not selected or structured to play the roles performed by trustees of private institutions.

At Michigan we have built advisory groups of alumni and friends to help with fund raising. With each successive campaign, our volunteer network has grown larger and stronger. Today we have about 1,500 development volunteers, 90 percent of whom are alumni; 10 percent are friends, parents, or active in the life of the University in some other way. Most of the volunteers concentrate on a particular program, school, or college in which they have a special interest. Volunteers help identify potential

donors, introduce donors to development staff and set up meetings with deans, bring prospective donors for campus visits, help shape case statements, serve on major gift committees in the schools and colleges, and solicit gifts. Some labor a lifetime working to raise funds for Michigan. One particular group, the seventy-five-member President's Advisory Group (PAG), meets twice a year for discussions on long-range planning issues related to the University, including academic initiatives, financial resources, and administrative management. Established in 1989, the PAG is an important source of counsel and guidance. By sharing their expertise and experience, PAG members help to develop and implement plans for the future of the institution.

To keep 1,500 volunteers motivated and enthusiastic requires ongoing engagement, a key role played by development officers in the schools and colleges. Campaign programs and field activities are varied and scheduled to inform and involve the largest possible number of alumni, parents, health care consumers, patrons, and other friends of the University in the life of the institution. The most successful donor motivational programs at the U-M have been national campaign volunteer workshops in Ann Arbor, working sessions for major gifts committees in large metropolitan areas, receptions and meals with University speakers, weekend University seminars on campus, special on-campus seminars for targeted audiences, leadership gift recognition and appreciation events, presidential dinners and athletic events, and mid-campaign volunteer workshops and progress meetings.

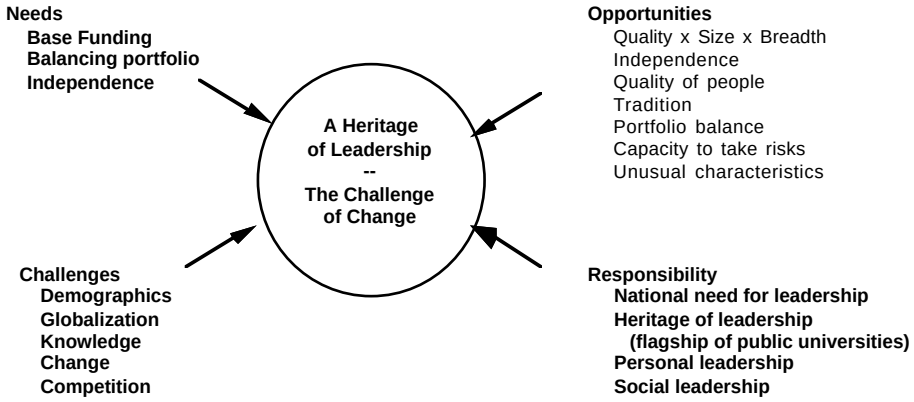
Campaign communications also serve as important motivational tools. Special campaign publications are prepared for volunteers, donors, and potential donors. Videos and slide presentations are produced for individual and group audiences. Campaign information also is incorporated into a variety of existing publications, including *Michigan Today*, a quarterly publication for all U-M graduates. Personalized letters and bulletins are prepared for key audiences. Whatever the event or audience, campaign publications are designed and produced to represent the quality of the University in a tasteful, cost-effective manner.

High-quality publications such as the award-winning Campaign for Michigan publication *Leaders & Best* produced by central development, working in conjunction with the schools and colleges, have improved the overall quality of the University's marketing efforts. Fund-raising volunteers help spread news of Michigan through their personal and professional contacts. Informed alumni who are involved in fund raising also are some of our best recruiters of outstanding students.

The Campaign for Michigan

To achieve our goal of building private support to a level exceeding state support, we concluded in the late 1980s that we would need to launch a major fund-raising campaign. We were also convinced that the success of such a campaign depended upon generating energy and commitment among our donors and volunteers.

We analyzed the forces compelling such a campaign as a matrix:



Specifically, we saw that the needs of the University could only be met through enhanced private support. We simply did not have an adequate level of base funding for the University. Furthermore, we needed to develop a more balanced portfolio of resources, so that, for example, in years in which state support dropped, we could compensate for this loss without having to implement draconian increases in tuition. Furthermore, private support would give us added flexibility and autonomy during difficult economic times.

Our second class of forces were the challenges we have discussed throughout this book: demographics, globalization, the age of knowledge, the challenge of change, and the challenge of competition.

Third, the unique character of the University provided us with an unusual opportunity to make the case for enhanced private support. Its unusual combination of quality, size and breadth; the quality of its students, faculty, and staff; its long tradition of leadership; its constitutional autonomy; the liberal spirit characterizing its activities; and its capacity to take risks—all, we believed, would position us well for a massive fund-raising campaign. Finally, we believed that the unusual nature of the

responsibilities of the University merited this support: the national need for leadership; the University's heritage of leadership as the flagship of public universities; its role in producing leadership for America; and the role it must play in serving a changing America and a changing world.

We adopted two key themes for the Campaign for Michigan, first, our heritage of leadership, and second, the challenge of change. As we assembled the structure of the Campaign, we realized that we could frame it in several ways:

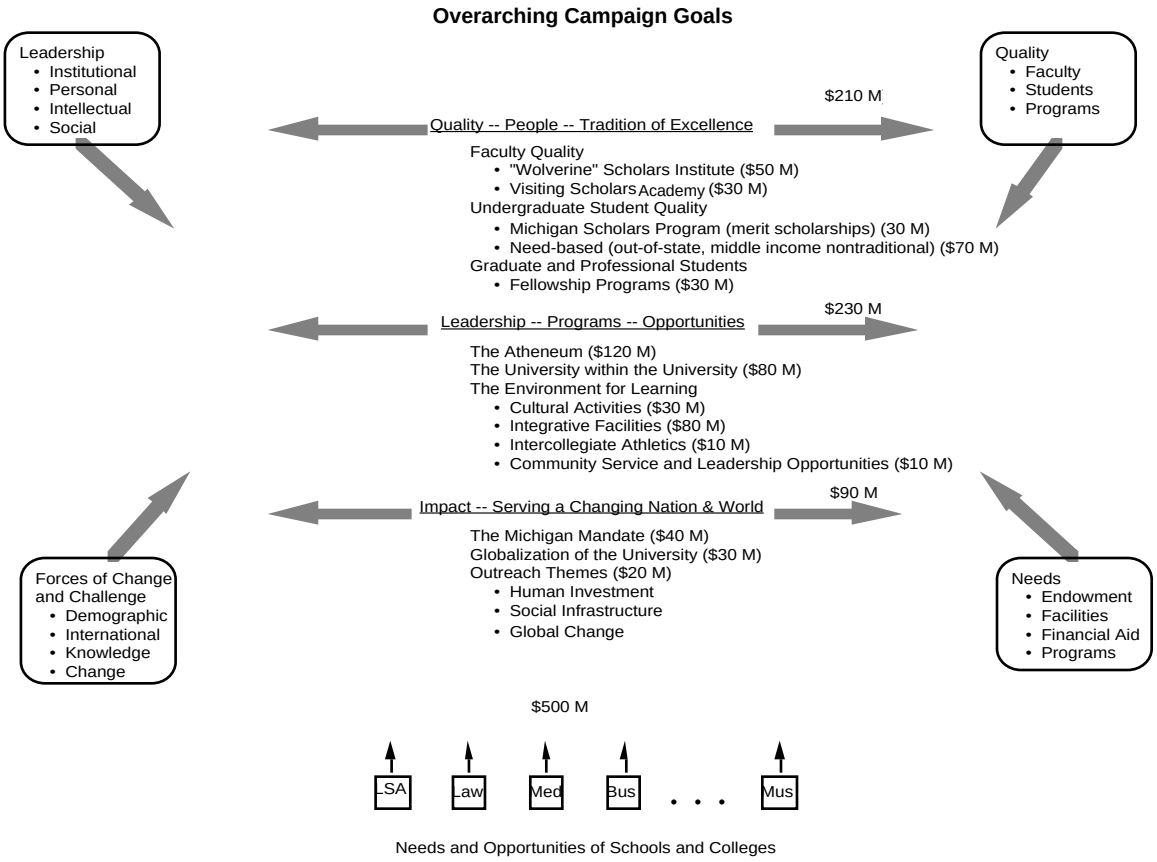
1. As a synthesis of the critical needs (and opportunities) of our various schools and colleges

2. As an effort to provide the margin of excellence and opportunity for impact

3. As the traditional components of any university campaign

- Endowment
- Facilities
- Financial Aid
- Program Support
- Other (Cultural programs, extracurricular activities, etc.)

One of the most significant challenges of this or any other fund-raising campaign is to set appropriate goals. Here, the concern is not only to set realistic goals for the total fund-raising effort, but also to respond effectively to the goals of the various units of the institution. We utilized both a bottom-up and top-down approach. That is, we first worked with the various units to determine their various needs and goals. Then we worked with potential prospects, volunteer groups, and consultants to determine the total amount that we might be able to raise over the course of the campaign.

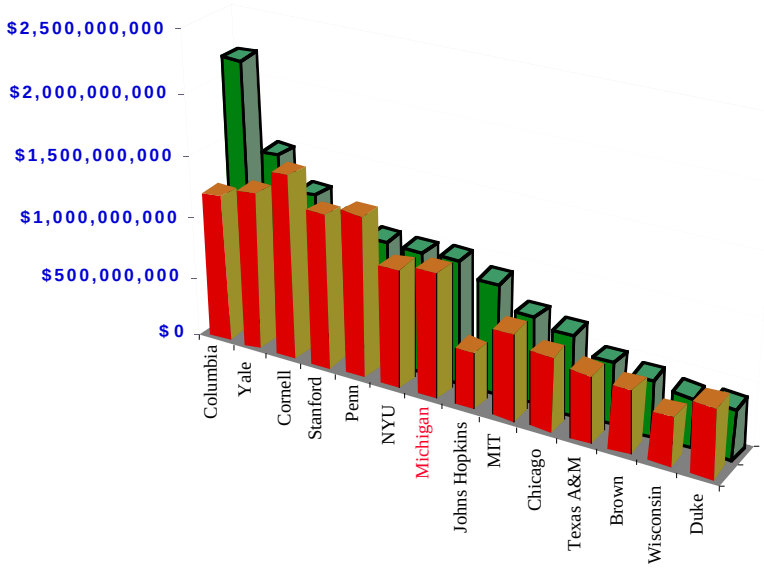


This was essentially an iterative process, since the first "wish list" of goals of individual units far exceeded the total we believed we could realistically raise during the campaign. Hence, as we converged on a total goal, we had to work with the various units to pare back somewhat their particular goals.

To assist in this effort, we formed several key teams. Most significant was a team of deans that worked closely with the central administration on campaign planning and operations. Since much of the campaign effort would be led by the deans, it was critical for them to be actively involved in broader campaign leadership. In addition, we formed a campaign advisory group of roughly two dozen alumni and friends, who would play the key role in helping to develop a strategy, recruiting the volunteer groups, soliciting pledges, and making personal commitments.

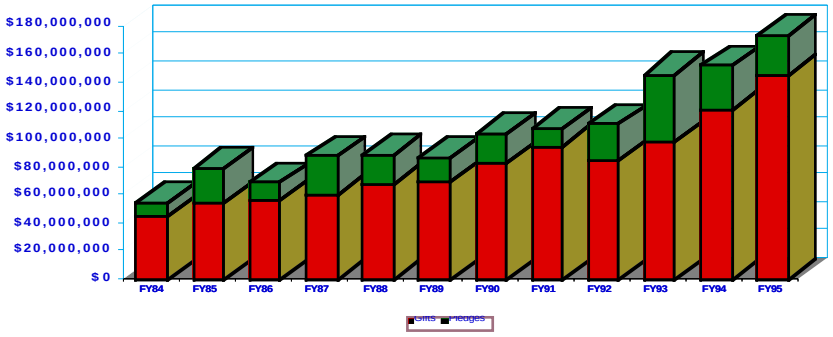
We knew that a successful fund-raising campaign also sets a goal which is both challenging and realistic. In our case, one of the most significant challenges was setting the overall goal. In the wake of several major campaigns then underway at private universities, many of our volunteer groups believed we should set a stretch of raising $1 billion over the course of the campaign from 1992-1997. This was a formidable goal, however, since it would not only represent the first billion dollar campaign ever conducted by a public university, but it would be several times as large as any public university campaign had ever raised (including the $300 million we had raised in the 1980s). Furthermore, our fund-raising consultants expressed concern about whether we could raise this amount, citing the cardinal rule of fund raising: always make certain you make your goal.

Campaign Goals and Progress for Selected Major Universities

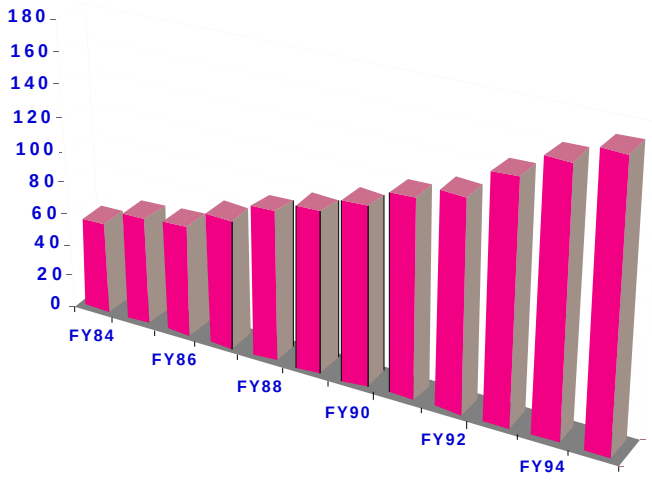


For this reason, we set an initial goal that attempted to balance the enthusiasm of our volunteers with a dose of realism. We set a goal of $850 million in gifts, augmented by an additional $150 million in new bequest commitments. This would give us a realistic goal, challenging but within reach, while giving volunteers "bragging rights" about being involved in a "billion dollar campaign." Even at the beginning of the campaign, we believed we could raise close to $1 billion in gifts alone, but we were hesitant to set this as a goal. In the end, we did manage to raise $1.1 billion in gifts, along with an additional $300 million in new bequest commitments, for a campaign total of $1.4 billion. In fact, toward the end of the campaign in 1997, we seriously considered extending the campaign three more years and raising the total goal to $2 billion, although we ultimately left that decision for the next president of the University.

Private Giving (Gifts and Pledges)



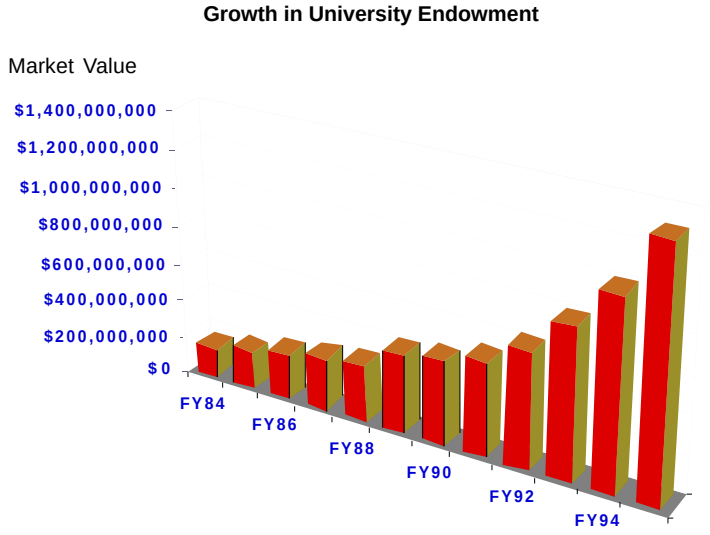
Cumulative Growth in Number of Endowed Professorial Chairs



Results to Date

The fund-raising effort was extraordinarily successful. By the end of the Campaign, the University had already gone well past its $1 billion goal to raise $1.4 billion, the largest in the history of public higher education and comparable to even the largest campaigns of private higher education (Yale at $1.7 billion and Cornell at $1.3 B).

A key element of the strategy involved far more aggressive management of the assets of the University—its financial assets, its capital facilities, and, of course, its most valuable assets, its people. VPCFO Farris Womack moved rapidly in the late 1980s to put into place a sophisticated program to manage the investments of the University. He built a strong internal investment management team augmented by knowledgeable external advisors, including several University alumni. Particular attention was focused on the University endowment, which amounted to only $250 million in 1988, small by peer standards and quite conservatively managed. Through Womack's aggressive investment management, coupled with a highly successful fund-raising effort, the University was to increase its endowment to over $2.0 billion by 1996, a truly remarkable growth of six-fold. During this period, Michigan consistently ranked among the national leaders in the endowment earnings.



Similar attention was focused on the management of the University's financial reserves, such as operating capital and short-term funds. By treating the University as though it were a centralized bank, Womack was able to bring more than $3 billion of additional funds associated with the various operating units of the University under sophisticated investment management.

Growth in Dollars Under Investment Management

Conclusion

When identifying its peers, the University historically has looked to elite private institutions. Using private colleges as a frame of reference has fostered high standards for the University's development activities. A number of renowned professional schools have been part of the fabric of the University for many years, also giving the University a decided advantage when it comes to fund raising. Although Michigan is proud to be a public institution, it has never relied solely on state appropriations and tuition and fees for support.

We will continue to rely heavily on private fund raising. Michigan has much to be grateful for: The hard work of the deans and faculty members, the striving of students, the enthusiasm of 1,500 volunteers, and the dedication of thousands of alumni and supporters who believe in the University and its mission.

Fund raising—key to fulfilling the University's mission—will not become easier in the years ahead; it will never be a "quick fix." Competition for private dollars today is keener due to increasing efforts by other colleges and universities to tap into foundation and corporate funding. Although increased competition creates awareness of the need for more private fund raising for higher education, and potentially

expands the total pie, competition also requires that development staff work vigorously and that university leaders plan strategically. If we are successful and are able to explain our program to supporters and skeptics, I believe intelligent citizens who are concerned about our nation's future and the welfare of their children and grandchildren will support higher education with their gifts. Whether the institution is a small liberal arts college or a large research university, the basics of fund raising still apply: We must make a case and ask.

[1] Duderstadt, James J., "Fund-Raising from the University President's Perspective," in *Fund-Raising in Higher Education*, Frank Rhodes, Ed. (American Council on Education, Washington, 1997).

[2] James L. Fisher, and Gary H. Quehl, *The President and Fund-Raising* (New York: American Council on Education, MacMillan, 1989): 238.

Chapter 19 *The Michigan Mandate and the Michigan Agenda for Women*

Higher education is facing a period of significant change, driven by the profound changes occurring in the society and world we serve. In our earlier discussion, we suggested three themes of particular importance in shaping 21st Century America:

- America will become a truly multicultural society, with a cultural, racial, and ethnic diversity that will be greater than we have ever known before.[1]

- Our nation will be "internationalized" as every aspect of American life becomes ever more dependent on other nations and other peoples. Through immigration, too, we are becoming truly a "world nation," with ethnic ties to every corner of the globe. Increasingly, all of our activities must be viewed within the broader context of our interdependence in the global community.

- The United States and the world community will rapidly evolve from a resource- and labor-intensive society to a knowledge-intensive society, in which intellectual capital—educated people and their ideas—become the keys to our own and, indeed, world productivity, prosperity, security, and well-being.

We cannot ignore these trends and their profound implications for our society and our universities. Nor should we react to them passively. In keeping with our heritage of leadership in higher education, we must act directly to determine our own destiny, to make our ideals a reality.[2]

Yet in this effort to change, to become more inclusive, to better serve a changing society, we face great challenge. Our nation's political climate raises serious questions about our commitment to achieve equity and social justice for all Americans. A recent *Wall Street Journal*/NBC News survey found that two out of three Americans oppose affirmative action. Federal courts are considering cases that challenge racial

preference. In Washington, a conservative majority in Congress is taking aim at the nation's commitment to civil rights. And efforts are building momentum in the states to forbid the consideration of race in public activities through public referenda such as California's Proposition 209.

A History of Diversity at the University of Michigan

At the University of Michigan, we have been particularly committed to this goal of diversity, both through heritage and destiny. Throughout our long history, the University has been distinguished by our commitment, as President James Angell noted in 1879, to provide "an uncommon education for the common man." This aspiration contrasted sharply with the goals of the nation's earliest colleges, which traditionally served only the elite.

The journey from this early ambition to real diversity at Michigan, however, often required intense struggle. Our current successes did not come quickly, easily, or without detours along the way, and the history of diversity at Michigan has been complex and often contradictory. Yet, unlike many other universities, our institution has always aimed for wide access and equality. In the early 19th Century, for instance, higher education was primarily a religious enterprise. Although some institutions (like Harvard) were originally more open, nearly all eventually succumbed to the control of a single religious denomination. Envisioned by the people of our state as truly public, Michigan became the first university in America to successfully resist sectarian control. We can be proud that, buoyed by committed students, faculty, staff, and the citizens of our state, the University of Michigan has consistently been at the forefront of higher education, grappling with the difficult issues of plurality and promoting equality.

At our founding, we attracted students from a broad range of European ethnic backgrounds. In the early 1800s, the population of the state swelled with new immigrants from the rest of the country and across the European continent. By 1860, the Regents referred "with partiality," to the "list of foreign students drawn thither from every section of our country." Forty-six percent of our students then came from other states and foreign countries. Today more than one hundred nations are represented at Michigan.

In contrast, our record regarding Native Americans has been disappointing. In 1817,

in the treaty of Fort Meigs, local tribes became the first major donors when they ceded 1,920 acres of land for "a college at Detroit." A month later the Territorial Legislature formed the "university of Michigania," and accepted the land gift in the college's name. Today, although the number of Native American students enrolled is low, they continue to make vital cultural and intellectual contributions to the University.

The first African American students arrived on campus in 1868, without official notice. In the years after Reconstruction, however, discrimination increased. Black students joined together to support each other early in the century and staged restaurant sit-ins in the 1920s. It was not until the 1960s that racial unrest finally exploded into campus-wide concerted action. Although the University had made efforts to become a more diverse institution, both black and white students, frustrated by the slow movement, organized into the first Black Action Movement (BAM) in 1970. The administration building was occupied and students boycotted classes. Many positive advances came from this outpouring of student solidarity. The number of African American faculty and students on campus increased; new programs were initiated and old programs were funded. Yet only a few years later, enrollments began to fall and funding waned. Although black enrollment began to increase in the 1980s, two more student uprisings (BAM II and III) occurred before the University again took a systematic look at the difficult problems of race on campus. The BAM movements are an important part of Michigan's proud history of student activism and commitment to social justice and have helped place Michigan at the forefront of the struggle for equality in America.

Michigan's history with respect to gender is also very mixed. Michigan was the first large university in America to admit women. At the time, the rest of the nation looked on with a critical eye. Many were certain that the "experiment" would fail. The first women who arrived in 1869 were true pioneers, the objects of intense scrutiny and resentment. For many years, women had separate and unequal access to facilities and organizations. Yet, in the remaining decades of the 19th Century, the University of Michigan provided strong leadership for the nation. Indeed, by 1898, the enrollment of women had increased to the point where they received 53 percent of Michigan's undergraduate degrees. However, during the early part of the 20th Century, and even more with the returning veterans after World War II, the representation of women in the student body declined significantly. It only began to climb again during the 1970s and 1980s and, for the first time in almost a century, once again exceeded that of men in 1996. During the past several decades, the University took a number of steps to recruit, promote, and support women staff and faculty, modifying University policies to better reflect their needs. True equality has come slowly, driven by the efforts of many courageous and energetic women.

A Renewed Commitment

Despite these earlier efforts, it had become obvious by the end of the 1980s that the University had made inadequate progress in its goal to reflect the rich diversity of our nation and our world among its faculty, students and staff. Simply allowing access to our institutions was not sufficient to provide full opportunity for those groups that continued to suffer from social, cultural, and economic discrimination in our society. People from underrepresented groups who did manage to find their way here faced serious barriers to their success and advancement in a University (and national) culture still largely dictated by a white, male majority.

We knew we had to do more. We also knew that the University would have to change dramatically if it were to remain faithful to its century-old commitment of making education available to all people.

In the wake of the third BAM in 1987, after meetings with hundreds of people throughout our campus community, the University initiated *The Michigan Mandate*[3], a strategic initiative designed to change the institution in profound ways to better enable it to serve a changing nation and a changing world. The Michigan Mandate reflected a commitment to make the University of Michigan a national and world academic leader in the racial and ethnic diversity of our faculty, students and staff. It was a plan to link academic excellence and social diversity.

We have made progress through this effort. Today, the numbers of underrepresented students and faculty of color on campus are at an all-time high and increasing every year, and we have initiated a long-term study to examine student attitudes about race and difference. Insightful programs all across campus are part of a broad and creative effort to grapple with the difficult issues of racism and segregation.

Representation of Persons of Color
in the Nation, the State of Michigan and the
University of Michigan, Ann Arbor, Fall 1995

	Persons of Color	Black	Hispanic/ Latino	Native American	Asian
Nation	24.80%	12.10%	9.00%	0.80%	2.90%
State	17.80%	13.9%	2.20%	0.60%	1.10%
University					
Students	24.80%	8.71%	4.58%	0.75%	10.76%
Undergraduates	26.00%	9.10%	4.70%	0.80%	11.40%
Graduates	21.60%	7.30%	8.75%	0.70%	4.80%
Professional	24.37%	9.00%	10.56%	0.61%	4.20%
Faculty (Ten. & Track)	14.42%	4.98%	1.90%	0.26%	7.28%
Academic Administration	20.20%	19.40%	0.80%	0.00%	0.00%
Professional Non-Faculty	14.60%	6.60%	1.70%	0.50%	5.80%

Even as the Michigan Mandate gained momentum and our University began to change, we launched other strategic efforts aimed both at enhancing our diversity and achieving social equity and justice.

In 1993, the University launched a second, parallel effort to renew its commitment to equality for women. *The Michigan Agenda for Women*[4] is a wide-ranging plan to transform the University into a place where women can succeed and excel as students, faculty, and staff. We have made a commitment to examine all areas of the campus, shifting resources, adjusting promotion and tenure policies, hiring more women faculty and administrators, and finding ways to make the University the institution and employer of choice for women across the country.

We have also moved ahead in some other areas that deserve mention. The University's nondiscrimination policies were extended to prohibit discrimination based on sexual orientation, and in 1995 we extended staff benefits and housing opportunities to same-sex couples. We are moving rapidly to achieve greater international diversity among our people and our programs. For example, within the past two years we have opened major new instructional centers in Hong Kong, Seoul, and Paris. We are also exploring the possibility of an alliance of American universities that would deliver education worldwide based on rapidly evolving information technology.

Hence, at Michigan we believe—indeed, we are absolutely convinced—that diversity and excellence are not only mutually compatible but mutually reinforcing objectives. Furthermore, we also believe that the experience of the past decade in developing and implementing the Michigan Mandate and the Michigan Agenda for Women in order to achieve diversity demonstrates this point.

The Michigan Mandate

The Michigan Mandate was based on the following premise:

> Embracing and, even more importantly, capitalizing on our racial, cultural, and ethnic diversity will be a critical element of the university's ability to achieve excellence in teaching and research while serving our state, nation, and the world in the years ahead.

We created a strategic framework for this commitment that was also a challenge to the University to build a multicultural community that would become a model for our society. The specific purpose of the Michigan Mandate was to guide our university in creating a community that:

- Supports the aspirations and achievements of all individuals, regardless of race, creed, national origin, or gender
- Embodies and transmits those fundamental, academic, and civic values that must bond us together as a scholarly community and as part of a democratic society
- Values, respects, and draws its intellectual strength from the rich diversity of peoples of different races, cultures, religions, nationalities, and beliefs

The Rationale

It is important to discuss more thoroughly the rationale behind the Michigan Mandate, why the University made this commitment to change, and why diversity became the cornerstone of our efforts to achieve national excellence and leadership during the 1990s. The reasons are simple:

- First and foremost, it was and still is the morally right thing to do. Plurality, equal opportunity, and freedom from discrimination are the foundations upon which the University is built. It is more than what we do; it is what we must be if we are to call ourselves a truly public university.
- Second, the University cannot achieve excellence in teaching and scholarship unless it also benefits from the varied intellectual perspectives and experiences of the United States and the world in every aspect of our community. We must draw upon a vast diversity of people and ideas to generate the intellectual and social vitality we need to respond to a world characterized by great change. Only with a multiplicity of approaches, opinions and ways of seeing can we hope to solve the problems we will encounter in the years ahead.

- Third, the America of the 21st Century will be a nation without a dominant ethnic majority; it will be truly pluralistic. To serve this rapidly changing population, institutions such as the University of Michigan must provide the educated people and ideas needed by our society both to understand and to build unity out of diversity.

Let us discuss each of these premises in more detail.

Moral Responsibility

First and foremost, the University of Michigan's commitment to affirmative action and equal opportunity is based on our fundamental social, institutional, and scholarly commitment to freedom, democracy, and social justice. These require us to:

- Take action to overcome the inequities imposed by our society on people who historically have been prevented from participating fully in the life of our nation. The University has an obligation to make a special effort to increase the participation of those racial, ethnic, and cultural groups who are not adequately represented among our students, faculty, and staff. We must address this fundamental issue of equity and social justice if we want to keep faith in our values, responsibilities, and purposes.

- Provide equal opportunity for every individual regardless of race, nationality, class, gender, belief, or sexual orientation, both as part of our basic obligations as a public institution, and because the University is a major source of leaders of our society.

- Provide equal access to all educational resources to individuals from underrepresented racial and ethnic groups to enable them to achieve a fulfilling life and the rewards of meaningful work in a knowledge-based society.

Equity and social justice are fundamental values of this institution and integral to its scholarly mission. They are among the most important reasons for making a commitment to promoting diversity.

Academic Quality

Universities are social institutions of the mind, not of the heart. Hence, while there are compelling moral reasons to seek diversity and social equity on our campuses, the most effective arguments to a university community tend to be those related to

academic characteristics. The Michigan Mandate therefore stressed the importance of diversity to our academic programs by noting that unless we drew upon a vast diversity of people and ideas, we could not hope to generate the intellectual and social vitality we needed to respond to a dynamic world.

In the midst of lively debate, the scientific community has begun to realize how central diversity can be to the survival of many groups. Homogeneous populations are often much less able to respond to change in their environment. A field of monocultural wheat, for example, can produce explosively under relatively controlled conditions, but it is in great danger from climatic change or new diseases. The wheat has a very limited library of genetic material, giving it few options with which to respond.

Universities, of course, are not fields of wheat; they are much more complex. While we may, in general, be able to control the conditions in a wheat field, this is much less true for a university. Perhaps (and I say this advisedly), our society could in the past tolerate singular answers, when we could still imagine that tomorrow would look much like today. This assumption of stasis is no longer plausible. As knowledge advances, we uncover new questions we could not have imagined a few years ago, and as society evolves, the issues we grapple with shift in unpredictable ways. A solution for one area of the world often turns out to be ineffectual or even harmful in another. Academic areas as different as English and sociology have found their very foundations radically transformed as they attempt to respond to these dilemmas.

For universities to thrive in this age of complexity and change, it is vital that we resist any tendency to eliminate options. Only with a multiplicity of approaches, opinions, and ways of seeing can we hope to solve the problems we face. Universities, more than any other institution in American society, have striven toward a vision of tolerance and intellectual freedom. We must continually struggle to advance this heritage and to become places where a myriad of experiences, cultures, and approaches are valued, preserved, discussed, and embraced.

The University of Michigan's ability to achieve excellence in teaching, scholarship, and service will be determined over time to a considerable degree by the diversity and pluralism of our campus community. Diversity is in our best intellectual interest because diversity will increase the intellectual vitality of our education, scholarship, service, and communal life. Many African Americans, Hispanic Americans, Native Americans, and Asian Americans, women, foreign students and faculty, and other groups bring special ways of representing and conceptualizing problems and addressing intellectual issues. Research in progress at the University—in politics, history,

and literature, for example—has already discovered the valuable insights that these under-represented voices and viewpoints bring to those fields. Simultaneously scholars in areas like anthropology, art, or sociology are discovering new patterns in and theories of the social construction of "difference"—racial, gender, ethnic, national, etc.—which reveal its distorting effects on both the dominant culture and the culture of people of color.

In addition to these intellectual benefits, the inclusion of under-represented groups allow the University to tap reservoirs of human talents and experiences from which it has not yet fully drawn. Indeed, it seems apparent that we cannot sustain the distinction of our university in the pluralistic world society that is our future without diversity and openness to new perspectives, experiences, and talents.

Clearly, in the years ahead we will need to draw on the insights provided by many diverse perspectives to understand and function effectively in our own as well as the national and world community.

Serving a Changing Society

America's population is changing rapidly. We all need to understand that those groups we refer to today as minorities will become the majority population of our nation in the century ahead, just as they are today throughout the world. Our nation, too, will cease to have a majority culture—we will become a nation of minorities. For example:

- By the year 2000, one of three college-age Americans will be a person of color.
- By the year 2000, roughly 50 percent of our school children (K-12) will be African American or Hispanic American.
- By 2020, the American population, which now includes 26.5 million African Americans and 14.6 million Hispanic Americans, will include forty-four million African Americans and forty-seven million Hispanic Americans.
- By the late 21st Century, some demographers predict that Hispanic Americans will become the largest population group in America.

Indeed, the America of the 21st Century seems destined to become one of the most socially diverse nations on earth. This does not necessarily mean that America will be a "melting pot" in which all cultures are homogenized into a uniform blend.

Adaptation and the blending of culture is likely to occur over several generations and then to varying degrees, as our past history has already shown. The truth is that most of us retain proud ties to our ethnic roots. And our future is likely to continue to be pluralistic in this sense—composed of peoples different in backgrounds, cultures, and beliefs, who seek to retain their cultural identities and their distinctiveness within the society as other Americans have done before them, while at the same time becoming full participants in the economic and civic life of our country. This pluralism poses a continuing challenge to our nation and its institutions. We want to build and maintain a fundamental common ground of civic values that will inspire mutually beneficial cohesion and purpose—a true sense of community—for our society.

As both a leader of our society and a reflection of it, the University of Michigan, with its long heritage of leadership, must accept the special challenge and responsibility to help develop effective models of community, developing and transmitting intellectual and social values that will help bind us together. These values help inspire and inform our country and enable it to cope successfully with our changing demographic make-up and interdependence in the global community. Education has always been the crucible for our democratic culture, and this function has never been more necessary to our social health than it is today. The task before us is formidable, but consider our future if we do not commit ourselves wholeheartedly to the effort.

Human Resources

The demographic trends we see in our future hold some significant implications for the national economic and political life and for education. For example:

- During the 1990s, 85 percent of the new additions to the workforce have been women, members of minority groups, and immigrants

- Today there are three workers for each retiree, and one of the three is a member of a minority group

Our clearly demonstrated need for an educated workforce in the years ahead means that the United States can no longer afford to waste the human potential, cultural richness and leadership represented by minorities and women. Now, as people and knowledge are the sources of new wealth, we will rely increasingly on a well-educated and trained workforce to maintain our competitive position in the world and our quality of life at home.

Challenges

As we drafted the Michigan Mandate, we were determined that the University of Michigan would take the initiative to prepare for the future. We committed ourselves to leadership in higher education by developing a model of what a pluralistic, multicultural university community must be to serve our nation in the 21st Century. But we also realized that the way ahead would not be an easy one. There were many challenges to overcome, including continuing racism, an eroding sense of community, and the challenge of change itself.

Seeing Difference Differently

We had to work diligently to create a welcoming community, encouraging respect for diversity in all of the characteristics that can be used to describe humans:

- age
- race
- gender
- disability
- ethnicity
- nationality
- religious belief
- sexual orientation
- political beliefs
- economic background
- geographical background

Yet here we had to move in two directions at once. We had to set aside the assumption that people from groups different from ours necessarily have the same needs, experiences, and points of view that we do. At the same time, we could not succumb to the equally pernicious assumption that "they" are all the same. Real barriers, experiences, and culture may be shared by many in a group, but that did not give us permission to treat people as though they conform to some stereotyped image of "white," "gay," or "Latino." We envisioned a community where various cultures and ethnicities were valued and acknowledged, but where each individual had the opportunity to find her or his own path.

At the same time, we recognized that not everyone faces the same consequences for their differences. The experience of an Asian American person on our campus was not the same as that of an African American person or a white woman or a person with a disability. We could not forget that issues of difference are inextricably

intertwined with issues of power, discrimination, and with the specific histories of groups and of each individual. As we pursued a pluralistic campus, we realized that equality would require effort, resources, and commitment to both structural change and education. We had to learn to see difference differently.

Even as we celebrated differences between people, we also had to make every effort to find common grounds around which to unite. The multicolored skein that would be a multicultural Michigan had to be woven together, becoming a tapestry, with each thread retaining its unique character.

The Challenge of Racism

Prejudice and ignorance continue to exist on our nation's campuses as they do throughout our society. American society still experiences high levels of racial segregation in housing and education in spite of decades of legislative efforts to reduce it. Today many Michigan students complete their elementary and secondary education without ever having attended a school that enrolled students of another race and without living in a neighborhood where another was well represented. In fact, the southeastern Michigan area, from which the University draws almost half of its undergraduate students, has been ranked as the second most racially segregated areas in the nation (Gary, Indiana being the first). This isolation may perpetuate stereotypes which reinforce the idea that one race is superior to another.

Not surprisingly, then, new students arrive on our campus bringing with them the views of society at large. It is here that many students for the first time have the opportunity to live and work with students from very different backgrounds. In many ways our campus acts as a lens that focuses the social challenges before our country. It is not easy to overcome this legacy of prejudice and fear that divides us.

Obviously we must decry racism in all its forms, both individual and institutional. We must demonstrate clearly and unequivocally that racism on this campus will not be tolerated. However, beyond this we need to develop programs to help make us learn to value diversity individually and collectively, to promote reflection on social values, and to encourage greater civility in social relations. We have to develop new networks and forums to promote interaction among campus groups.

Even these steps to counter racism and bigotry were not enough. Our Michigan Mandate was intended to take us far beyond mere reactive measures.

The Challenge of Community

As a public institution, the University could find direction in its history and tradition. The idea of the campus as a melting pot of cultures and races must evolve towards a vision of a more varied and tolerant environment—a more pluralistic, cosmopolitan community. We had to become a community in which all barriers to full participation of all people in the life of our University was removed; a place where every person was valued and respected; a place where we could all rejoice in the richness of our human variety; but also a place where we could work constructively together as a community of scholars and as citizens of a democratic society.

That was the challenge before us. We had to work together to achieve tolerance, understanding, and respect. As citizens we had to reaffirm our commitment to justice and equality. As scholars we had to unwaveringly support our shared commitment to academic freedom and the pursuit of excellence. The task was large and called on the best that was in each of us. It demanded that we become leaders for change on our campus and in our society.

The Challenge of Change

It was important not to fool ourselves. In confronting the issues of racial and ethnic inequality in America we were both probing one of the most painful wounds in American history and rejecting the prescription of "benign neglect," which for too long has paralyzed action. The road we had to travel was neither well traveled nor well marked; there were very few truly diverse institutions in American society. The challenge was great; we literally had to make our own history. To do this we needed both a commitment and a plan.

To move toward our goal of diversity, the University of Michigan had to leave behind those reactive and uncoordinated efforts which had characterized our own and most other campuses and move toward a more strategic approach designed to achieve long-term systemic change.

Here we had to recognize the limitations of those efforts, essential though they were, that focused only on affirmative action; that is, on access and retention and on representation. Of course, increased representation of minorities would be the foundation upon which we could build. But without deeper, more fundamental institutional change, these efforts by themselves would inevitably fail. While we intended to continue our commitment to affirmative action efforts, we needed to achieve more permanent and fundamental change in our institution.

Evolution of the Michigan Mandate

Planning models for the institutional change necessary to become a genuinely pluralistic, multicultural community are still difficult to find. However, we were fortunate to be able to draw on the expertise of faculty colleagues with experience in other arenas, particularly in the corporate world, where significant cultural changes in the workplace have been achieved, using strategic approaches and techniques. A small group of advisors with wide-ranging experience in organizational change was assembled to help forge the first outlines of the Michigan Mandate. This group, nicknamed "the Change Group," conceived this Mandate not as a bureaucratic directive, but as an organic and evolving framework for organizational change that would attract and reflect the active participation of faculty, students, and staff at all levels of the University.

The Change Group recognized early on that the real goal was institutional change. The objective was to develop a preliminary version of a plan, a new agenda, a vision of the future of the University of Michigan that would respond more effectively to two of the principal challenges before us in the 21st Century: first, the fact that our nation was rapidly becoming more ethnically and racially pluralistic; and second, the growing interdependence of the global community, which called for greater knowledge, understanding, and appreciation of human history than ever before. As president, I believed that it was important to assume personal responsibility for the design, articulation, and implementation of the plan. Credibility also required that I accept personal accountability for its success or failure.

The purpose of the plan was to change the institution in such a way that all institutional barriers were removed to full participation in the life of the University and the educational opportunities it offered for peoples of all races, creeds, ethnic groups, and national origins. But it was also recognized at the outset that the strategic plan would really be only a road map. It was intended to set out a direction and point to a destination, but the journey itself would be a long one and much of the landscape through which the University would travel was still to be discovered. As the effort evolved, it attempted to deal with two themes that heretofore had appeared to be incompatible: community and pluralism. The goal of the effort was to strengthen every part of the University community by increasing, acknowledging, learning from, and celebrating the ever-increasing human diversity of the nation and the world.

We also recognized at the outset that the plan would be organic and should evolve in such a way as to facilitate the involvement of both the University community itself and the broader external community. The challenge was to construct a process that would engage the various constituencies of the institution, reflecting their opinions

and experience. Indeed, the plan would provide the framework for a continuing dialogue about the very nature of the institution. In this sense, the Change Group was engaged in developing a dynamic process and not a finished product.

In their discussions, the Change Group became convinced that the University's ability to achieve and sustain a campus community recognized for its racial, cultural, and ethnic diversity would in large part determine the University's capacity to successfully serve the state, the nation, and the world. The group also saw that this diversity would become the cornerstone in the University's efforts to achieve excellence in teaching, research, and service in our multicultural nation and world.

To make progress in achieving such a change, the group made every effort to link diversity and excellence as the two most compelling goals before the institution, recognizing that these goals were not only complementary but would be tightly linked in a multicultural society. The University needed to broaden its vision, to draw strength from its differences, and to learn from new voices, new perspective and different experiences of the world.

In these efforts the University would have to take the long view that would require patient and persistent leadership. Progress would also require sustained vigilance and hard work as well as a great deal of help and support. The plan would have to build on the best that we already had. The challenge was to persuade the community that there is a real stake for everyone in seizing this moment to chart a more diverse future, that the gains to be achieved would more than compensate for the necessary sacrifices.

Though we knew we would face many setbacks and disappointments in the early stages, the important point was to make a commitment for the long range and not be distracted from this vision. This long range viewpoint would be particularly important in the face of campus activism because of the ongoing pressures to serve one special interest group or another or to take a particular stance on a narrow issue or agenda. Indeed, many, both on and off the campus, tended to view the presence or absence or nature of such responses as a sequence of litmus tests that measured the extent of the University's commitments.

While the inevitable pressures were understandable, the plan would succeed only if the University leadership insisted on operating at a long-term strategic rather than on a short-term reactive level. It was essential to keep our eyes focused on the goals ahead and resist efforts to react to every issue that arose. In this sense, then, while commitment and support within and outside the University community were necessary ingredients for success, it could not succeed alone.

With all of this in mind, we sought to develop the Michigan Mandate so that it would feature clear, concise and simple goals, propose specific actions and evaluation mechanisms, and reflect extensive interaction with and direct comment from a variety of constituencies and individuals to ensure their responsiveness. Once the basic outlines of the plan were developed, a broad process of consultation also would be launched to engage groups both on and off campus.

The mission and goals of the Michigan Mandate were quite simple:

Philosophy: To recognize that diversity and excellence are complementary and compelling goals for the University, and to make a firm commitment to their achievement

Representation: To commit to the recruitment, support, and success of members of historically underrepresented groups among our students, faculty, staff, and leadership

Environment: To build on our campus an environment which seeks, nourishes, and sustains diversity and pluralism and in which the dignity and worth of every individual is valued and respected

Associated with these general goals were more specific objectives:

Faculty recruiting and development: To substantially increase the number of tenure-track faculty in each underrepresented minority group; to increase the success of minority faculty in the achievement of professional fulfillment, promotion, and tenure; to increase the number of underrepresented minority faculty in leadership positions.

Student recruiting achievement and outreach: To achieve increases in the number of entering underrepresented minority students as well as in total underrepresented minority enrollment; increase minority graduation rates; develop new programs to attract minority students who have withdrawn from our academic programs back to campus; to design new and strengthen existing outreach programs that have demonstrable impact on the pool of minority applicants to undergraduate, graduate, and professional programs.

Staff recruiting and development: To focus on the achievement of affirmative action goals in all job categories; to increase the number of underrepresented minorities in key University leadership positions; to strengthen support systems and services for minority staff.

Improving the environment for diversity: To foster a diverse cultural environment; to significantly reduce the number of incidents of racism and prejudice on campus; to increase community-wide commitment to diversity and involvement in diversity initiatives among students, faculty, and staff; to broaden the base of diversity initiatives, for example, by including comparative perspectives drawn from international studies and experiences; to ensure the compatibility of University policies, procedures, and practice with the goal of a multicultural community; to improve communications and interactions with and among all groups; and to provide more opportunities for minorities to communicate their needs and experiences and to contribute directly to the process of change.

Over the course of 1987 and 1988 we developed a series of carefully focused strategic actions to move the University toward these objectives. These strategic actions were framed by the values and traditions of the University, an understanding of our unique culture, and imaginative and innovative thinking. A good example of this approach was the Target of Opportunity faculty recruitment program.

Traditionally, university faculties have been driven by a concern for academic specialization within their respective disciplines. This is fundamentally laudable and certainly has fostered the exceptional strength and disciplinary character that we see in universities across the country; however, it also can be constraining. Too often in recent years the University had seen faculty searches that were literally "replacement" searches rather than "enhancement" searches.

To achieve the goals of the Michigan Mandate, the University had to free itself from the constraints of this traditional perspective. Therefore, the central administration sent out the following message to the academic units: be vigorous and creative in identifying minority teachers/scholars who can enrich the activities of your unit. Do not be limited by concerns relating to narrow specialization; do not be concerned about the availability of a faculty slot within the unit. The principal criterion for the recruitment of a minority faculty member is whether the individual can enhance the department. If so, resources will be made available to recruit that person to the University of Michigan.

In this way some important academic barriers for minority recruitment were removed. Those departments that were able to identify candidates quickly found that their vitality was not only enhanced, but their numbers were enlarged. The Target of Opportunity program was an example of idealism joining self-interest; it also provided an example of breaking down the barriers.

The achievement of goals at a university, as with any organization, ultimately depends on the people charged with the task of carrying them out. Of course, as we developed the Michigan Mandate, we knew that those in key administrative positions must be sufficiently capable and committed to lead the institution toward true diversity. Not only were we operating from strength in our key administrative offices, but we could draw heavily on the expertise and counsel of a variety of individuals and groups that were experienced and committed to this agenda.

Key to the success of the Michigan Mandate was the engagement of as many individuals and groups as possible, both on and off the campus. From the outset we knew that success would be determined largely by grassroots involvement. Hence, it was important to build commitment and awareness by creating a process in which a variety of different groups were involved in refining the Michigan Mandate plan.

At the same time it was essential to understand that in a culture as decentralized as ours at the University of Michigan, real change would have to come at the unit level. And in the units, it was the concerted effort and commitment of individuals that carried us forward and made the difference. The central administration could provide incentives and leadership, but every member of our community had to take personal responsibility to opt for change if we were to succeed.

The inclusion of affirmative action criteria as part of the performance evaluations of units, departments, and their heads had brought some progress, but it still showed an uneven response. The broader performance objectives of the Michigan Mandate were woven into both merit salary and promotion evaluations.

Accountability was an important part of the Michigan Mandate. It was accomplished through established channels, improved and expanded reporting, and several oversight committees.

Of particular concern here was the importance of determining and controlling an agenda that would be focused on strategic objectives. From the outset we knew that there was a danger in that various special interest groups would attempt to distort or even disrupt the Michigan Mandate in order to establish their own particular priorities. Hence, control of the agenda was recognized as a critical element of success, and a strong public relations/media-based campaign was designed with this as its objective.

The plan was promoted through a series of major addresses to on-campus groups, including the faculty senate, the deans, various schools and colleges, various student

groups, and alumni. Presentations to a number of ethnic groups within the University, including minority student, faculty, and staff groups were critical to the project. On the other hand, I thought it was equally important to spend a great deal of time meeting with leaders of external communities to explain to them the nature of the Michigan Mandate, including the key leadership in cities throughout the state, various alumni groups, various church and neighborhood groups, and so forth.

In order to build the key teams we needed to move forward with the Michigan Mandate, we devised a series of retreats involving the leadership of the University. Throughout the early years executive officers and deans saw to it that the Michigan Mandate became effectively woven into the objectives of the University. Some key actions taken played important roles in maintaining the momentum of the Michigan Mandate. For example, the University decided to declare Martin Luther King Jr. day a time for education and reflection on the University's role in a multicultural society. While activist groups had demanded that the University declare Martin Luther King day an official University holiday, the University moved instead to identify Martin Luther King Jr. day as an opportunity for educational commitment in which classes would be replaced by a variety of other learning experiences including retreats, seminars, and numerous lectures. The Board of Regents agreed to support this particular strategy.

We at the University took another critical step toward the realization of our goals when we managed to negotiate an agreement with the Michigan Attorney General that would allow us to sell a remaining $500,000 worth of stock holdings in companies with South African interests because of that nation's apartheid policies. Here the key issue was whether the Attorney General would continue to challenge the University's autonomy, or drop the case following the ruling by the Court of Appeals upholding the University's autonomy. The Attorney General agreed to drop the case, and the University was then free to go ahead and complete divestment.

Although the first phase of the Michigan Mandate focused on increasing the representation of minority groups within the University community, we recognized that this was the easy part of the plan: a university can have a great many different people living in the same locale, working side by side, and going to the same classes, and still not achieve a meaningful community. The University faced the challenge of creating a new kind of community that drew on the unique strengths and talents and experiences of all of its members. In short, this was the aim of the second phase of the Michigan Mandate.

More specifically, we felt that many of our society's traditional institutions, our neighborhoods, churches, public schools, and businesses, had failed in large part to provide the models for creative interaction that anchor a society based on a general mutual dependence, trust, and respect. Our college campuses are often the first places that many students of different races and cultures come together in an environment in which they are expected to live, work, and learn. Unfortunately, our existing university structures reproduce tension and separatism, rather than foster interdependence and cohesion.

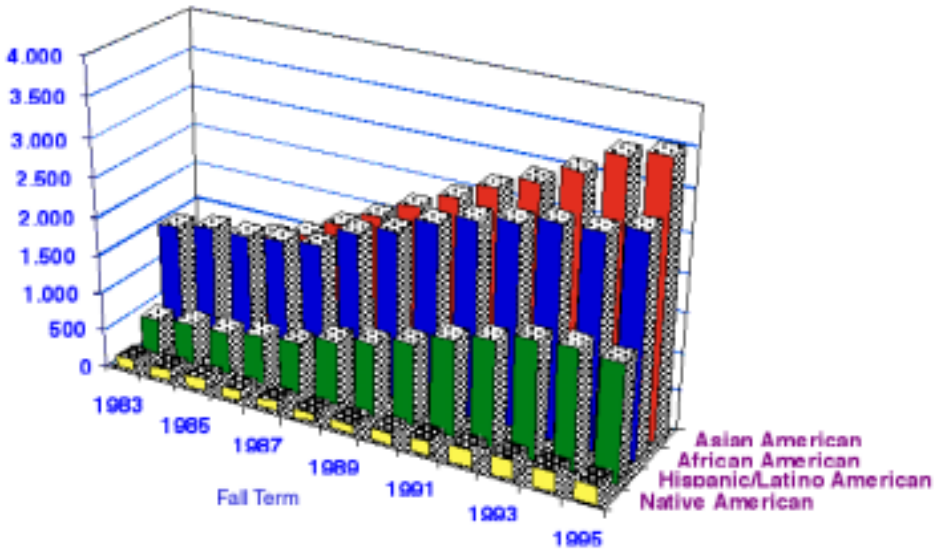
The University of Michigan had a certain advantage over many other institutions because it benefited from having one of the strongest concentrations of programs in the social sciences of any American university. Hence, it was clear that the University's success in building a multicultural university would depend upon the great experience and knowledge of its social science faculty. To this end, the Change Group was eventually restructured into a group that more appropriately reflected these disciplines. Beyond this a second guidance group was formed by replacing the affirmative action coordinator council with a new committee consisting of the second-ranking administrative officers in each unit of the University, and charging them with implementing many of the ideas necessary to take the University toward a multicultural community.

While the Michigan Mandate was moved into a new phase, the strong commitment to achieve greater minority representation among students, faculty, and staff continued to be among the University's highest priorities. The leadership continued to push very hard on this agenda and would meet from time to time with units of the University which, we felt were not making the desired commitment.

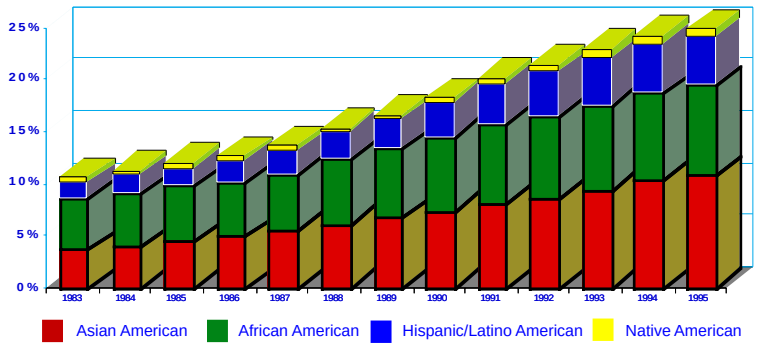
Signs of Progress[5]

Today, in every degree program, at every level, for every minority ethnic group, we currently enjoy the highest enrollments in our history. By 1996, over 24 percent of our student body (and 27 percent of that year's freshman class) were students of color—an increase of over 60 percent over a ten-year period to 7,927.

Minority Student Enrollments

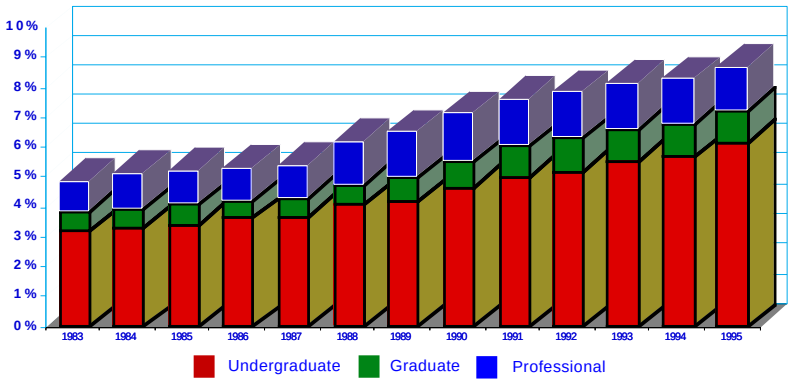


Minority Student Enrollment Percentages



By 1995 African American enrollments rose 60 percent to 2,715, bringing enrollment to 8.5 percent of our student body. So too, enrollments of Latino students have increased to 1,533 (4.7 percent), and Native Americans to 258 (1 percent).

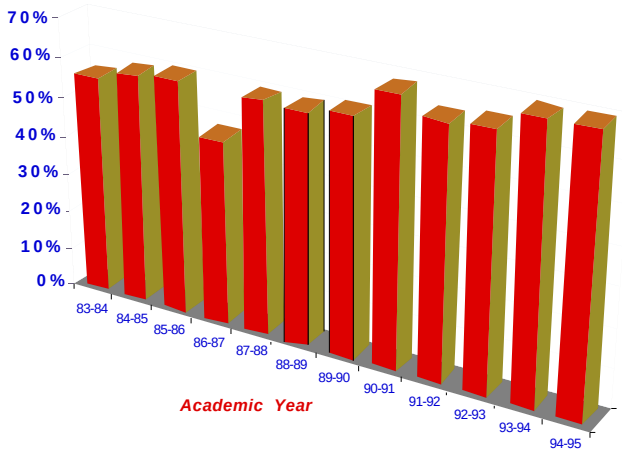
Enrollment Percentages of African American Students



To continue our progress, we created a number of "pipeline programs" for pre-college African American students by building relationships with schools in the southeastern Michigan area. These programs are vital recruitment tools, introducing prospective young students to students, faculty, and staff, and building personal, ongoing relationships. We hope to inspire them with pride, drive, and discipline in their academic pursuits, no matter where they may later choose to go to college.

Our graduation rates for African American students have risen to 70 percent, the highest for any public university in the nation—indeed, higher than the graduation rates for white students at most public universities.

Graduation Rates of Freshman African American Cohorts
Six Years after Initial Entry



Although our 70 percent graduation rate for students of color sounds impressive, and we are delighted that our graduation rates for all students are rising, we still have a 15 percentage-point gap between graduation rates of African American and white students that must be addressed.

The University has taken several comprehensive steps to close that gap, beginning with the matriculation and orientation of each first-year student who joins the Michigan family. Students learn of academic, extracurricular, housing, and counseling programs that they may explore and adapt to their individual liking and needs. For instance, the following three programs are designed to enrich the academic lives of our undergraduates.

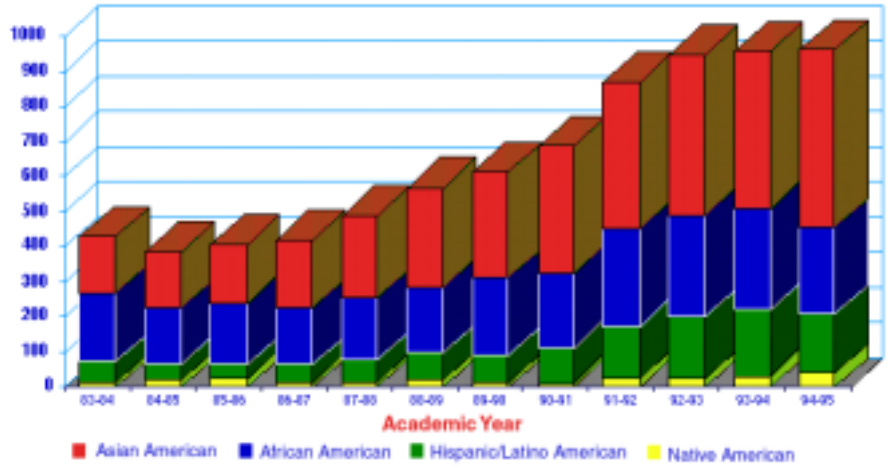
- The University Research Opportunity Program (UROP), which began in 1988 as a faculty-student collaboration program for students of color, has expanded to include the entire student body, serving over 700 students from all backgrounds and involving faculty research mentors from every School and College in the University. UROP brings first- and second-year students into the research enterprise of the University and, early in their careers, makes them part of scholarly inquiry.

- The 21st Century Program currently includes 265 first-year students who live and learn together. Sponsored by the College of Literature, Science, and the Arts and University Housing, the 21st Century Program features small, in-depth seminars taught by faculty and staff. The students, who live on the same floors or areas of a residence hall, discuss the transition to college life, academic major selection, leadership, and community service opportunities for two hours a week during the fall semester. They also take Mastery Workshops together for two hours twice a week. The workshops are in English composition, math, chemistry, and physics, and emphasize collaborative learning and the mastery of concepts beyond course requirements.

- The Center for Research on Learning and Teaching provides workshops for faculty and graduate student instructors on classroom diversity issues, and consults with instructors and academic units to help them serve the learning needs of the UM's diverse student body. Advice may include guidance on how to introduce or expand an appropriate multicultural focus in subject areas or how to enhance bibliographies that may have previously omitted such issues as a result of narrowness of vision.

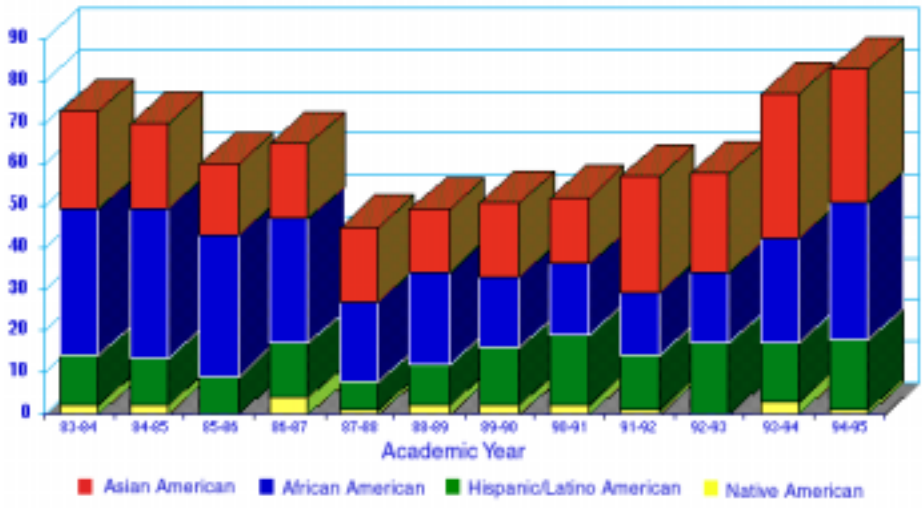
Nationally, the UM is a leader in post-secondary degrees conferred upon members of underrepresented minority groups.

Minority Undergraduate Degrees Conferred



Since the University of Michigan ranks among the leading sources of doctorates in the nation, it plays a key role in producing the next generation of faculty for American universities. The University of Michigan has long been a national leader in the graduate education of members of underrepresented minority groups. The recent report in *Black Issues in Higher Education* placed Michigan eighth nationally for total minority master's degrees for all disciplines combined, and seventh in the nation in total minority doctoral degrees for all disciplines combined. These rankings include historically Black institutions.

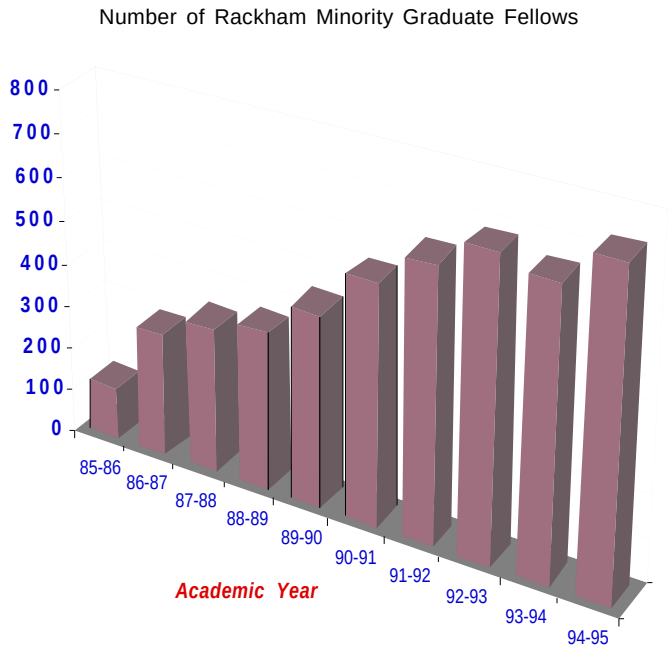
Minority Ph.D. Degrees Conferred



The Michigan Mandate sought to increase the number of African American Ph.D.s at Michigan. One clear way to address this gap is to enlarge the pool of prospective students, but this does not resolve the economic burden of graduate school. One of the greatest challenges to diversity can be a lack of resources. A number of highly qualified minority students elect to go directly to the job market after receiving baccalaureate degrees rather than incur thousands more dollars of debt. Congressional efforts to cut back financial aid for students threaten to make the task of encouraging minority students to pursue higher education even more challenging.

In addition to supporting a variety of efforts to increase funding for graduate education on the federal and state levels, the University addressed the need for more financial support for our graduate students through the Campaign for Michigan, our $1 billion fund-raising campaign. Part of the Campaign was for endowment, some of the proceeds of which will be used for student financial aid.

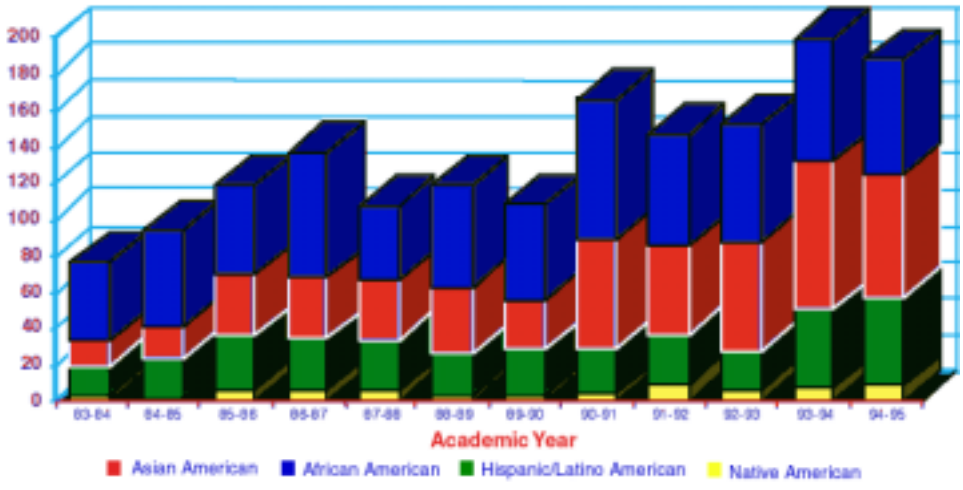
The Rackham Graduate School Merit Fellowship Program is another important component of our recruitment and retention efforts. The Horace H. Rackham School of Graduate Studies has increased the number of Fellows supported by programs for historically underrepresented groups by 118 percent since 1987.



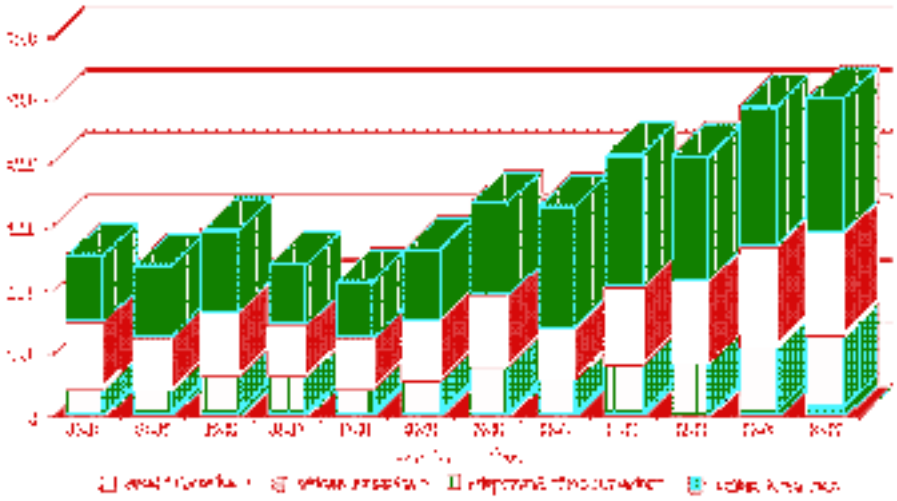
Of the 734 Rackham Fellows in Fall 1994, 51 percent were African American and 29 percent were Mexican American or Puerto Rican. Since 1993-94, Merit Fellowship awards have included incentives to encourage departments to add teaching and research appointments to the Fellowships for doctoral students from historically underrepresented groups.

So, too, many of our professional schools have become national leaders in their diversity, including our schools of Business, Law, Medicine, and Engineering. The Business School has seen its MBA full-time day student enrollment rise to 28 percent persons of color. In 1994, 11 percent who entered the school were African American, which was among the highest figures for the nation's leading business schools. The enrollment of African American students in the Medical School reached 10 percent in 1994, and 39 percent of the entering class were students of color. The Law School reported that in 1994, 21 percent of its enrollment and entering class included students of color.

Minority Professional Degrees Conferred

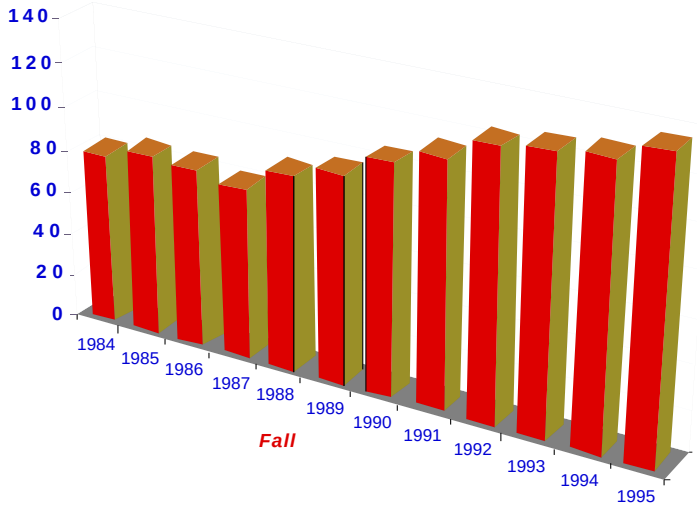


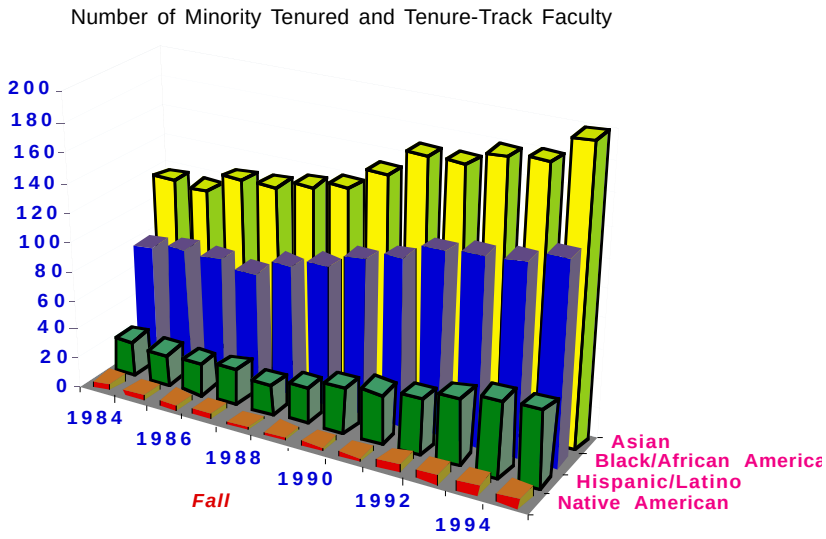
Minority Masters and Intermediate Degrees Conferred



Since the beginning of the Michigan Mandate, we have added over one hundred new African American faculty, roughly doubling their numbers.

Number of Black/African-American Faculty

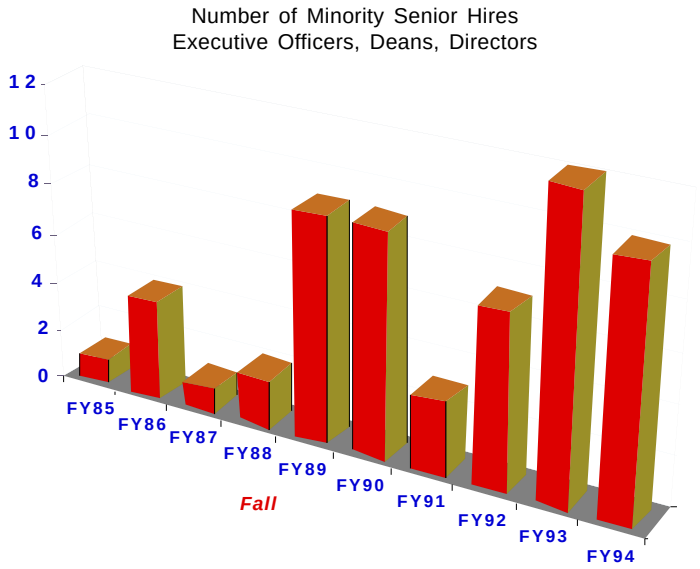




We have increased our tenured and tenure-track faculty of color by 55 percent since 1987; more than 13 percent of our tenured or tenure-track faculty are persons of color. Since the beginning of the Michigan Mandate, 87 percent of the underrepresented assistant professors of color who were reviewed for promotion to associate professor with tenure received tenure. The number of underrepresented faculty of color in such important academic leadership positions as vice presidents, deans, directors, vice provosts, and department chairs has increased by 79 percent.

Many formal and informal surveys have confirmed that the creation of a climate and culture that is more welcoming and supportive of all new faculty, including scholars of color, often is most effective when done at the departmental and college level, where newcomers are initiated into the University community. A number of departments, schools, and colleges have responded to the challenge of enriching the academic culture by using a recruitment strategy known as "cluster hiring"—the hiring of faculty members who share similar research and teaching interests, either within one department or across departments. This practice creates communities of scholars and creative artists, and we are optimistic that the results of cluster hiring will become evident very soon.

The University has also made a major effort to diversify its leadership by recruiting minorities into key administrative positions:



We have made steady progress in hiring and retaining professional and administrative (P&A) staff of color, increasing the total P&A staff of color from 449 to 816, with substantial increases in three of the four racial categories.

We have experienced some success in recruiting and promoting members of underrepresented groups, particularly African Americans, to key leadership and management positions since 1987. The number of African Americans in senior management positions has increased from twenty-three in 1987 to fifty-three in 1994. During that same period, the number of senior managers increased from two to eleven among Hispanics/Latinos, from one to two among Native Americans, and from three to ten among Asian Americans.

The Office of Human Resources and Affirmative Action (HRAA) office has launched several initiatives to better develop our staff. Currently the Human Resources Development Office is undergoing an assessment and evaluation. The goal is to target professional development programs to meet the needs of employees and departments. As a result of meetings and consultations with staff from underrepresented minority groups, we recognize that we must do a better job of helping all employees identify long-term career paths and provide the tools necessary to assist them with career development.

The Michigan Agenda for Women

The inclusion of women as full and equal partners in all aspects of University life is key to Michigan's continued leadership and contributions to a changing world. But beyond equity and rightful participation the University needed to accept a greater challenge consistent with its heritage of leadership for higher education and our society. We sought to challenge the University of Michigan to accept the following vision statement for its future:

> *By the Year 2000, the University of Michigan will become the leader among American universities in promoting and achieving the success of women of diverse backgrounds as faculty, students, and staff.*

To achieve such a vision, we recognized that the University would have to change dramatically, a process that would require vision, courage, commitment, and leadership. University resources needed to be directed toward women and programs that served them. It would also require a bold strategy in which we would set clear directions, implement decisive actions, and built strong and sustained support throughout the University community and its various external constituencies.

To this end, we developed *The Michigan Agenda for Women: Leadership for a New Century*, or more simply, the *Michigan Agenda*. This plan was intended to integrate the goals of gender equity and the participation of women into the University's strategic planning and administrative processes. It called for dramatically increasing the representation of women among the faculty, the administration, and the leadership of the University. This plan aimed as well to create a University climate that fostered the success of women as faculty, students, and staff.

Like its predecessor, the Michigan Mandate, this plan was designed to be an organic, evolving tool for achieving institutional change. Over time, its evolution would be shaped by the counsel, experience, and wisdom of those—both within and external to the University—who became committed to institutional leadership in the success of women. The Michigan Agenda would provide a framework for continuing dialogue, planning, and action through a dynamic process that we hoped would eventually reach and involve every member of the University community.

Women at Michigan: A Rich History

Understanding the history of women at the University of Michigan and the present challenges they face in our institution clarifies the urgency of our resolution to form the Michigan Agenda for Women. Women themselves have consistently and persistently been the leaders in the long struggle at Michigan to achieve equality for women, to recognize women's contributions, and to foster an environment in which women can succeed. We have benefited from a long line of women leaders who have pulled, pushed, and sometimes dragged the University along the path to equality for women. The University is indebted to the many women who—from 1858, when Sarah Burger first applied for admission to the University, to the present day—have dedicated untold effort, overcome formidable barriers, and endured considerable hardship and sacrifice to make the University a better, fairer, more intellectually challenging, more diverse, and enriching place for us all.

Despite these efforts, and beyond the good news in some areas, it was also clear that the University had simply not made the progress that we should have. Below are the conclusions of a number of studies conducted during the late 1980s and early 1990s that suggested a strong need for change.

Faculty Hiring

In faculty hiring and retention, despite the increasing pools of women in many fields, the number of new hires of women did not change significantly during the 1980s, but remained at 20 percent. In some disciplines such as the physical sciences and engineering, the shortages were particularly acute. We continued to suffer from the "glass ceiling" phenomenon, i.e., women could not break through to the ranks of senior faculty and administrators though no formal University policy expressly prohibited them from doing so. The proportion of women decreased steadily as one moves up the academic ladder (34 percent of assistant professors, 23 percent of associate professors, 9 percent of full professors). Furthermore, hiring practices in the 1980s tended to perpetuate the status quo, with only 24 percent of new associate professors and 10 percent of new full professors as women. During the 1980s, the representation of women at the full professor level increased only modestly, from 6 percent to 9 percent.

Additionally, there appeared to be an increasing tendency to hire women off the tenure track as postdoctoral scholars, lecturers, or research scientists. The rigid division among various faculty tracks provided little opportunity for these women to move into tenure tracks positions.

Faculty Success

Retention of women faculty remained a serious concern. Statistical studies in the late 1980s suggested that women were 30 percent less likely than men to be either reviewed for promotion or recommended for promotion at the critical step between assistant professors and associate professors.

Women faculty, like men, came to the University of Michigan to be scholars and teachers. Yet because of their inadequate representation in the University, our women faculty were stretched far too thin. Virtually every woman faculty member was asked to assume a multitude of administrative assignments. While this was true for women faculty at all ranks, it took the greatest toll on junior faculty.

The period of greatest vulnerability in promotion and retention of women is in the early stage in their academic careers, when they are assistant professors attempting to achieve tenure. Women faculty experience greater demands for committee service and mentoring of women students, inadequate recognition of and support for dependent care responsibilities, and limited support in the form of mentors, collaborators, and role models. The small number of women at senior levels is due in part to early attrition in the junior ranks.

Women faculty at all ranks described their difficulties in juggling teaching, research, formal and informal advising, departmental and University-wide committee service, and family responsibilities. The majority of female faculty did not feel that these difficulties arose from overt or systematic discrimination, but rather from the interaction between a system that was becoming increasingly demanding and competitive, and their personal lives, which were often more complex than those of their male colleagues because of dependent care responsibilities.

It was also clear that despite the efforts of many people, we still suffered gender-based inequities with respect to resources made available to individual faculty members in areas such as startup salaries, access to funding for the summer months, laboratory space and office space.

The Culture

While the low numbers of women in senior faculty and administrative ranks might have been caused by attrition at lower ranks, the absence of senior women, we thought, might also have been due to the degree to which senior men faculty and administrators set the rules and performed the evaluations in a way—whether overt or unintended—that was biased against women.

Surveys to identify the barriers to success and comments on equity in hiring, promotion, and workload revealed a general discontent among women about the department and university climate in which they worked. Many viewed the University as being intolerant. They felt frustrated in a system that they saw as unworkable. They believed that old-boy networks were still solidly in place. Women felt that in order to succeed they had to play by the rules that have been previously set up by the men in their fields. They also suggested there might be differences in styles between the two genders which further increase their difficulty in achieving their career goals.

While some women felt at ease within the existing male-designed system, many others saw themselves as isolated, lacking mentors, and not being included in various local and national networks. One noted, "My profession is male-oriented and very egalitarian. The men are willing to treat everyone the same as long as you act like a man."

In raising these concerns about campus culture, women did not seek special privileges, but they did point out that the rules had been made largely by men to benefit men. Women sought equal support for equal effort. This culture had to be modified to accommodate women as well.

University Leadership Roles

Many of the concerns we heard derived from the extreme concentration of women in positions of lower status and power—as students, lower-level staff, and junior faculty. We knew that a rapid increase in the number of women holding positions of high status, visibility, and power would not only change the balance of power in decision-making, but it would also change the perception of who and what matters in the University. Yet here we faced a particular challenge.

The University of Michigan had acquired an external image as a tough and unforgiving place for women in senior academic or staff leadership roles, making the University of Michigan unattractive as a prospective employer. Many women had accepted or been assigned roles of considerable responsibility without adequate authority to succeed in the position. The number of women faculty and staff in key administrative posts was unacceptably low. For example, over the past several years, the University had lost several women in senior leadership positions (including three deans, one chancellor, two associate vice presidents, and two directors). Although in most of these cases, women leaders went on to more senior positions elsewhere, the fact that the University was unable to retain them or recruit other women into these

senior positions was a reason for concern. Many academic and administrative units had no women in key leadership positions.

Women of Color

Women of color faced the double jeopardy of racial and gender discrimination. While the Michigan Mandate had made some progress in increasing the representation of women of color among both faculty and students, they still faced many special needs and concerns in achieving full participation in the University. By the 1990s, only 3.1 percent of tenure/tenure-track faculty were women of color. Furthermore, the proportion of women faculty of color who achieved promotion was lower than that of either men of color or white women.

So, too, women staff of color faced particular challenges. Job segregation and promotion among staff were particularly important issues.

Staff Issues

The increased participation of women in our society had reached a plateau, in large measure because of artificial barriers imposed on women moving up the career ladder ("the glass ceiling"). There was a concern that at the University, we simply did not do an adequate job of placing women in the key staff positions that prepared them for senior assignments. Women were not provided with adequate stepping stones to senior management, and many believed they were all too frequently used as stepping stones for others. Women leaders had long urged adoption of a philosophy of staff development and programs to implement it. Although the M-Qualify effort sought to address these staff concerns, it was also obvious that we needed a far more aggressive approach.

The pre-eminent issues facing staff women were now salary equity and compensation. Data from the Michigan College and University Personnel Association showed that University of Michigan staff salaries were less competitive than they were a few years ago; in many cases, salaries in the lowest paid classifications had eroded most.

It was clear that we needed to rethink our philosophy of staff benefits, and especially to move to more flexible benefits plans which could be tailored to the employee's particular situation (e.g., child care rather than dependent health care). Furthermore, we needed to aim at providing equal benefits for equal work, independent of gender.

Pipeline Concerns

Despite the efforts to document the "pipeline" challenges faced by each academic unit of the University (i.e., by examining pools of prospective women students, undergraduate concentrators, graduate students, and faculty at various ranks), little progress had been made in developing and implementing specific strategies to deal with underrepresentation where it was most acute. Such efforts were particularly necessary in areas where women were seriously underrepresented either on faculties or in the professions.

Student Issues

While Michigan attracted outstanding women students to its various academic programs at the undergraduate, graduate, and professional levels, many others were deterred from applying to or attending the University because of perceptions concerning the environment for women at Michigan. Indeed, parents sometimes conveyed concerns about sending their daughters to the University and sometimes even encouraged them to consider institutions with reputations for being more supportive of and providing more opportunities for women. We needed to move immediately to bring University policies and practices into better alignment with the needs and concerns of women students in a number of areas including campus safety, student housing, student life, financial aid, and child care.

Of course, over the longer term it was essential that we attract more women into senior faculty and leadership roles if we were going to attract top women students. Furthermore, as one of the nation's leading sources of scientists and engineers, the University simply needed to do more to encourage and support women in these fields of study—fields from which women had for decades been discouraged from entering.

The Campus Environment

Most women faculty, students, and staff succeeded admirably in working and learning at the University. Nonetheless, they struggled against subtle pressures, discrimination, and a still-common feeling of invisibility. Removing barriers and encouraging women's full participation would transform the University, creating a community in which women and men could share equal freedom, partnership, and responsibility.

The Commitment

We came to the conclusion that the University of Michigan was far from where it should be—from where it must be—in creating an environment that provided the full array of opportunities and support for women faculty, students, and staff. The University had an opportunity to emerge as a leader in providing expanded roles for women in higher education and to achieve the vision proposed by the Michigan Agenda. Real progress toward full participation for women would require shifts in perspective in every aspect of University life. The actions we needed to take should serve as catalysts not just for changes in the policies and procedures by which this institution was governed, but more fundamentally for changes in the understanding, attitudes, and behavior of its members, including those at the highest levels of leadership in the University.

As president, I was prepared to make this commitment to lead the University toward the vision articulated in the Michigan Agenda. I felt strongly about the importance of a commitment to fulfilling this agenda for some of the same moral and practical reasons I was committed to the Mandate. First and fundamentally, I believed it was the right thing to do. The University had a fundamental moral responsibility to pursue equity and social justice for every individual. Full gender equity was not only essential for women, but it was indisputably in the University's best interest, given the growing number and influence of women in the educational arena, the workplace, and in the University's own alumnae population. If Michigan was to be a leader in higher education, it had to be at the forefront in assuring equity for women in all aspects of the life of the institution.

The second reason for my commitment to the Michigan Agenda was more pragmatic. If our nation is to thrive in the next century, it must call on the talents of all our people. In my role as chair of the National Science Board, I had become painfully aware that the underrepresentation of women in many fields of science and technology seriously threatens our nation's security and well-being. As we moved into an era where knowledge is becoming ever more important to our society and to the world, we simply could not ignore talents represented by over one-half of the population. Given the impending shortages of faculty, scientists, and educated professionals in many fields, it was clear that women's contributions would be increasingly critical to higher education and to the public and private sectors of our economy and society.

Third, I was absolutely convinced that the strong involvement of women in all aspects of the University would be key to the quality of our teaching and research

missions. The perspectives and theoretical interpretations of women were fundamental to the integrity of our teaching and research and to the vigor and vitality of our education, scholarship, service, and communal life. The scholarly contributions of women have strengthened and invigorated our intellectual climate and academic standing in many ways.

And finally, a personal comment is in order. I was fortunate to be the husband, father, friend, and colleague of many talented, wise, energetic, and determined women. Through these relationships, I had come to see and understand some of the barriers—large and small—that continued to prevent women from achieving their full potential and contributing their great talents and leadership, not just to this University, but to society at large. And I had learned that at times my male-biased view of the world was just plain wrong!

Of course my education on these issues was far from complete. Indeed, this evolving plan reflected in part my own education concerning the challenges facing women at Michigan. But it also reflected the advice, counsel, and judgment of scores of women across this campus and beyond, who had helped to shape its evolving form. Their concerns, wisdom, and commitment had convinced me that achieving the goals of the Michigan Agenda was a compelling necessity both for this University and for our society.

The Task Ahead

If we were to make Michigan the University of choice for women seeking leadership roles in our society, we needed to be rigorously honest in evaluating our efforts to date. We had tried many, many things. Hundreds of dedicated members of the University community—women and men—had worked long and hard to bring women more fully into the life of the University.

But our actions to date, while motivated by the best of intentions, had been ad hoc. They lacked coherence and precise goals and strategies; they were too independent of one another and provided no assurance of progress. Beyond a deep commitment, we needed a bold strategic plan characterized by firm goals. Programs could be tested against these goals, and our progress could be accurately measured and shared with the broader University community.

The plan we developed and put into place had several important characteristics:

- clear, concise, and simple goals
- specific actions and evaluation mechanisms
- a process to involve the broader University community in helping to design and implement the plan

The Vision and the Values

The Michigan Agenda Vision Statement:

By the Year 2000, the University of Michigan will become the leader among American universities in promoting and achieving the success of women of diverse backgrounds as faculty, students, and staff.

In framing this challenge, we accepted certain values as fundamental to the University:

1. **Education**: The education of all members of our community, including ourselves, is the fundamental mission of the University. If the University is to make progress, we must all be willing to educate ourselves about gender issues and be committed to working together to achieve equity.

2. **Community**: The University is often described as a community of scholars. In its weakest sense, a community is a group of people who share an institutional structure with norms and expectations about behavior. Under this concept the most we can hope for is tolerance of the differences among us. The University must strive to be a community in a stronger sense, that is, a group of people who are genuinely interdependent; who respect, value, and seek understanding of our differences; and whose practices nurture both the institution as a whole and all of its individual members and diverse sub-groups.

3. **Investment in People**: The University is fundamentally reliant upon the knowledge, creativity, skills, and leadership of the people within it. To flourish, the University must invest in the intellect, commitment, and creativity of all of its people, removing all barriers to gender, race, ethnic origin, sexual orientation, or

disability. To this end, the University needs to translate its stated commitment into actions which support human aspirations, development, and achievement as well as into actions which mobilize the best efforts of all its members toward the achievement of our common goals.

4. **Leadership:** Leadership is fundamental to the achievement of gender equity. University leaders at all levels of the institution need to consistently address gender-related issues affecting faculty, students and staff in order to foster positive change in the units for which they are responsible, and they should regularly assess the progress of such change. Key to this effort is the presence of women in positions of leadership at all levels of the institution.

Fundamental Goals

To move the University toward the vision of the Michigan Agenda, we proposed the following specific goals:

Goal 1: To create a University climate that fosters the success of women faculty, students, and staff by drawing upon the strengths of our diversity

- Build an environment supporting women's success and achievement
- Continue efforts to build a safe, secure, and supportive environment for women faculty, students, and staff

Goal 2: To achieve full representation, participation, and success of women faculty in the academic life and leadership of the University

- Substantially increase the number of tenure-track women faculty particularly in the senior ranks
- Increase the success of women faculty in the achievement of professional fulfillment, promotion, and tenure
- Address the long-term academic and professional pipeline issue in the fields in which women are most severely underrepresented
- Substantially increase the representation of women in University leadership positions

Goal 3: To make the University the academic institution of choice for women students aspiring to leadership roles in our society

- Change both the perception and reality of Michigan to that of an institution committed to the success of women
- Develop an array of leadership experiences for women students
- Design and implement "pipeline" programs to encourage women students to move into fields of study in which women are underrepresented

Goal 4: To make the University the employer of choice for women staff who seek satisfying and rewarding careers and to provide opportunities for women staff who seek leadership roles

- Attract talented women into key staff positions
- Identify women with potential for leadership roles and make available to them appropriate career development programs
- Develop employee benefits and support programs that respond to the particular needs and concerns of women staff

Goal 5: To make the University the leading institution for the study of women and women's issues

- Strengthen and extend research activities concerned with women and the impact of gender in society
- Sustain the Women's Studies Program and expand its influence on teaching and scholarship across the University

Strategic Actions

The University proceeded to launch a series of actions in various areas to achieve these goals. However, while these actions were intended to address the concerns of women students, faculty, and staff, many of them were quite gender-independent. Just as the Michigan Agenda required a commitment from the entire University community, so too its success would benefit us all, regardless of gender.

These actions required the commitment of significant resources. However, we believed that neither the potential of nor the commitment to the Michigan Agenda should be measured in terms of resource commitments alone.

Tactical Implementation

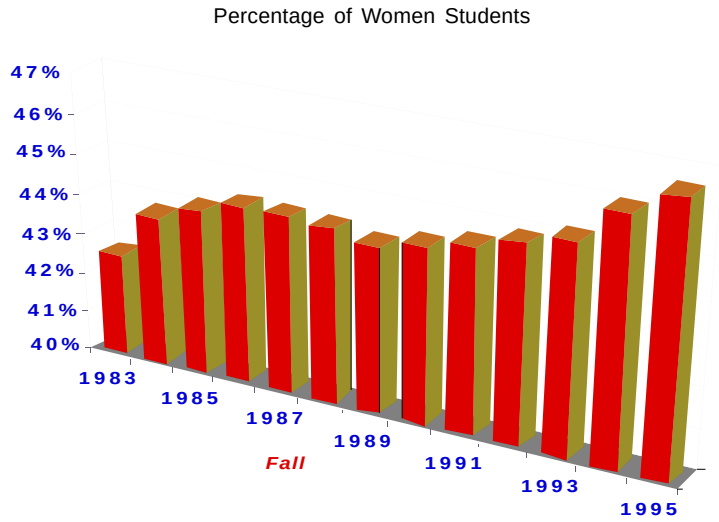
The tactical implementation of these actions required different strategies for different parts of the University. Units faced a wide variety of challenges. Some, like the physical sciences, had few women represented among their students and faculty. For them, it was necessary to design and implement a strategy which spanned the entire pipeline, from K-12 outreach to undergraduate and graduate education, to faculty recruitment and development. For others such as the social sciences or Law where there was already a strong pool of women students, our challenge became attracting women from this pool into graduate studies and academe. Still other units such as Education and many departments in LS&A had strong participation of women among students and junior faculty, but suffered from low participation in the senior ranks.

There was also a great deal of variation among non-academic administrative areas of the University, with many having little tradition of women in key management positions. We asked each of our units to develop and submit a specific plan for addressing their specific gender inequities. These plans were reviewed centrally, and the progress of each unit was then measured against their plan each year, as part of the normal interaction associated with budget discussions. This system enabled us to create a process that both permitted central initiative and preserved the potential for local development of unit-specific action plans.

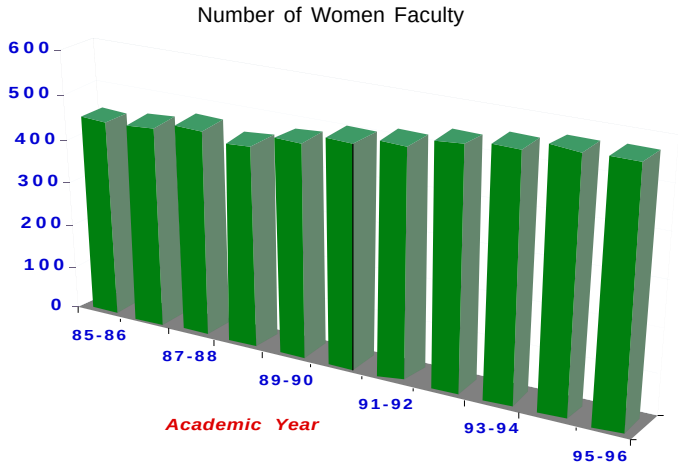
Signs of Progress

Although this major initiative is still in its early stages, it, too, has had important impact. Some of the highlights include:

- In 1995, almost exactly a century after Michigan first achieved gender parity in graduation rates, it has again achieved a balance between men and women students:



- Fifteen new senior faculty lines have been established and filled by newly recruited women faculty. Furthermore, units have been provided with strong incentives to recruit women faculty. Already there are signs of progress:



- The University's policies with respect to dependent care, family leave, and flexibility in the workplace have been overhauled to respond to the concerns of women faculty and staff.

- A major new task force was established to improve campus safety and eliminating violence against women.

- A series of senior appointments of women to key leadership positions has occurred, including deans and executive officers.

- A new Institute for Research on Women and Gender has been established and endowed.

- Michigan became one of the first major universities in America to commit sufficient resources to achieve true gender equity in intercollegiate athletics, providing the same number of varsity opportunities for women as for men (50 percent - 50 percent).

Beyond these highlights, we have learned a great deal about what it will take to achieve the vision of the Michigan Agenda. During the first years of the Agenda, as president, I personally met hundreds of groups and literally thousands of women from every facet of our University. Participants in these meetings, which ranged from a few individuals to groups of over six hundred women, expressed a series of concerns that create a revealing mosaic of the accomplishments and challenges faced by women at Michigan. Predictably, priorities differed among faculty, staff, and students. Yet, a surprising number of issues emerged that are critical to all women on campus. The following is a brief summary of those issues.

Safety concerns emerged as a high priority among all women on campus. Students, in particular, urged that greater action be taken to ensure their safety. Violence against women on campus interferes with students' ability to fully utilize the resources of the University and with faculty and staff members' ability to contribute fully. Women brought up concerns about violence within family housing, in the workplace, and about a violent culture in fraternities and athletics. The need to provide timely and accurate information regarding assaults and incidents was noted. More frequent and earlier Nite Owl rides were suggested, as was better lighting on campus. Faculty, staff, and students also shared concerns about security within campus buildings.

Parking regulations were modified to increase the availability of nighttime parking on campus, and the Regents approved a $2.5-million project to improve campus safety through increased lighting. We held a round-table discussion with campus leaders, and a new President's Task Force on Violence against Women on Campus was formed. A Human Resources/Affirmative Action task force on violence in the

workplace held public hearings across campus during the year. As a result, a set of interim guidelines was developed and discussed with the executive officers of the University and has been issued by the Office of Human Resources and Affirmative Action. Two new training programs for supervisors and employees regarding workplace violence were launched by Human Resource Development: A program for supervisors about the interim guidelines and how to deal with workplace violence, and an employee awareness program covering safety issues.

Michigan women indicated the enormous importance of dependent care for children or other family members while remaining a productive staff member, faculty member, or student. Accessible, affordable daycare facilities are a necessity. For many of our students, daycare costs exceed tuition. A major task force was appointed to develop a strategy to address the needs for dependent care among faculty, staff, and students.

Staff women, in particular, cited the need for greater flexibility in work schedules and structures. Faculty also would benefit from greater flexibility in appointment models. Students noted that many programs will not accept part-time students, limiting access to graduate education for those who cannot afford to quit their jobs and those with dependent care needs. Faculty and staff women wanted the option of reducing their appointments to part-time without severely diminishing future career opportunities. We need to more carefully examine split or shared appointments. The creation of more part-time tenure-track positions, both at pre-tenure and post-tenure stages, was recommended.

Units modified their dependent care and work schedules policies, and were asked to explore various flexible scheduling options. We sent a communication to 3,000 supervisors, encouraging them to give greater attention to staff issues and flexibility in work scheduling.

Because women of color face both racial and gender discrimination in nearly every aspect of their University lives, the President's Advisory Commission on Women's Issues and the Council on a Multicultural University was charged to develop specific goals and recommendations to address these issues.

The Women of Color in the Academy Project, under the aegis of the Center for the Education of Women and the Women's Studies Program, was funded by the Office of Academic and Multicultural Initiatives and the Office of the Vice President for Research (OVPR). The three-year project conducted focus groups of women of color faculty and graduate students and has launched a network for women faculty of

color aimed at reducing isolation and building community. In 1995-96, the project sponsored a speakers series and a research conference on "Women of Color in the University and the Community We Serve."

The Faculty Awards Program sponsored by the Office of the Vice Provost for Academic and Multicultural Affairs and OVPR supports the intellectual, professional, and scholarly pursuits of African American, Asian American, Latino/Hispanic American, and Native American faculty. It is part of our effort to increase the presence and participation of women faculty of color on campus. The program provides tenured and tenure-track faculty financial support to enable them to spend uninterrupted time pursuing research interests or independent study. Of the forty-three grants awarded through the Faculty Awards Program in 1994-95, two-thirds were to women of color.

Faculty and staff women called for improved management training for new deans, directors, department heads, and managers, a possibility being explored by the Human Resources/Affirmative Action office. Lack of human resource education often results in unnecessary personal costs to individuals in those units and in less-than-optimal performance of the unit and the University.

Staff women cited a need for supervisors to encourage more professional development for their staff members. Improvements in the University's tuition reimbursement program were suggested because presently many staff cannot afford to attend the University as students. Staff also would benefit from more information about career development; suggestions include expanding the Gopherblue information system, creating a career planning and placement service for staff members, and sponsoring University-wide departmental career fairs.

Internal and external reviews of the Human Resources Development Program were completed; the program was modified to better meet the needs of faculty and staff.

Faculty and staff women shared major concerns about salary equity. Studies of both faculty and staff salaries were conducted and units were asked to address any inequities.

Students and junior faculty women noted the paucity of senior faculty women available as role models. Men and women both would benefit from larger numbers of senior faculty women. Women comprised roughly half of our undergraduate student population, yet only one in ten full professors are women. In 1994, a program was instituted to recruit more women senior faculty, and ten new faculty positions each year were allocated for this purpose.

A number of faculty women reported that they were expected to perform a disproportionate amount of University service, including student advising, informal counseling, and committee work. In recognition of disproportionate service responsibilities expected of some women faculty members, faculty career development awards of $5,000 each were created specifically for women. The first forty awards were given during the 1994-95 academic year, and forty additional awards have been given in each subsequent year. The awards have been used in a wide variety of ways to enhance the professional development of faculty women.

Another step was to expand our Women in Science and Engineering Residence Program, housed in Couzens Hall, from 50 to 110 students. Also, increasing numbers of women students are honing their leadership skills through Leadership 2017 and LeaderShape, advanced leadership programs for both female and male student leaders offered by the Office of the Vice President for Student Affairs.

Faculty members recommended we create a new institute or center for the study of women's issues. In response, we created the Institute for Research on Women and Gender. The Institute serves three key functions: to provide an institutional umbrella for ongoing faculty research efforts focusing on women and gender; to offer coordination, stimulation, and support for effective interdisciplinary research; and to heighten Michigan's national profile as a major source of knowledge about women and gender. The Institute will have a strong focus on multicultural and international issues as they relate to women and gender. It will capitalize on the strong links that exist and can be forged between the liberal arts and the professional schools and will emphasize effective communication of scholarship about women and gender to the public and policy-makers.

During the numerous town hall discussions we conducted it became clear that many men on campus are unaware of the gender-based inequities experienced by women. Efforts were made to better inform men on campus about these issues and to increase their participation and commitment to the goals of the Agenda.

The Michigan Agenda for Women: Leadership for a New Century aimed at building a working and learning environment in which women can participate to their fullest. But the Michigan Agenda was intended as just a beginning, the sketch of a vision and a plan that will evolve over time as it is shaped through the interaction with broader elements of the University community. However, the commitment to move ahead will not change. The greatness of our University will be determined by the degree to which women are able to assume their rightful role as members and leaders in our community.

Concluding Remarks

True diversity means accepting new members not only into our classrooms, but into dialogues about how classrooms are structured and what is taught there. Diversity is not just about "numbers"; it requires profound structural change. As we have learned to be more open to different ways of seeing, we have discovered that there has always been more diversity on campus than we ever accommodated. Many of the new programs that were created to support people of color or women have actually improved the opportunities for success for all students, faculty, and staff. We will not succeed until all who come here feel a sense of ownership, until the experiences and points of view they bring are reflected in every aspect of our communal life.

We are far more diverse today than we were twenty years ago or even ten years ago. Our commitment has increased our recognition, world-wide, for academic excellence in every field. We cannot know beforehand where this journey will take us. Progress toward plurality will involve many different actors at multiple points in our community. The University is not monolithic and neither is discrimination; both are shifting constantly. We move ahead, knowing we can never simply rest. President Angell's mission for the University for Michigan, that it provides "an uncommon education for the common man," must finally be modified to read *"an uncommon education for all . . . with the ability to succeed . . . and the will to lead."*

[1] Harold Hodgkins, *All One System Demographics of Education: Kindergarten Through Graduate School* (Washington: Institute of Educational Leadership, 1985).
[2] William Bowen and Derek Bok, *The Bend of the River*: *Long-Term Consequences of Considering Race in College and University Admissions* (Princeton: Mellon Foundation, Princeton University Press, 1998).
[3] *The Michigan Mandate: A Strategic Plan to Link Diversity with Excellence*, Office of the President, University of Michigan, 1989.
[4] The Michigan Agenda for Women, Office of the President, University of Michigan, 1994
[5] *Climate and Character: Perspectives on Diversity*, Office of the President, University of Michigan, 1977.

Angell Hall - Haven Hall Connector
June 1996
Architect: Albert Kahn Associates
Contractor: Walbridge Aldinger Company
Cost: $7,894,500

Business Administration
Executive Education Addition
Completion Date:
Architect: Luckenbach/Ziegelman
Contractor: (in fund raising phase)
Budget: $20,000,000

Business Administration Executive Dormitory
November 1986
Architect: Luckenbach/Ziegelman & Partners
Contractor: Freeman-Darling Construction
Cost: $5,849,713

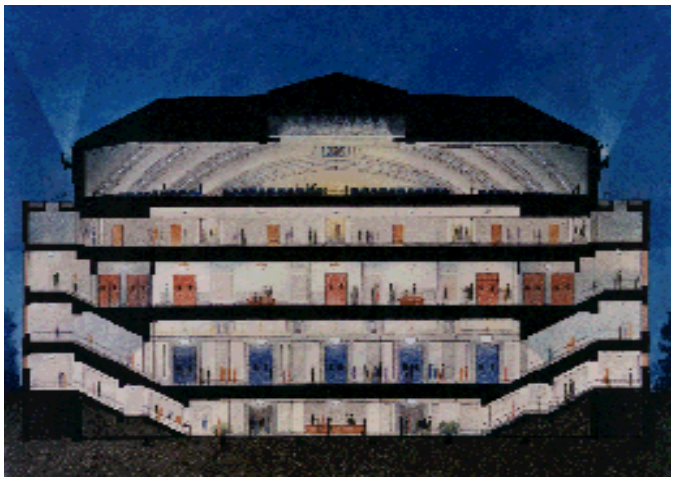
Randall Laboratory
Addition
September 1995
Architect: Luckenbach/Ziegelman
Contractor: Ellis-Don Michigan
Cost: $22,400,000

Shapiro Undergraduate Library
Renovation & Addition
April 1995
Architect: Albert Kahn Associates
Contractor: Spence Brothers
Budget: $11,050,000

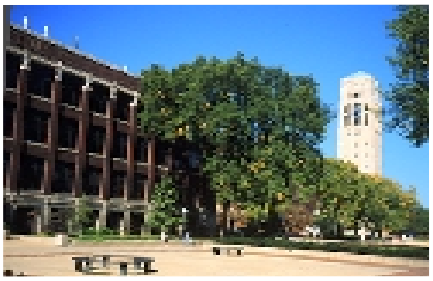
School of Social Work
July 1997
Architect: Sims-Varner Associates
Contractor: Ellis-Don Michigan
Budget: $25,000,000

Angell Hall
Renovation
November 1996
Architect: Albert Kahn Associates
Contractor: Walbridge Aldinger Company
Budget: $16,000,000

Angell Hall - Mason Hall
Courtyard Computer Facility Addition
October 1990
Architect: Sims-Varner & Associates
Contractor: TAI Construction Management
Cost: $3,872,453



Hill Auditorium
Renovation & Addition
Completion Date:
Architect: Albert Kahn & Quinn/Evans
Contractor:
Budget: $20 - $30 million



Edward Henry Kraus Building
Old Renovation Project
December 1991
(several separate projects)
Cost: $12,449,779

C C Little
Renovation
August 1996
Architect: Jickling Lyman Powell
Contractor: Ellis-Don Michigan
Budget: $16,500,000

C C Little
Pharmacy Renovation
September 1996
Architect: Jickling Lyman Powell
Contractor: Ellis-Don Michigan
Budget: $5,350,000

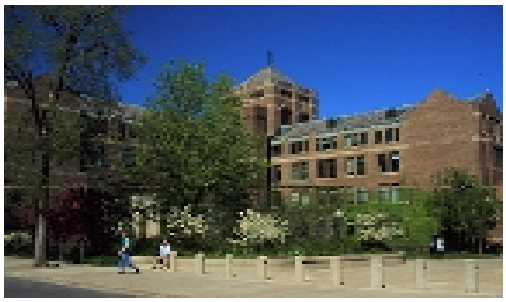
Chemistry Building
Addition 4 - Willard Dow Laboratory
July 1991
Architect: Harley Ellington Pierce Yee Associates
Contractor: Mellon Stuart Company
Cost: $44,939,099

Chemistry Building
Renovations to 1908/1948 Buildings
July 1993
Architect: Harley Ellington Pierce Yee Associates
Contractor: Turner Construction
Cost: $19,682,694

East Engineering Building
Renovation
July 1996
Architect: Louis Redstone
Contractor: Ellis-Don Michigan
Budget: $28,590,000

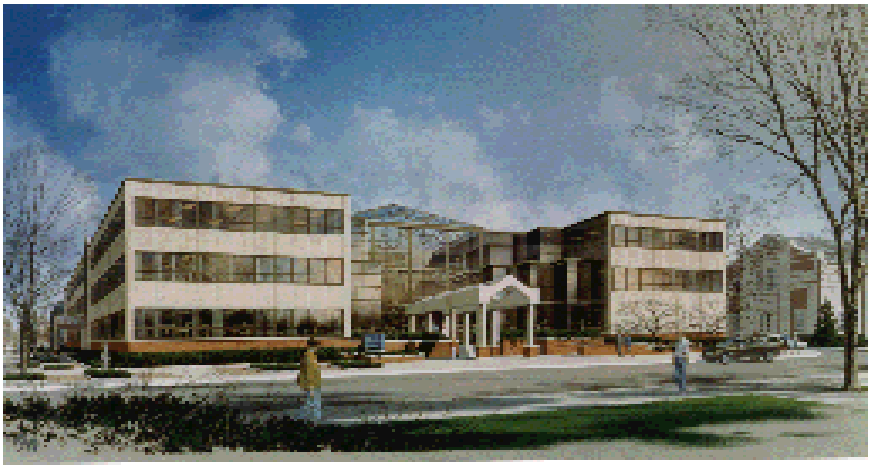
Health Service
Additions & Renovations
November 1997
Architect: Ghafari Associates
Contractor: John M. Olson Company
Budget: $7,500,000

Ingalls Mall Construction
February 1993
Architect: UM Facilities Planning & Design
Contractor: Stoner-Desbrough, Inc.
Cost: $402,796



Lorch Hall
Renovation
June 1987
Architect: E.M. Smith
Contractor: Boone & Darr/Freeman Darling
Budget: $4,559,401

Michigan League
Renovation & Addition
December 1987
Architect: Fry & Associates
Contractor: TKI Construction Management
Cost: $1,100,000



Student Activities Building Visitors Center
August 1996
Architect: Fry & Partners
Contractor: John M. Olson Company
Budget: $4,883,885

University Hospital
December 1986
Architect: Albert Kahn Associates
Contractor: Barton-Marlow Company
Cost: $264,727,841

University Hospital
Medical Procedures Unit
June 1991
Architect: Albert Kahn Associates
Contractor: Brencal Contractors
Cost: $4,563,957

University Hospital
Human Applications Lab Renovation
September 1996
Architect: Giffels Hoyem Basso
Contractor: F. J. Jones & Company
Budget: $1,536,200

University Hospital
Emergency Dept. Expansion/Renovation
April 1998
Architect: Albert Kahn Associates
Contractor: (in design phase)

Cancer & Geriatrics Center
October 1996
Architect: TMP Associates
Contractor: Walbridge Aldinger Company
Budget: $88,600,000

North Entrance Parking Structure - UMH
January 1996
Architect: TMP Associates
Contractor: Walbridge Aldinger Company
Budget: $12,200,000

Child Care Center - University Hospitals
July 1991
Architect: Corporate Design Group
Contractor: MSI
Cost: $2,195,231

Glen Avenue Parking Structure
July 1986
Architect: Luckenbach/Ziegelman & Partners
Contractor: Spence Brothers
Cost: $9,950,938

II I III

Medical Science Research Building I
January 1988
Architect: Jickling Lyman Powell Associates
Contractor: M. A. Mortenson Company
Cost: $15,500,000

Medical Science Research Building II
November 1989
Architect: Jickling Lyman Powell Associates
Contractor: Palmer-Smith Company
Cost: $22,726,000

Medical Science Research Building III
September 1994
Architect: Jickling Lyman Powell Associates
Contractor: M. A. Mortenson Company
Budget: $50,187,500

Medical Center Drive Parking Structure
Addition
December 1988
Architect: TMP Associates
Contractor: Rudolph/Libbe Inc.
Cost: $9,712,587

Primary Care Facility at East Campus
July 1996
Architect: Albert Kahn Associates
Contractor: Clark Construction Company
Budget: $28,100,000

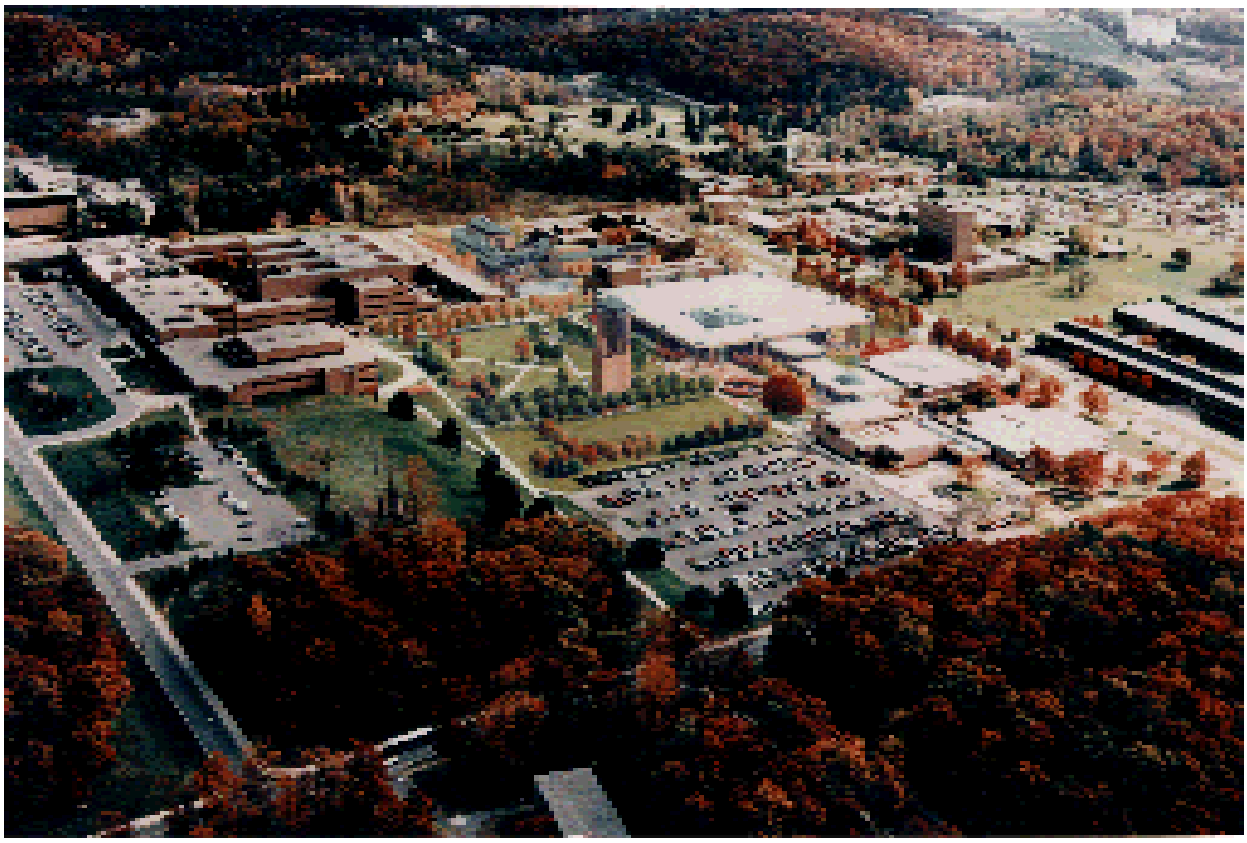
A. Alfred Taubman Health Care Center
December 1986
Architect: Albert Kahn Associates
Contractor: Barton-Malow Company
Cost: $46,987,147

C. S. Mott Children's Hospital
Renewal
January 1995
Albert Kahn Associates
Walbridge Aldinger Company
Budget: $46,475,750

C. S. Mott Children's Hospital
Single Room Maternity Care Renovation
November 1995
Architect: Albert Kahn Associates
Contractor: George W. Auch Company
Budget: $6,400,000

Women's Hospital
Renovation
August 1997
Architect: Giffels Hoyem Basso
Contractor: (in design stage)
Budget: $5,300,000

Maternal & Child Health Care Center
Renovations
June 1992
Architect: TMP Associates
Contractor: Brencal Contractors
Cost: $5,916,587

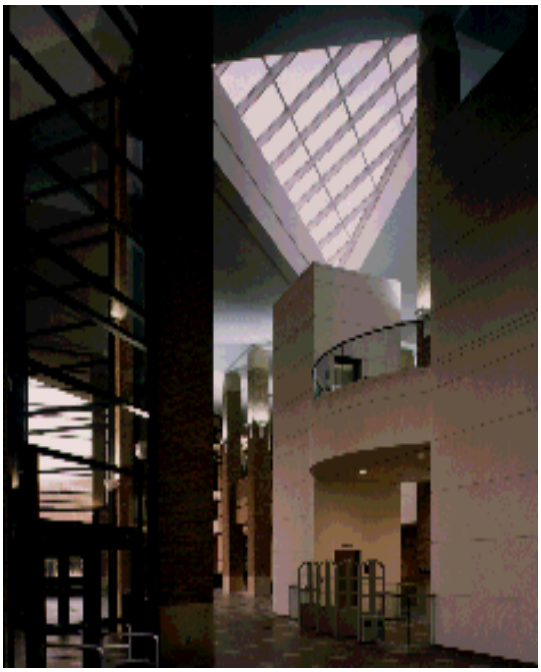


Computing Center
Addition 1
December 1986
Architect: TMP Associates
Contractor: Dale Krull Construction
Cost: $582,445

Dow - GG Brown Connector
October 1989
Architect: McClurg & Associates
Contractor: Spence Brothers
Cost: $4,899,428

Electrical Engineering and Computer Science
September 1986
Architect: Smith Hinchman & Grylls
Contractor: Walbridge Aldinger Company
Cost: $29,650,000

Francois-Xavier Bagnoud Building
September 1993
Architect: Smith Hinchman & Grylls
Contractor: F.J. Jones & Company
Cost: $14,395,397



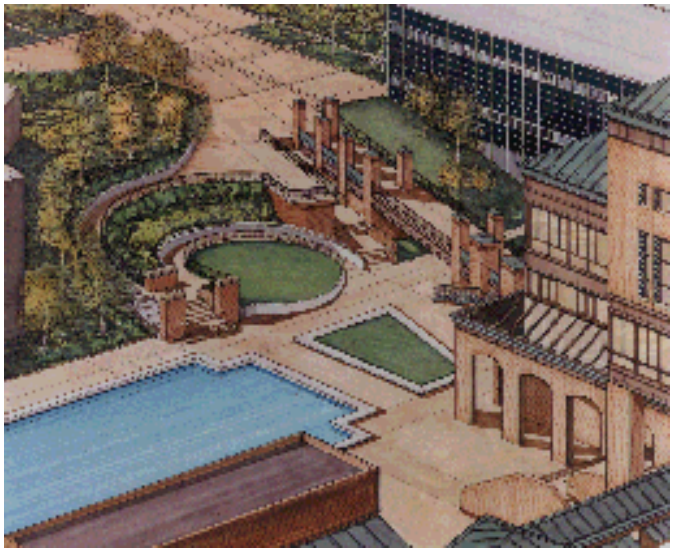
Media Union
June 1996
Architect: Albert Kahn Associates
Contractor: Ellis-Don Michigan
Budget: $41,800,000

Media Union
Basement Library
August 1996
Architect: Albert Kahn Associates
Contractor: Ellis-Don Michigan
Budget: $1,900,000

Lurie Engineering Center
August 1996
Architect: Hobbs + Black
Contractor: Sorensen Gross Construction
Budget: $16,500,000

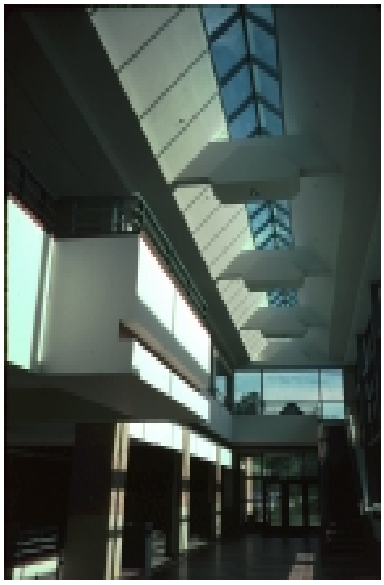
Lurie Bell Tower
August 1996
Architect: Hobbs + Black and M/A
Contractor: Ellis-Don Michigan
Budget: $5,200,000

North Campus Family Housing Community Center
January 1991
Architect: Sims-Varner & Associates
Contractor: TAI Construction Management
Cost: $2,206,774



North Campus Reflecting Pool & Pedestrian Bridge
Completion Date:
Architect: Johnson Johnson & Roy and Hobbs & Black
Contractor: (in design phase)
Budget: $1,400,000

North Campus Landscaping Plan
Competition 1995
Winner: Johnson Johnson & Roy



Pierpont Commons & Dow Engineering
Renovations for CAEN Classrooms & Library
June 1992
Architect: UM Facilities Planning & Design
Contractor: Dale Krull Construction
Cost: $760,013

Herbert H. Dow Building
Media Center Renovations
June, 1986
Architect: Simms-Varner
Contractor: Fairview Construction
Cost: $3,016,347

Space Research Laboratory
Addition - East Side
May 1992
Architect: UM Facilities Planning & Design
Contractor: John M. Olson Company
Cost: $2,715,322

Donald B. Canham Natatorium
May 1989
Architect: Hobbs + Black Associates
Contractor: Spence Brothers
Cost: $8,212,076

Glenn E. Schembechler Hall
August 1990
Architect: Gunnar Birkerts & Associates
Contractor: Spence Brothers
Cost: $10,795,971

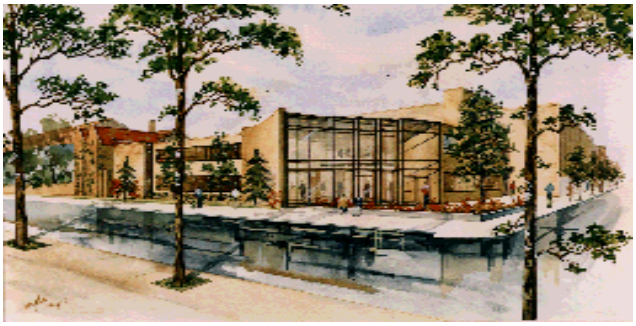
Golf Course Improvements
May 1994
Architect: Arthur Hills & Associates
Contractor: Paul Clute & Associates
Cost: $1,100,000

Institute of Continuing Legal Education
August 1987
Architect: Hobbs + Black Associates
Contractor: Forner Construction Company
Cost: $1,290,733

Tennis Center
June 1996
Architect: Osler
Contractor: Freeman-Darling Construction
Budget: $4,140,000

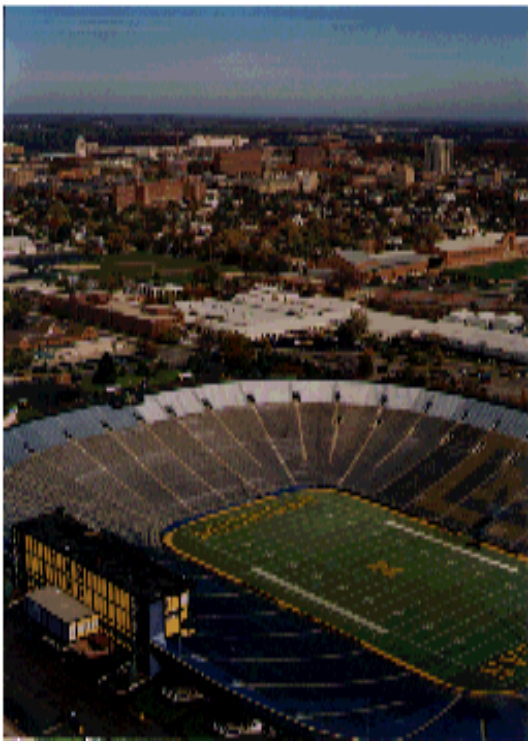
Margaret Bell Pool Addition
June 1997
Architect: Dow Howell Gilmore
Contractor: (in design stage)
Budget: $2,000,000

William D. Revelli Band Rehearsal Hall
Addition
June 1990
Architect: Hobbs + Black Associates
Contractor: Dale Krull Construction
Cost: $887,700

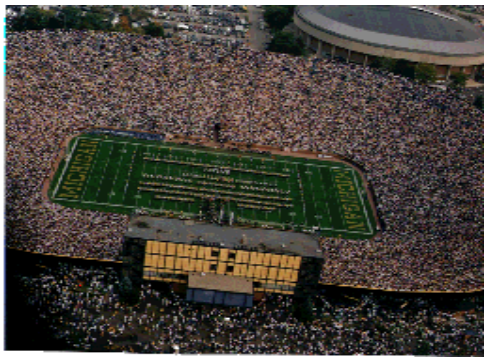


Weidenbach Administration Building
Phase I and II Building Renovation
September 1993
Architect: UM Facilities Planning and Design
Contractor: MSI
Cost: $2,699,468

Wolverine Tower
Renovations Phase I & Phase II
June 1994
Architect: Rossetti Architects
Contractor: J. C. Beal Construction
Cost: $2,094,784



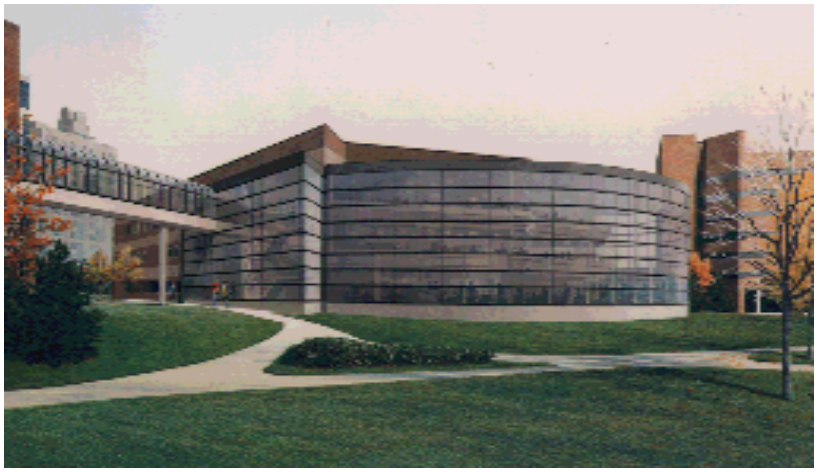
University of Michigan Football Stadium
Prescription Turf
February 1993
Architect: Luckenbach/Ziegelman & Partners
Contractor: Turf Services, Inc.
Cost: $2,164,303



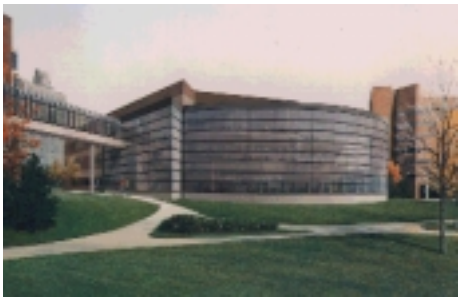
University of Michigan Football Stadium
Concrete Repairs
February 1993
Architect: Walker Consultants
Contractor: Spence Brothers
Cost: $1,589,662

Dearborn Campus
General Campus Renovations - Phase II
October 1996
Architect: Sims-Varner & Associates
Contractor: Walbridge Aldinger Company
Budget: $16,200,000

Dearborn Support Services Facility
New Construction
April 1995
Architect: Ghafari Architects
Contractor: AIM Systems
Budget: $1,541,000



Frances W. Thompson Library - Flint
New Construction
April 1995
Architect: Gunnar Birkerts Associates
Contractor: Walbridge Aldinger
Budget: $19,800,000



Murchie Science Building - Flint
New Construction
February 1990
Architect: Smith Hinchman & Grylls
Contractor: Erickson & Londstrom
Cost: $24,600,929

Major Capital Projects from 1985 to 1996

New Construction

Glen Avenue Parking Structure
New construction
Electrical Engineering & Computer Science
Original building
Business Administration Executive Dorm
New construction
A. Alfred Taubman Health Care Center
Original building
The University Hospital
Original building
Institute of Continuing Legal Education
New construction
Medical Science Research Building I
New construction
Medical Center Drive Parking Structure
construction
Donald B. Canham Natatorium
New construction
Dow-G.G. Brown Connector
construction
Medical Science Research Building II
New construction
Murchie Science Building (Flint)
New construction
Glenn E. Schembechler Hall
Construct new room
N. Campus Housing Community Center
New construction
The University Hospital
Medical Procedures Unit
University Hospitals Child Care Center
construction
Francois-Xavier Bagnoud Building
New construction
Medical Sciences Research Building III
New Construction
Dearborn Campus Support Services
New construction
Frances Willson Thompson Library
New construction
Harrison M. Randall Laboratory
Addition
School of Social Work Building
New construction
Cancer and Geriatrics Centers Facility
New construction
Med Center N. Entrance Parking Structure
University Hospital
Integrated Technology Instruction Center
New construction
Lurie Engineering Center
New construction
Lurie (North Campus) Bell Tower
New construction
Tennis Center
Contruction of new tennis facility
Dearborn Campus
Campus renovations - Phase II
Primary Care Facility
Phase 1 - East Campus

Total New Construction $766,553,571

Major Renovations

Kresge Medical Research Unit III
Addition #2
Tappan Hall
Library
Michigan Union
Improvements phase I and II
Earl W. Moore Building
New addition
Multiple Buildings
1984-85 program
Herbert H. Dow Building
Media center renovations
Computing Center
Addition 1
Central Heating Plant
Boiler/generator, gas turbine
Lorch Hall
Renovation and relocations
West Engineering
Information/Library Studies
Buhr Building
Library storage
Institute for Social Research
Addition II
Michigan League
1st floor kitchen/cafeteria
Catherine Street Parking Structure
1987 deck repairs
Engineering I
Optics lab
G.G. Brown Laboratory
Chiller addition
Art and Architecture Building
Renovate external wall enclosure
Central Heating Plant
New boiler breeching system

Central Heating Plant
New boiler breeching system
Horace H. Rackham Graduate Studies
Chiller and cooling tower
Angell Hall-Mason Hall
Courtyard computer facility
C. C. Little Science Building
Remodel rooms for isotope lab
Samuel Trask Dana Building
Renovate portion of ground level
The University Hospital
Fourth chiller
David M. Dennison Building
Central chiller plant
Chemistry Building
Remodel 4th floor, addition 4
Chemistry
W.H. Dow Laboratory
Medical Science Unit II
Anatomy department renovations
Administrative Services
HVAC renovations
Medical Science Unit I
Remodel 4th floor west wing
Edward Henry Kraus Building
Renovate old structure
Fletcher Street Parking Structure
1990 deck repairs
The 300 N. Ingalls Building
Renovate 9th floor wet/laser labs
Edward Henry Kraus Building
Auditorium renovations
Football Stadium
Concrete repairs - 1991, 1992
Harrison M. Randall Laboratory
New mechanical penthouse/core
Medical Science Unit I
Chiller system replacement
Medical Science Unit I
Remodel C and D wings
Space Research Laboratory
Addition - east side
Pharmacy College
C.C. Little addition lab-bridge
Maternal and Child Health Care Center
Renovate rooms
N. Campus Commons and Dow Engineering
CAEN classrooms and library
Harrison M. Randall Laboratory
North stair and wing renovation
Harrison M. Randall Laboratory
Remodel 3rd floor
Glenn E. Schembechler Hall
Margaret Dow Towsley Museums
Dental Building and W.K. Kellogg Institute
Renovate rooms
C. C. Little Science Building
Facilities grant project
North Campus Service Building #1
Remodel for waste transfer facility
Central Heating Plant
Boiler #5
CCRB and Bell Pool
Three discussion classrooms
Henry S. Frieze Building
4th floor office and classroom
Kresge Medical Research Unit III
Remodel 4th floor for wet labs
Football Stadium
Prescription turf
Kellogg Eye Center and Turner Clinic
Renovate rooms
Yost Ice Arena
Renovations phase I
1239 Kipke Drive
Renovations - structural floor
Thayer Street Parking Structure
1992 restoration
Dental Building and W.K. Kellogg Institute
Chiller Replacement
Chemistry Building
Renovate lecture halls, structures
Mary B. Markey Hall
Facility renewal, replace windows
Wolverine Tower
Renovate 1st, 2nd floors for DRDA
Harrison M. Randall Laboratory
Sub-basements 1st, 2nd floors
Athletics Administration
Phase I and II buillding renovation
Medical Science Unit I
Remodel levels 4 and 5
Medical Science Research Building I
Replace corroded water pipes
1239 Kipke Drive
Renovate mechanical rooms
South Quadrangle
Renovation of E and W elevators
Medical Science Unit I
New electrical substation

North Campus Switch Station (Edison)
Increase electrical capacity
South Quadrangle
Window replacement project
Football Stadium
Repair programs 1994, 1995
Alexander G. Ruthven Museums Building
Renovations - herpetology, insects
Church Street Parking Structure
Repairs 1993,1994
Church Street Parking Structure
1994 repairs
C.S. Mott Children's Hospital
Renewal
The University Hospital
Relocation-diagnostic vascular unit
G.G. Brown Laboratory
Manifold fumehood exhaust
Alexander G. Ruthven Museums Building
Replace chiller and pump
Dental Building and W.K. Kellogg Institute
Remodel for research labs
Shapiro Undergraduate Library
Additions and renovations
Medical Science Unit II
Upgrade air handling system
South Quadrangle
Renovate 9th and ground floor
Medical Science Units I and II
Air quality improvements
Medical Science Unit I
Remodel 6th level A-wing
Newberry Hall - Kelsey Museum
Sensitive artifact facility
Fletcher Street Parking Structure
Install new fire protection system
Medical Science Unit I
Chiller - clinical pathology labs
Chemistry Building
Manifold fume hood exhaust
Medical Science Unit II
Micro/Immun laboratory/office
School of Education
Remodel part of 3rd floor
David M. Dennison Building
Absorption chiller, cooling system
Medical Science Unit II
Remodel lecture halls
1239 Kipke Drive
Campus safety and security
C.S. Mott Children's Hospital
Single room maternity care
Cook Legal Research Library
Jackier rare book room
University Hospital
Human Application Lab renovation
IST Laboratory Wing
Remodel west basement area
Cook Legal Research Library
Replace piping
C.C. Little Science Building
College of Pharmacy - Phase II
East Engineering
Exterior window replacement
C.C. Little Science Building
Renovate 1st floor east wing
Medical Science Unit I
Remodel 6th and 7th level A wings
Wolverine Tower
Parking lot reconstruction
Cook Legal Research Library
Stair addition
Football Stadium
1995 repairs - phase I and II
Dennison Building
Renovate 2nd floor classrooms
Student Activities Building
Replace chiller and cooling tower
Cook Legal Research Library
Fire safety project - sprinklers
Michigan Union
Renovations
Michigan League
Renovations
Pierpont (North Campus) Commons
Building renewal 1995
Health Service
Additions and renovations
School of Education
Replace windows
Wolverine Tower
Remodel floors 3,5,and 6
Wolverine Tower
Renovate floors 8 and 9
Multiple Locations
Underground tank removal
Multiple Buildings
Campus card access system
School of Public Health I and II
Central chiller plant

Land Improvements - Ferry Field
Develop south area
Land Improvements
Security lighting improvements
Hatcher Graduate Library - multiple buildings
Roof replacement
Land Improvements - West Central Cempus
Duct run
Engineering Center/Beal Ave
Land improvements
Land Improvements - North Campus
Road and parking reconstruction
Walter E. Lay Automotive Lab
Tank farm and storage building
Health Service, Dental, Kellogg
Central chiller plant

Total Renovations Budget: $1,234,543,989

Exerpts from The Michigan Metrics 1995:

Access

Spires of Excellence

Research

Michigan Mandate

Women’s Agenda

Resources

Private Support

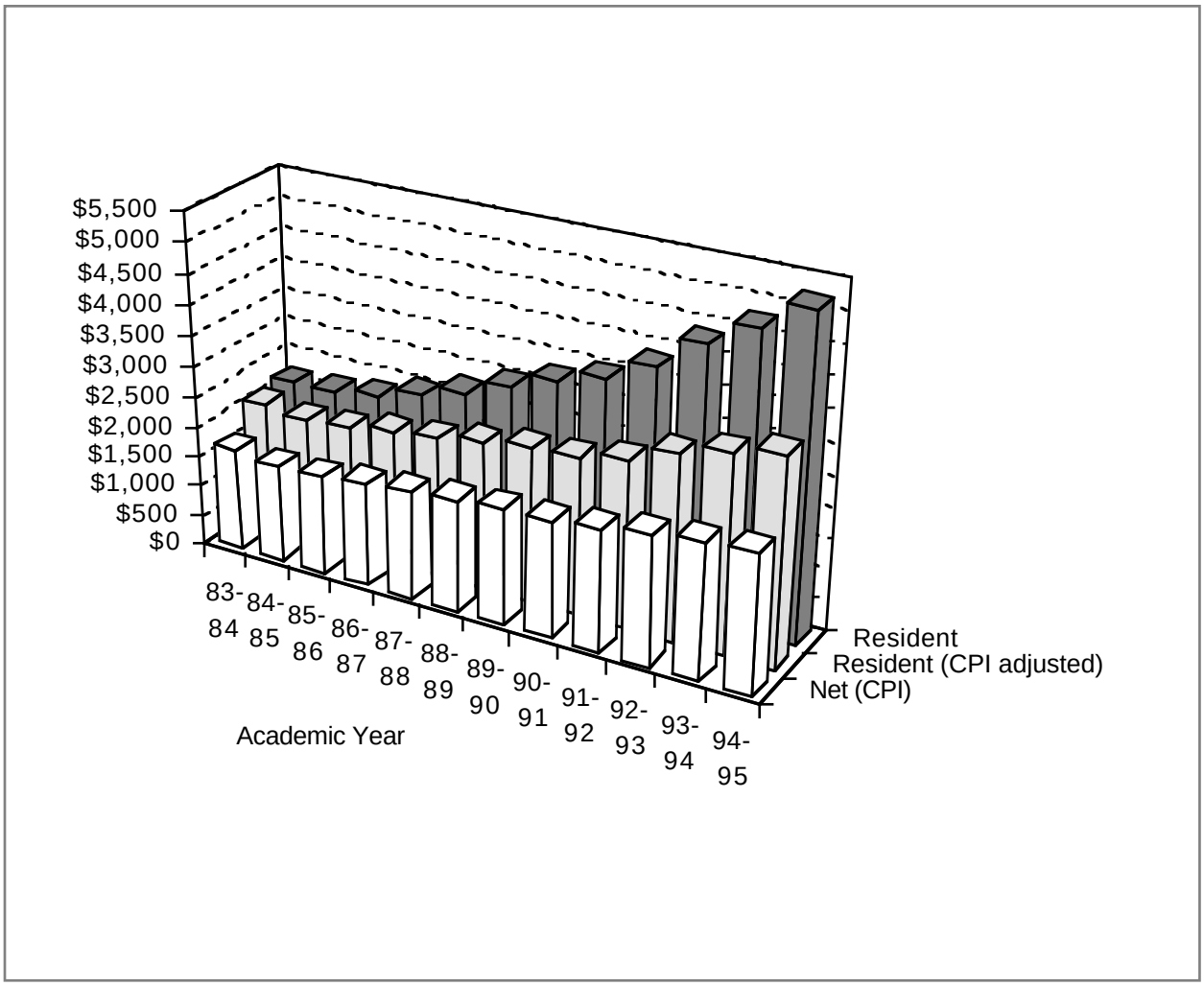
Endowment

University Enterprise Zone

Athletics

Figure 2-10

Resident Undergraduate Tuition (actual, discounted by CPI, and further discounted by UM financial aid per UG student)



Change Since 87-88 in Resident Undergraduate:

Tuition	+90%
Tuition (CPI adjusted)	+46%
Net Tuition (CPI adjusted)	+28%

Figure 2-12

UM Tuition Cost for a Michigan 1st Year Undergraduate in Relation to Tuition at Other Top Universities 1994-95

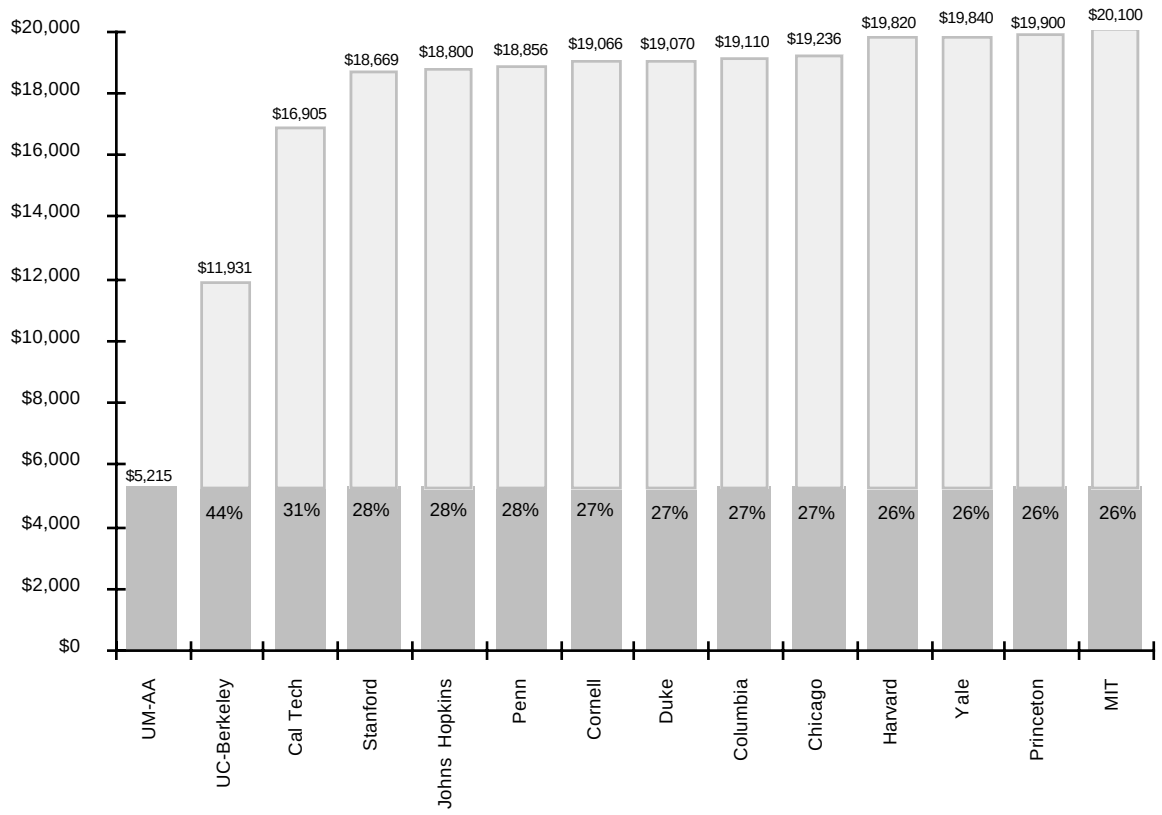


Figure 2-13 Student Financial Aid

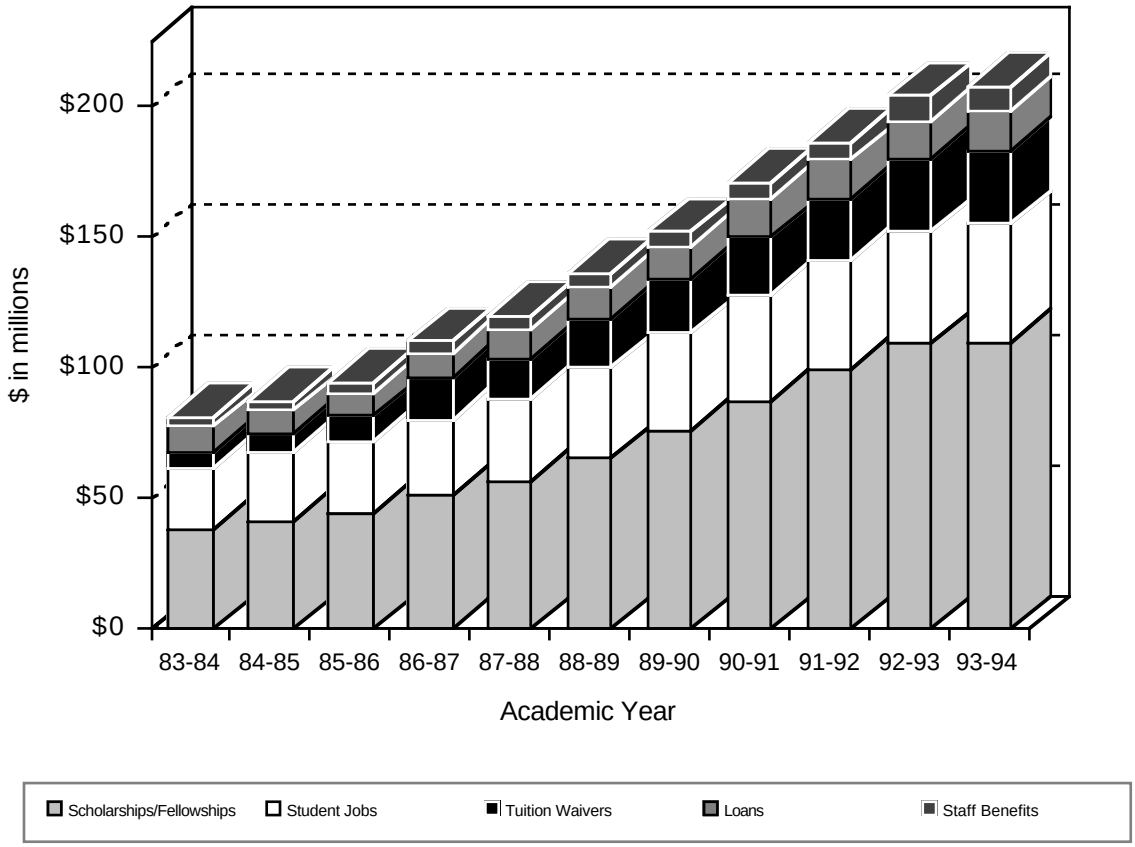
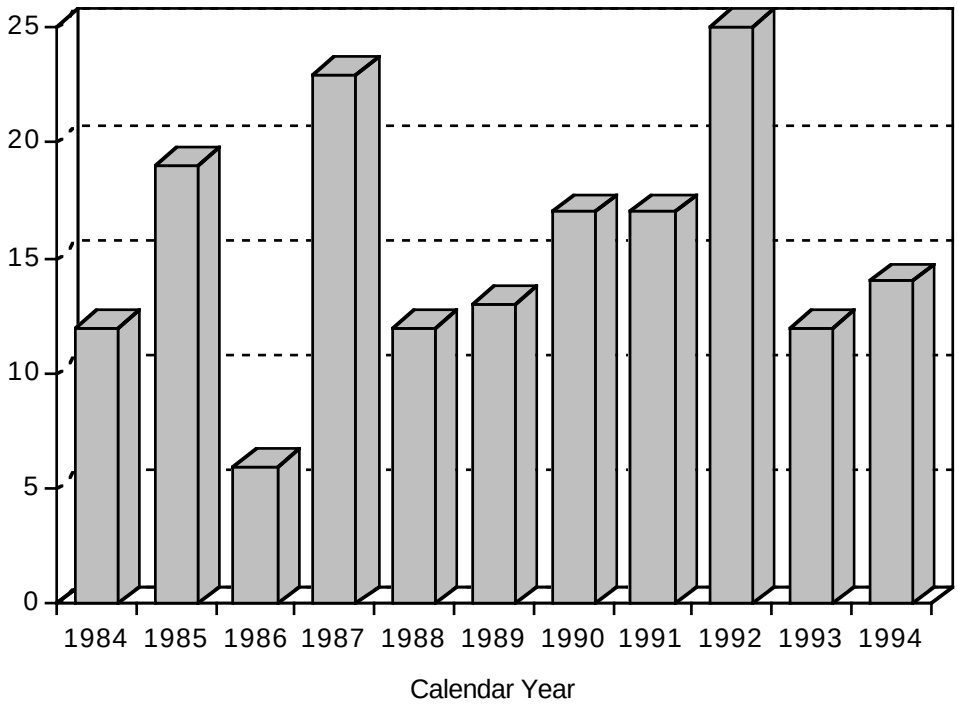


Figure 3-1 Number of Major National Honors Received by Faculty



Note: Honors include election to national academies, MacArthur Fellowships, Pulitzer Prizes, National Medals of Science or Technology, Guggenheim Fellowships, and Presidential Young Investigators/Presidential Faculty Fellows.

Figure 3-2 Number of Faculty Elected to the American Academy of Arts and Sciences

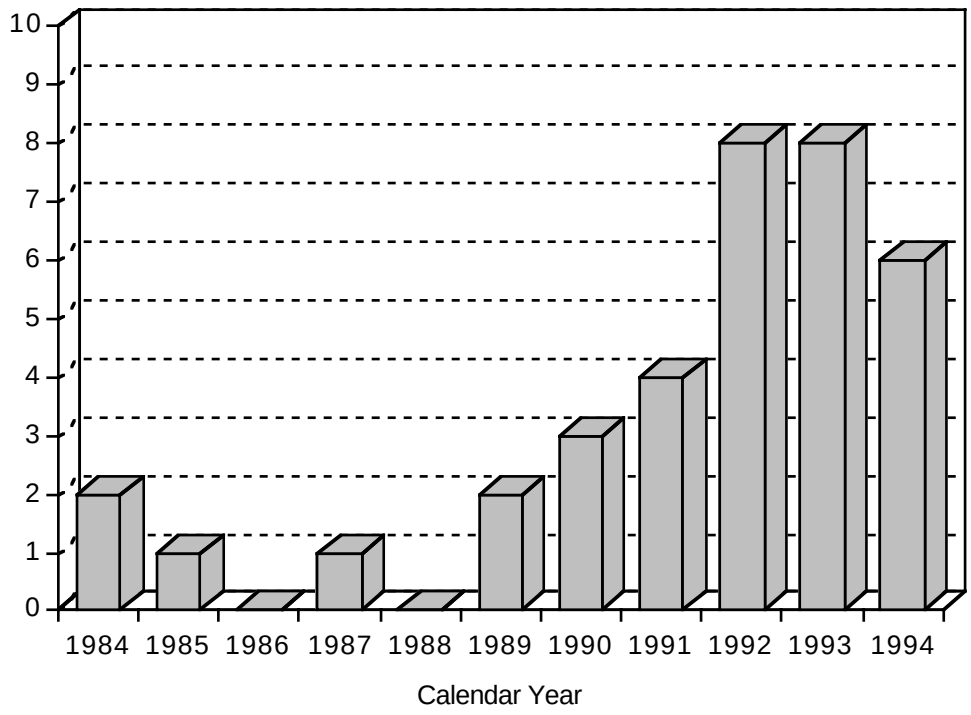


Figure 3-7

Average Compensation of Assistant Professors at UM-AA and Peer Public Universities

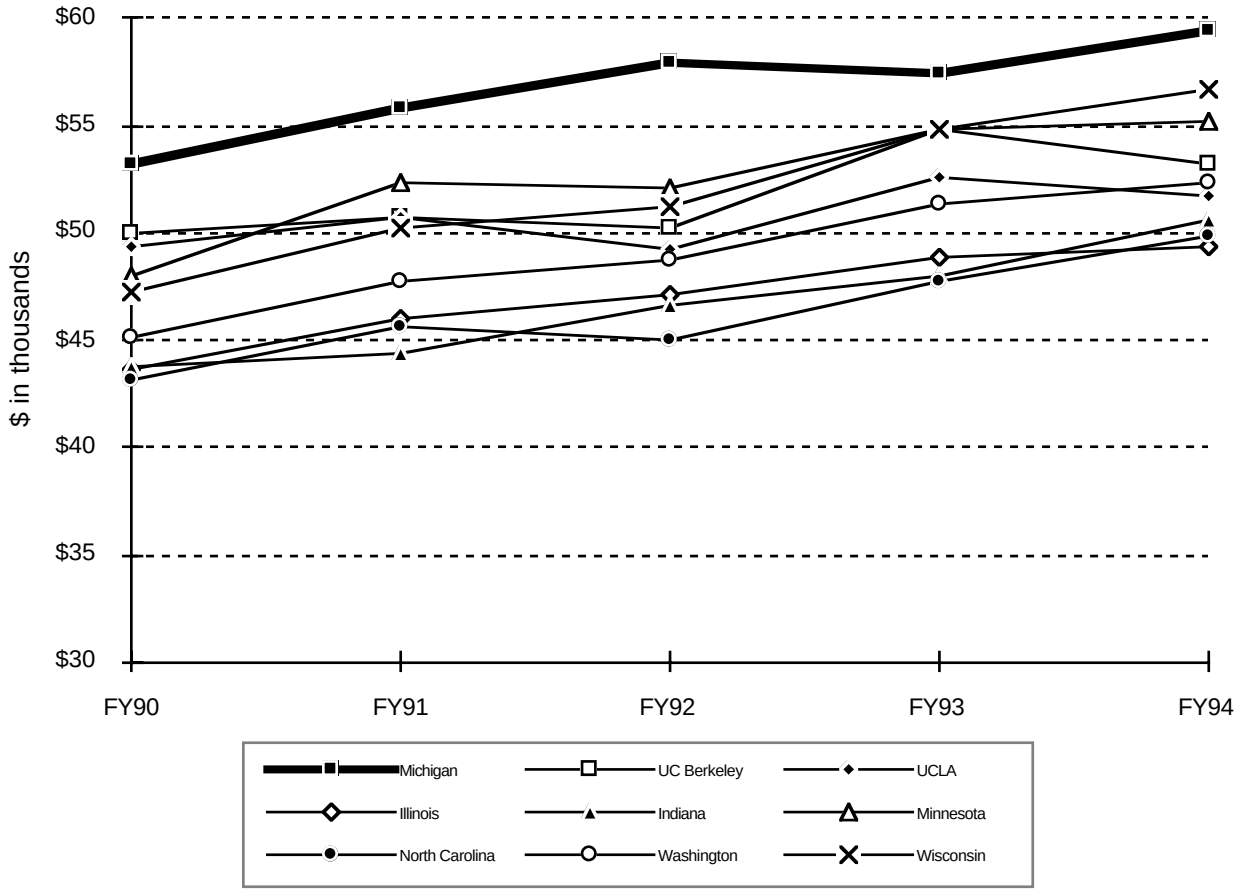


Figure 3-9

Average Compensation of Associate Professors at UM-AA and Peer Public Universities

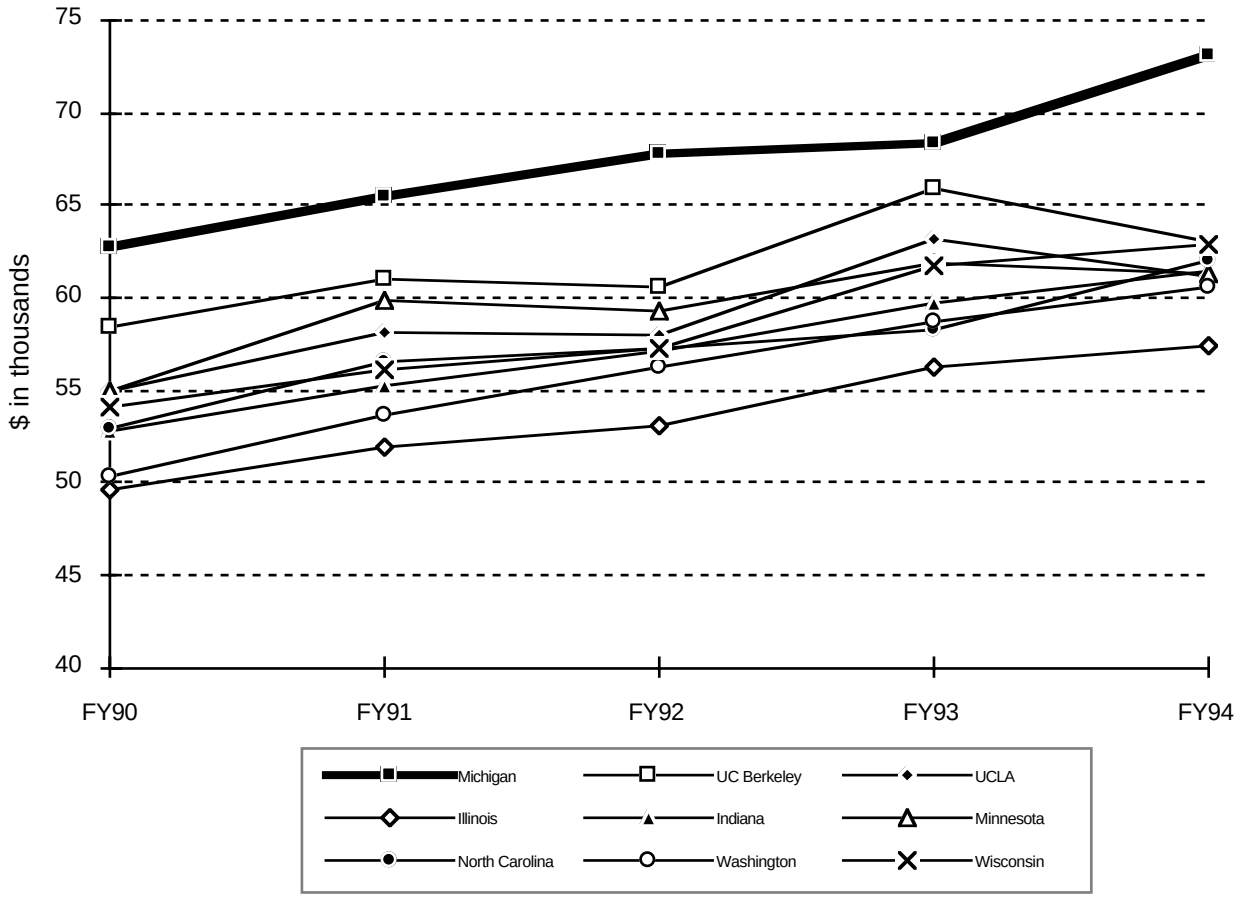


Figure 3-11

Average Compensation of Professors at UM-AA and Peer Public Universities

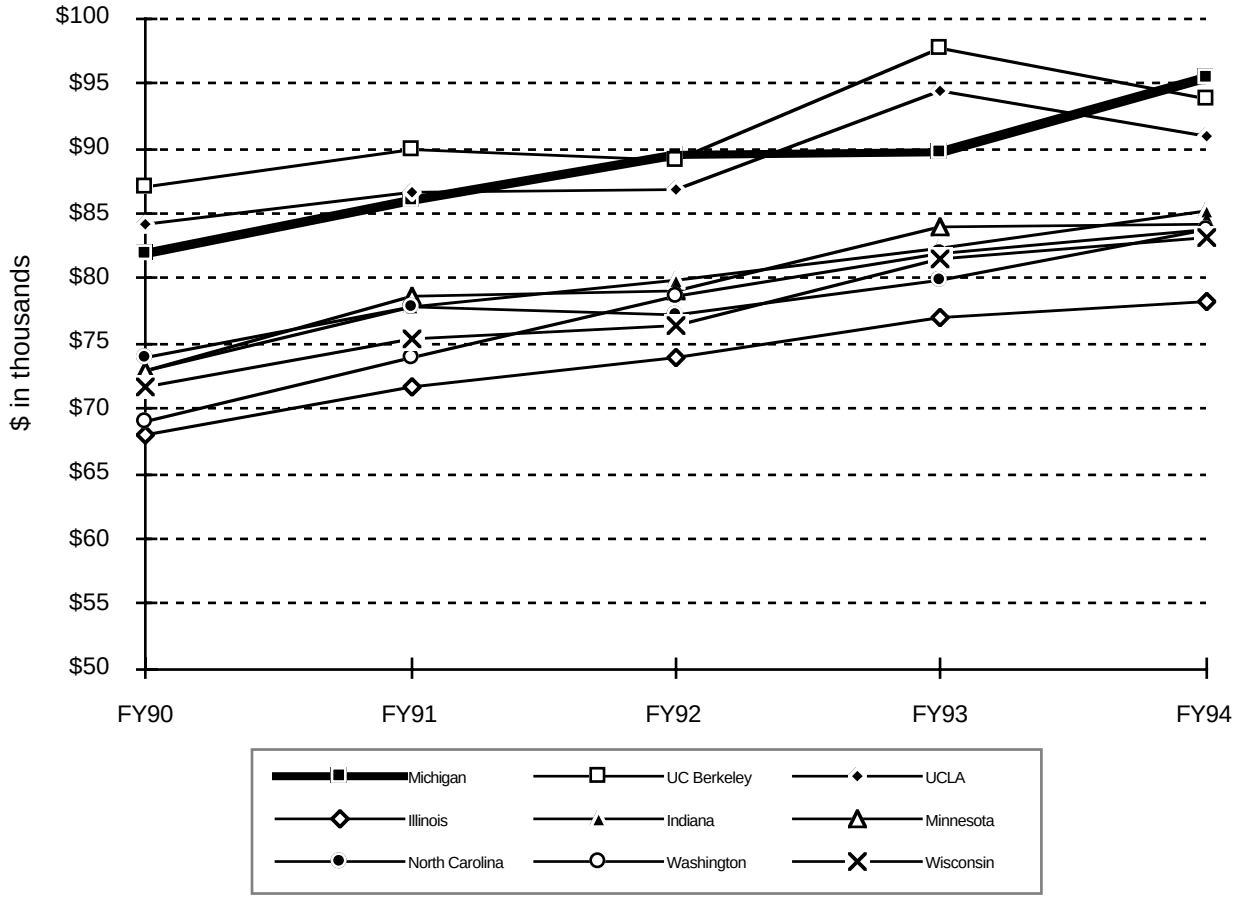
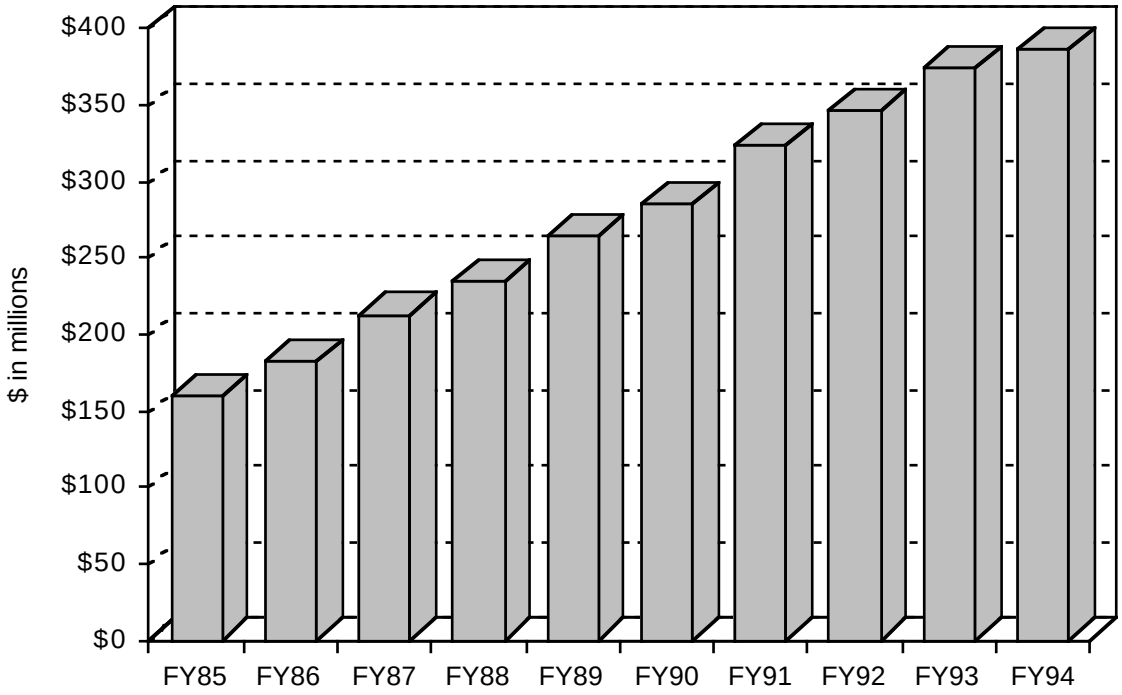


Figure 5-1 Growth in Research Expenditures



Change Since FY88: +65%

Figure 5-4 National Ranking in Research Activity

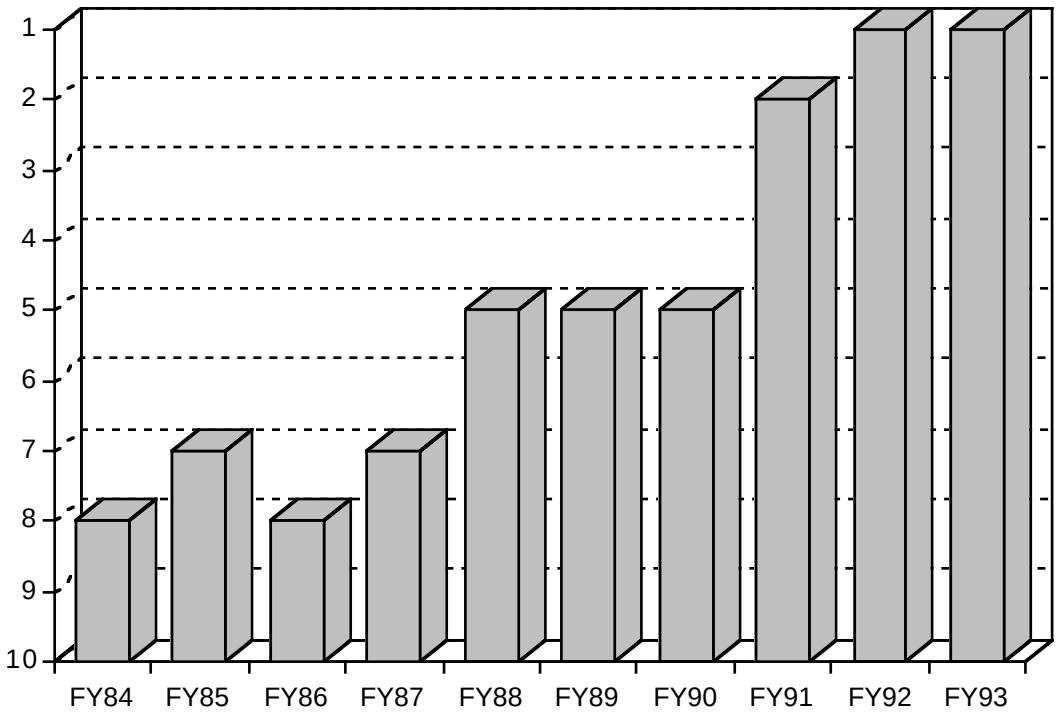
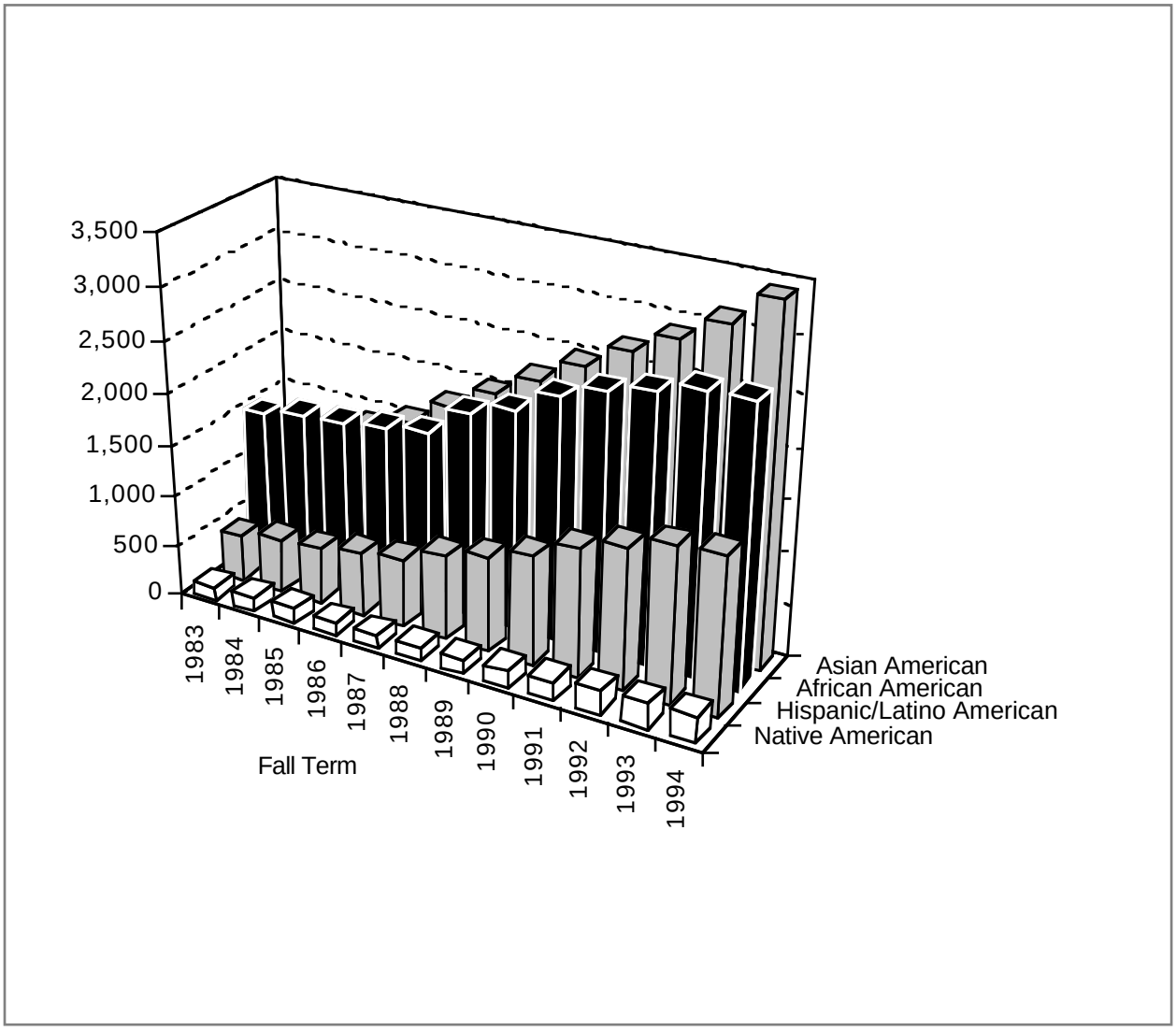


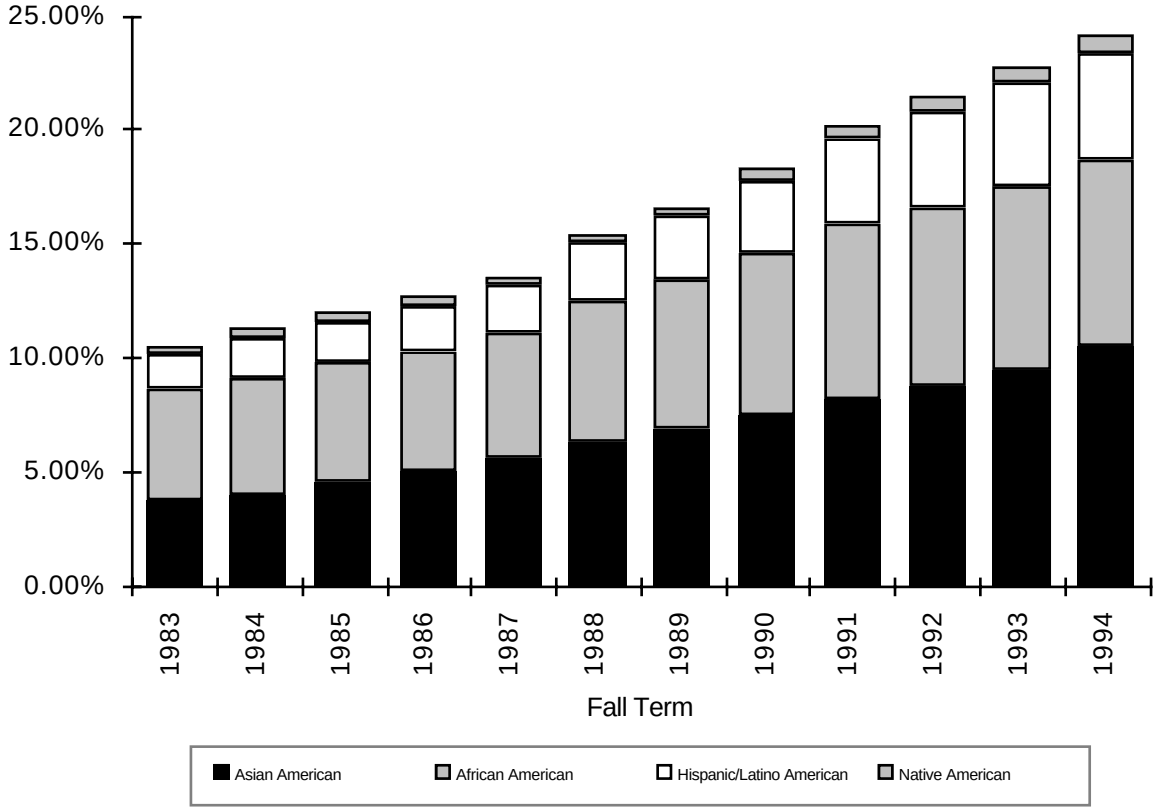
Figure 6-1 Minority Student Enrollments



Change Since Fall 1987:

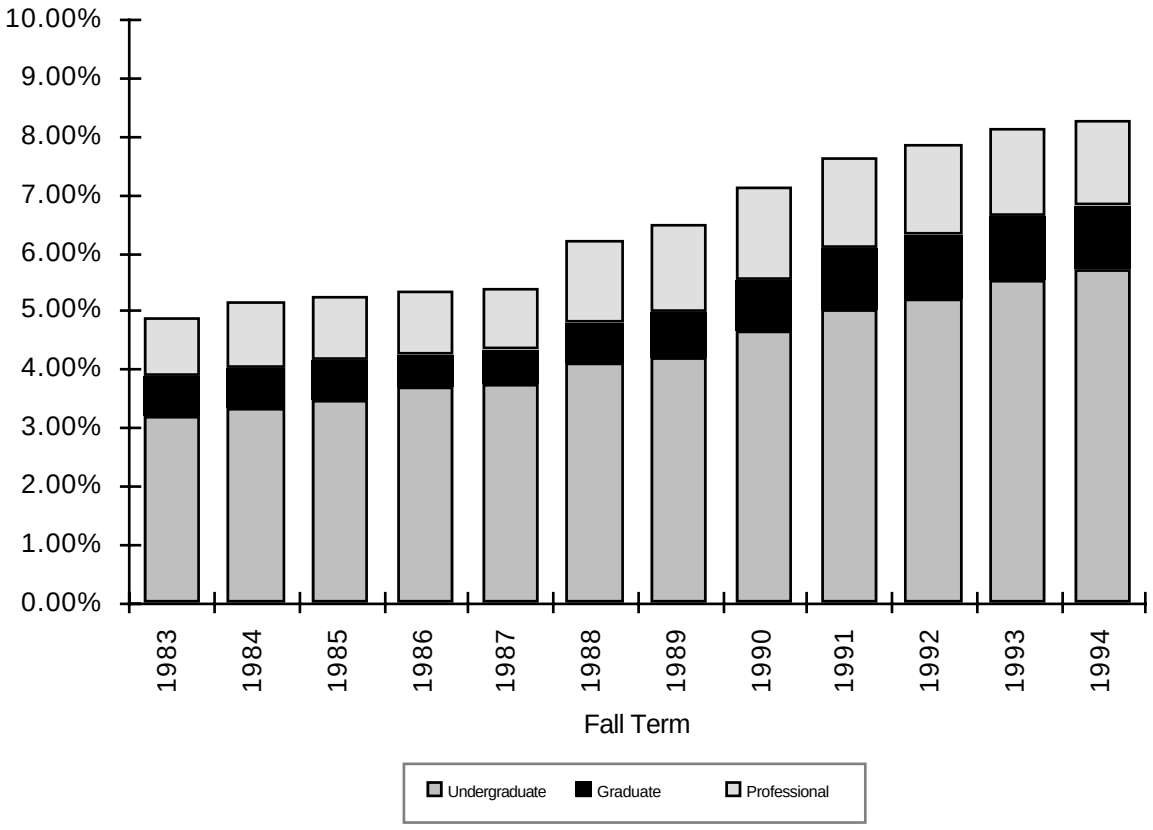
Asian Americans	+90%
African Americans	+57%
Hispanic/Latino American	+126%
Native Americans	+100%
TOTAL	+83%

Figure 6-3 Minority Student Enrollment Percentage



Change in the Percent of Minority Students Since Fall 1987: +79%

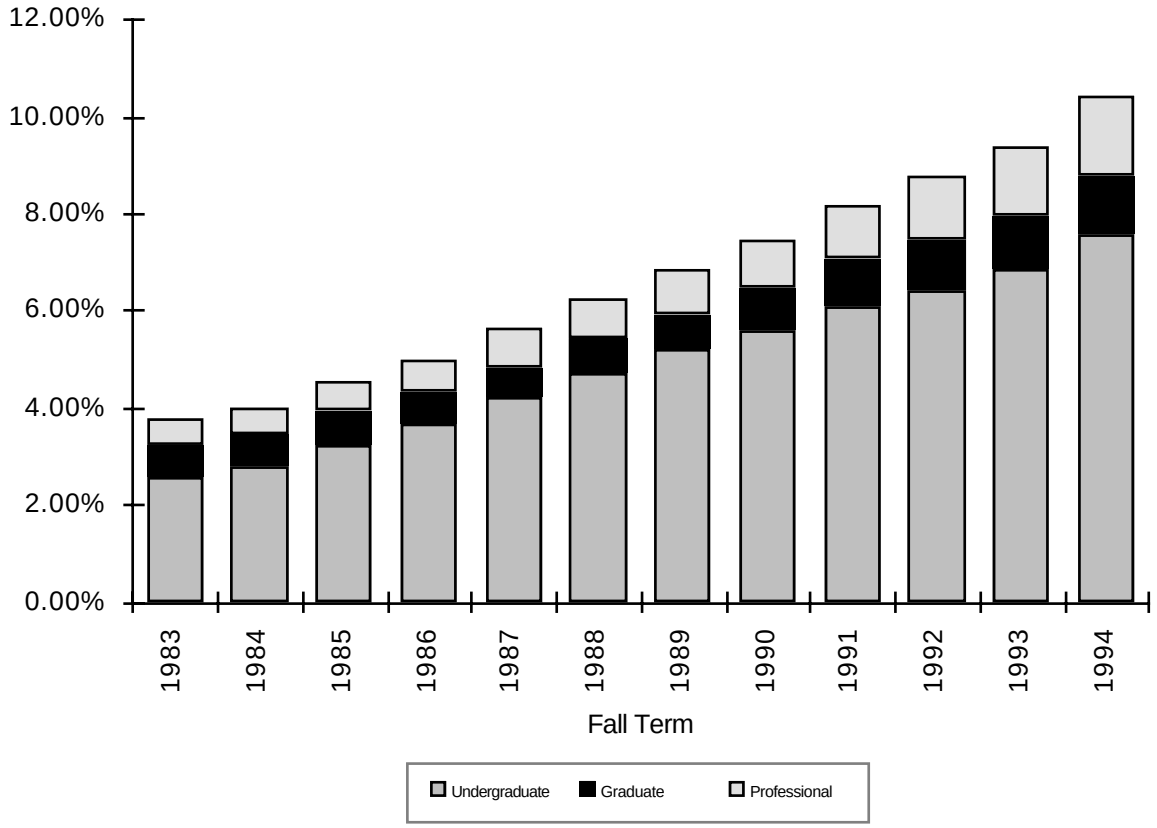
Figure 6-7 Enrollment Percentage of African American Students



Change Since Fall 1987:

Undergraduate	+53%
Graduate	+85%
Professional	+38%
TOTAL	+53%

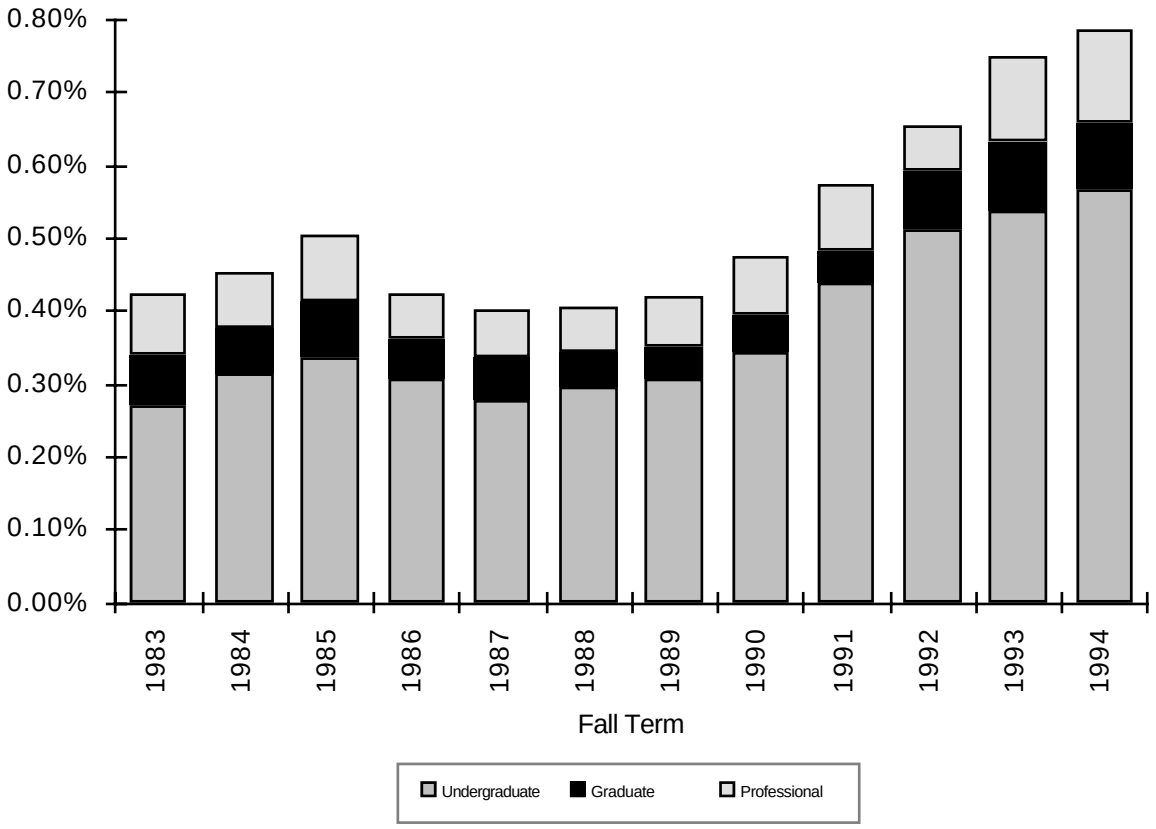
Figure 6-8 Enrollment Percentage of Asian American Students



Change Since Fall 1987:

Undergraduate	+81%
Graduate	+89%
Professional	+109%
TOTAL	+86%

Figure 6-9 Enrollment Percentage of Native American Students

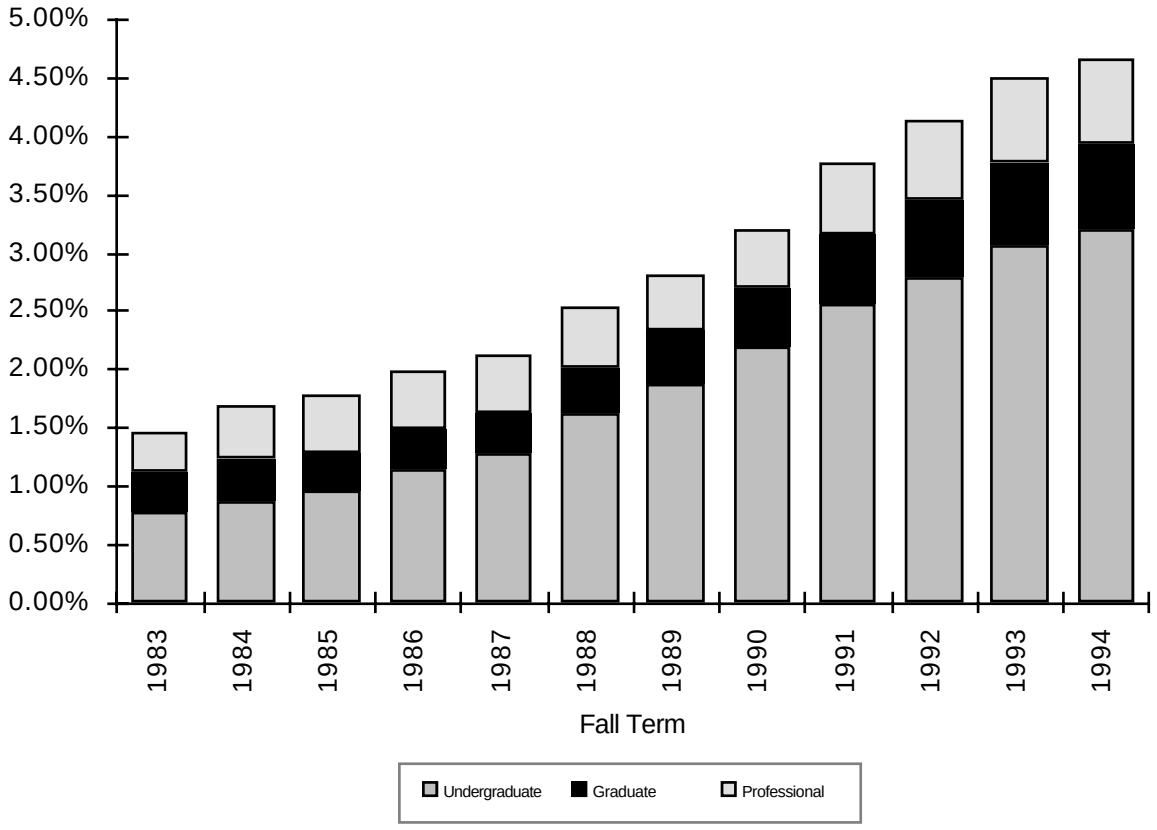


Change Since Fall 1987:

Undergraduate	+104%
Graduate	+54%
Professional	+96%
TOTAL	+96%

Figure 6-10

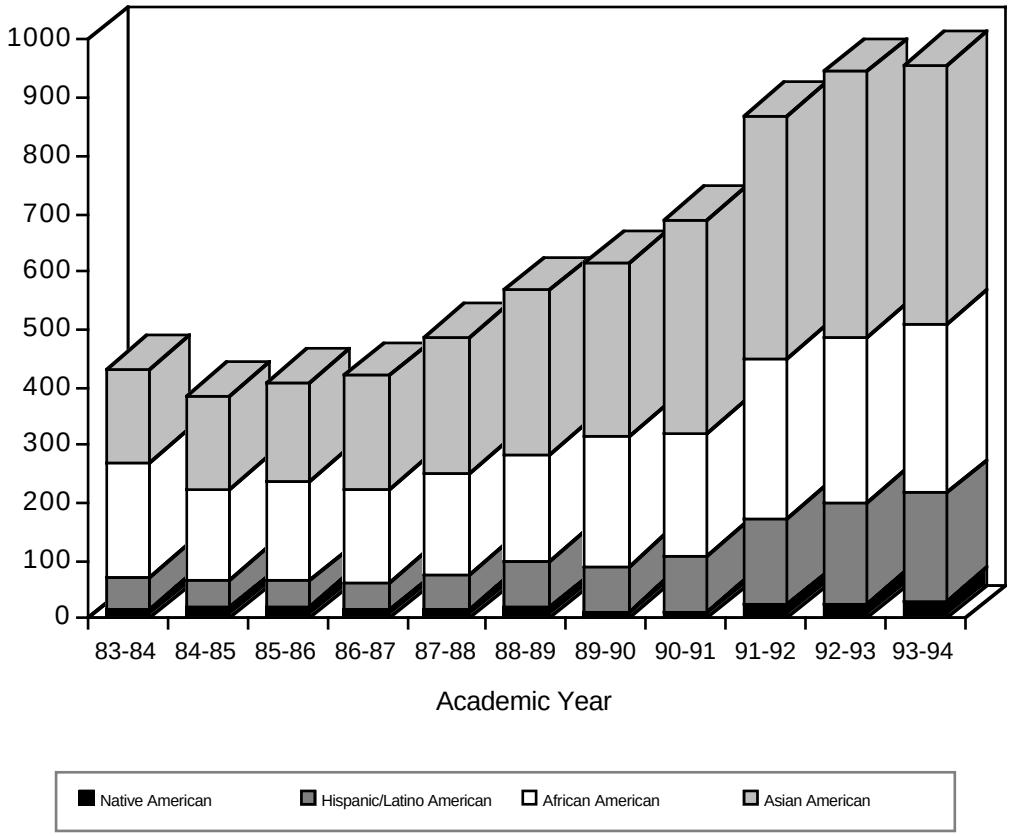
Enrollment Percentage of Hispanic/Latino American Students



Change Since Fall 1987:

Undergraduate	+151%
Graduate	+105%
Professional	+55%
TOTAL	+122%

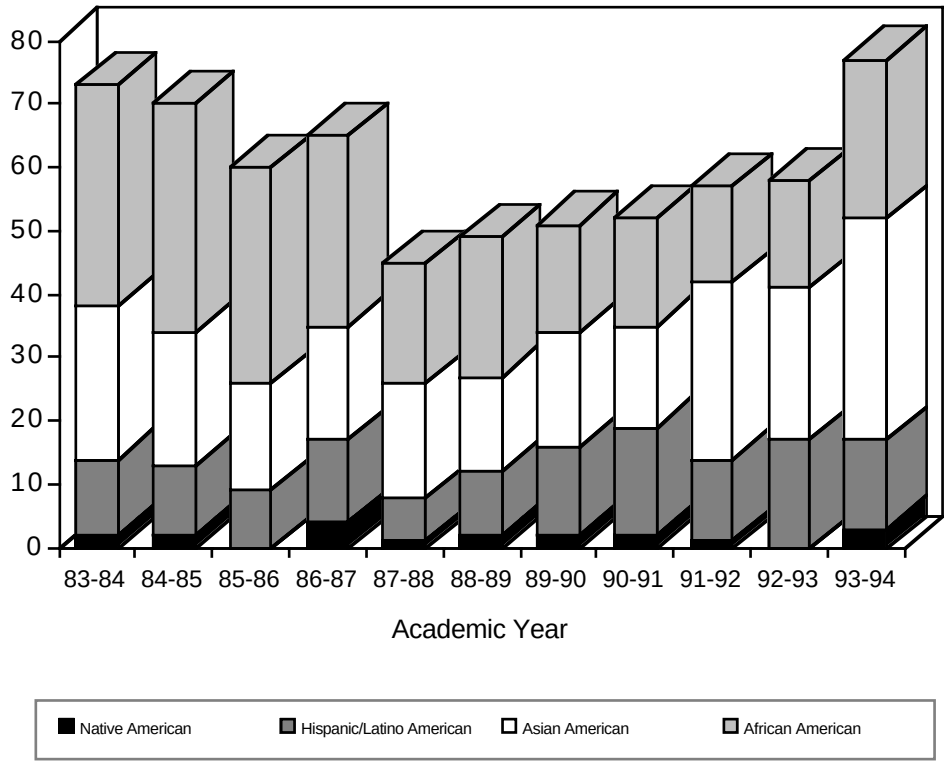
Figure 6-17 Minority Undergraduate Degrees Conferred



Change Since 87-88:

Total Minorities +96%

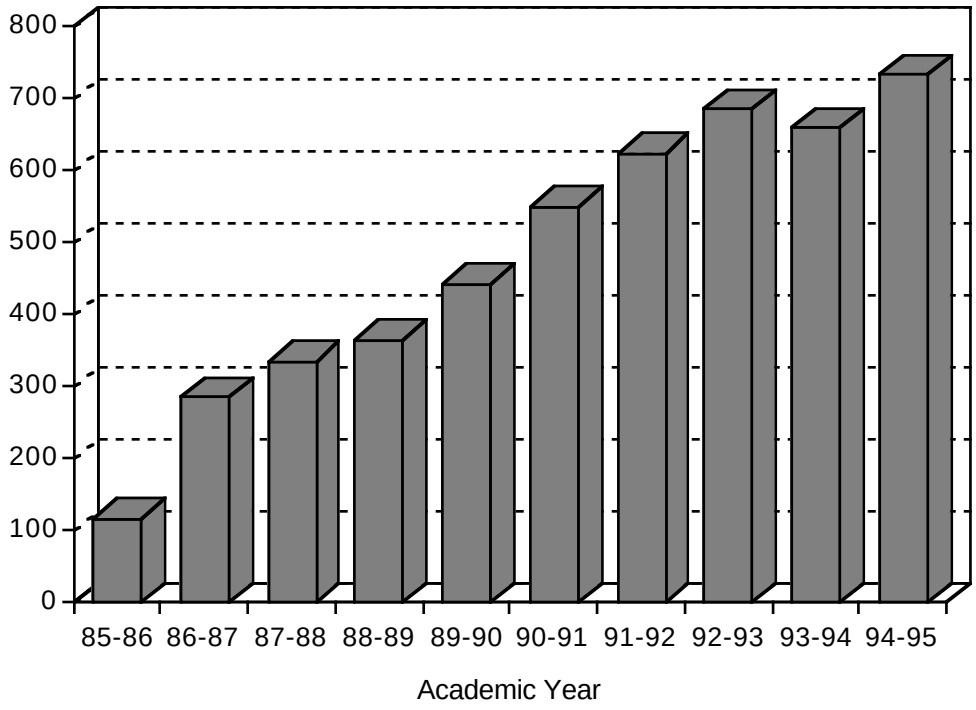
Figure 6-23 Minority Ph.D. Degrees Conferred



Change Since 87-88:

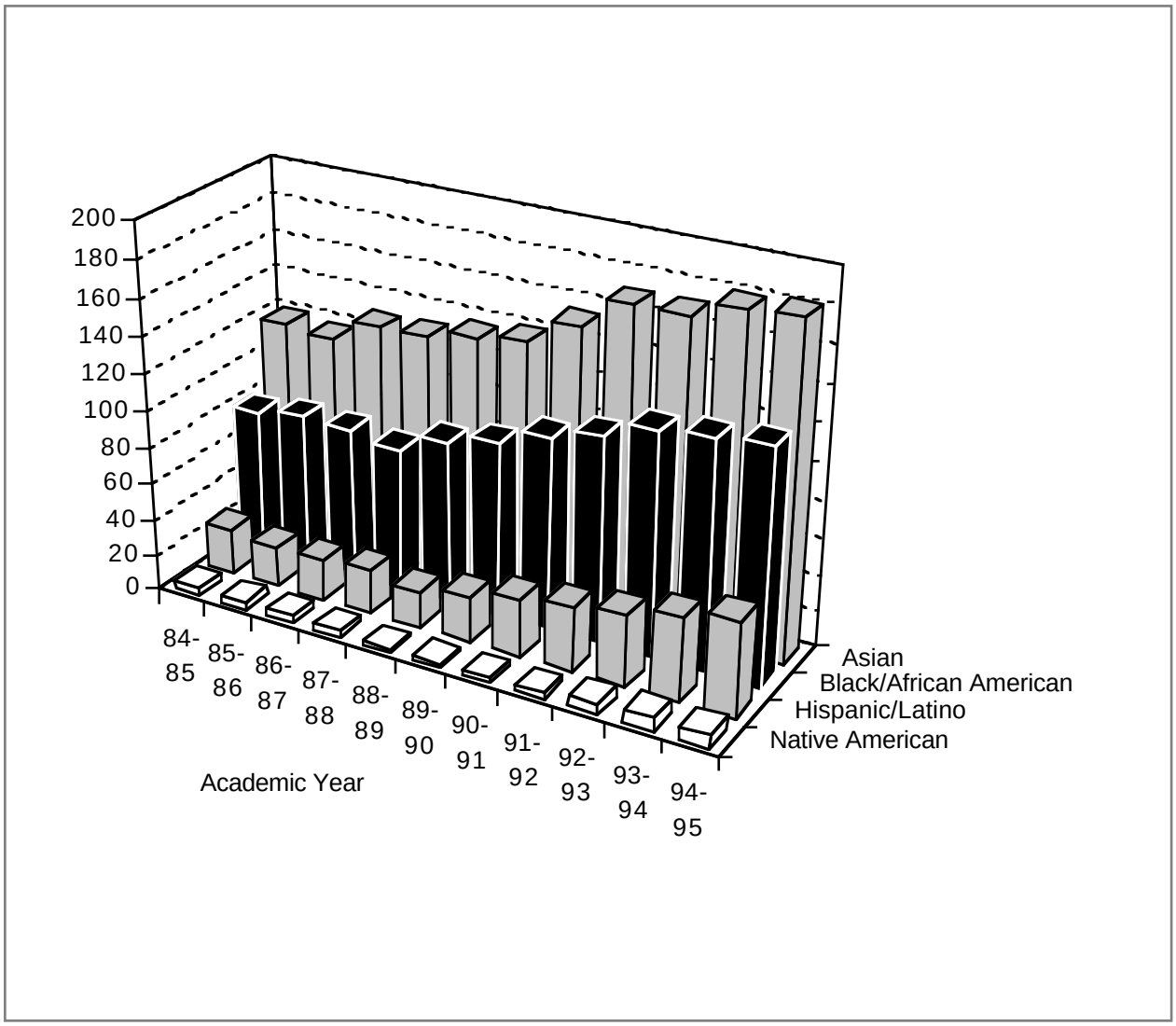
Total Minorities	+71%

Figure 6-24 Rackham Minority Graduate Fellows



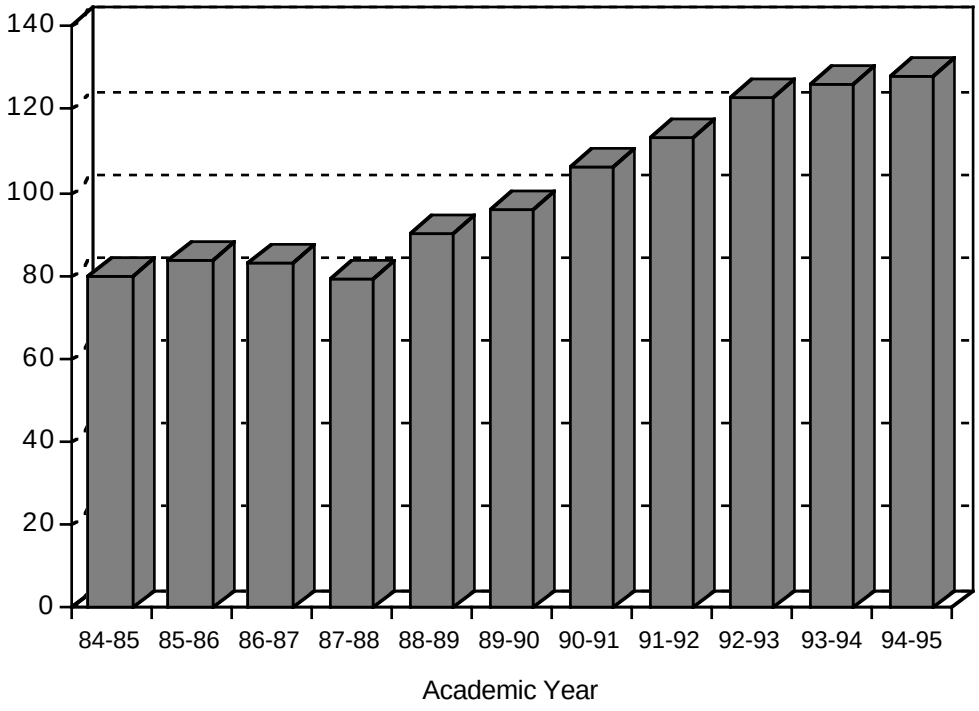
Change Since 87-88: +118%

Figure 6-25 Number of Minority Faculty



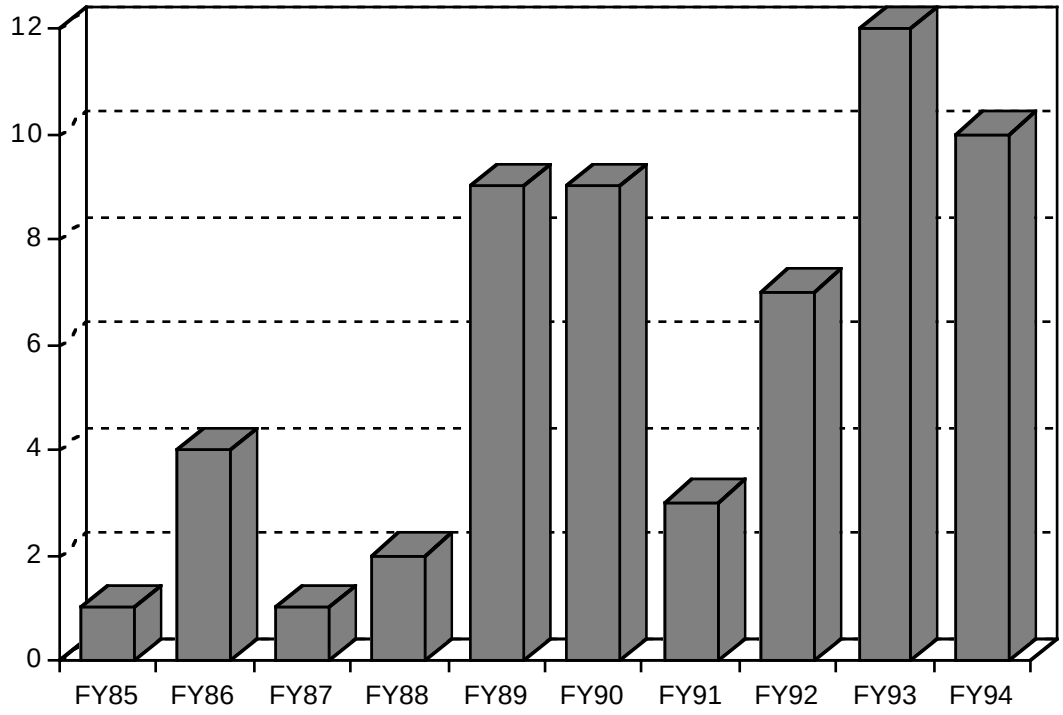
Change Since 87-88:	
Asian	+39%
Black	+62%
Hispanic/Latino	+117%
Native American	+75%
TOTAL	+55%

Figure 6-26 Number of Blacks/African Americans on Faculty



Change Since 87-88: +62%

Figure 6-27 Senior Hires of Minorities (EOs, deans, directors)



Change Since FY88: +400%

Figure 7-3 The Percentage of Women Students

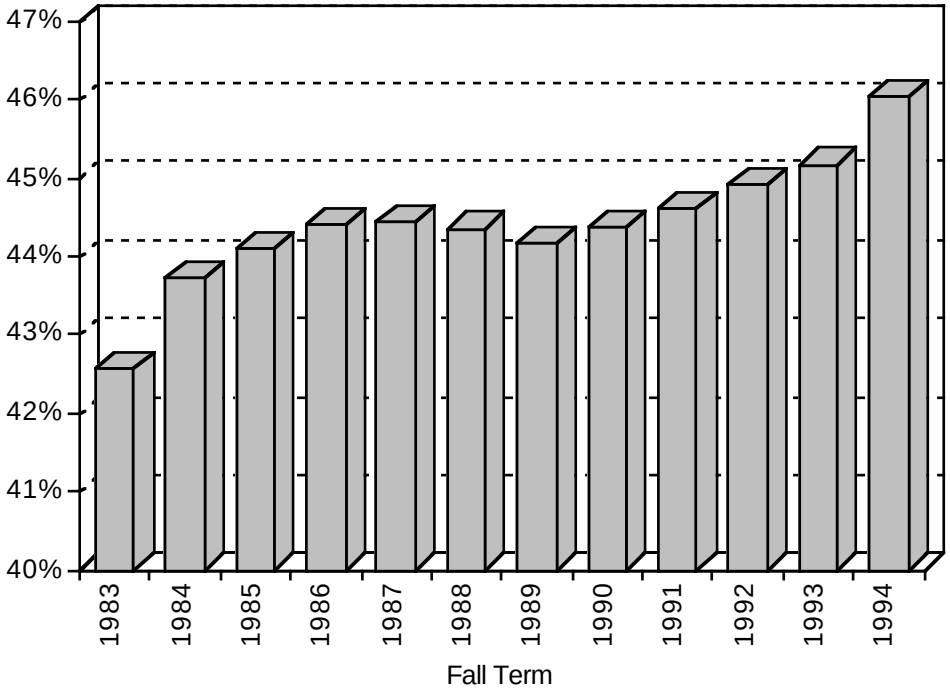
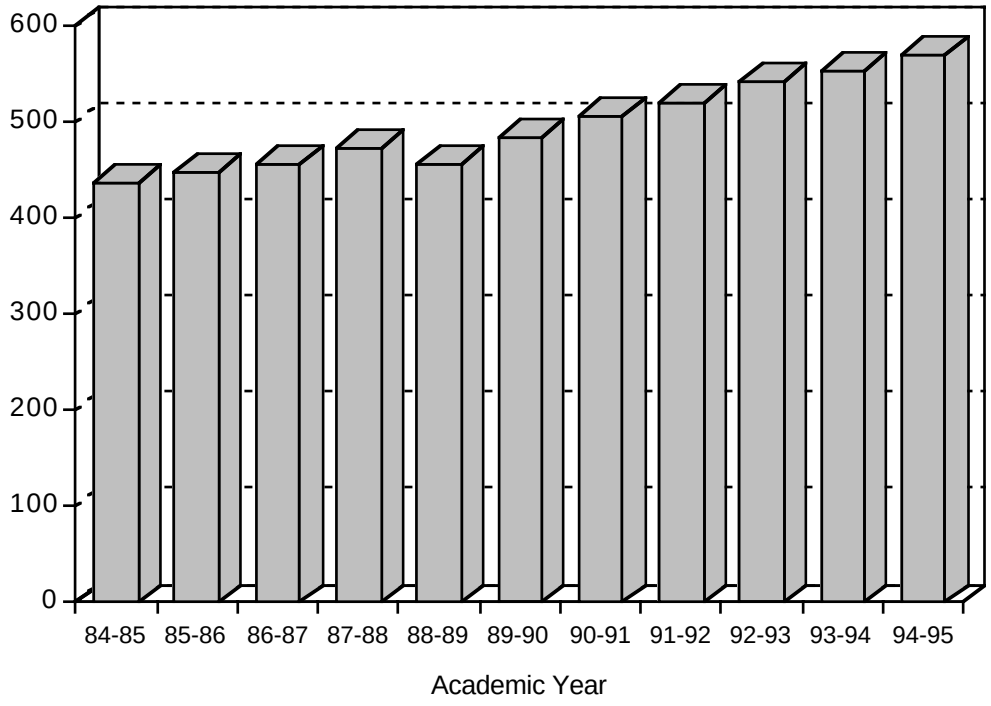


Figure 7-9 Number of Women Faculty



Change Since 87-88: +14.6%

Figure 10-4

State Appropriations per Fiscal Year Equated Student (in Actual Dollars and HEPI adjusted to FY84$)

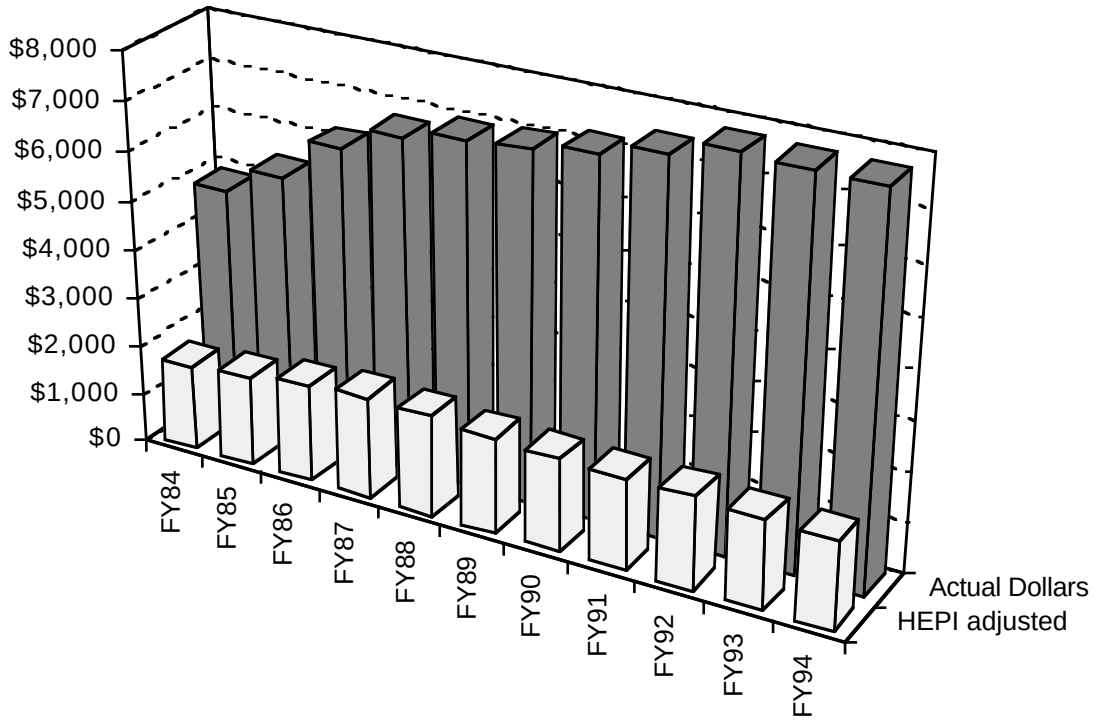


Figure 10-5

A Comparison of FY92 State Appropriations per Fiscal Year Equated Student

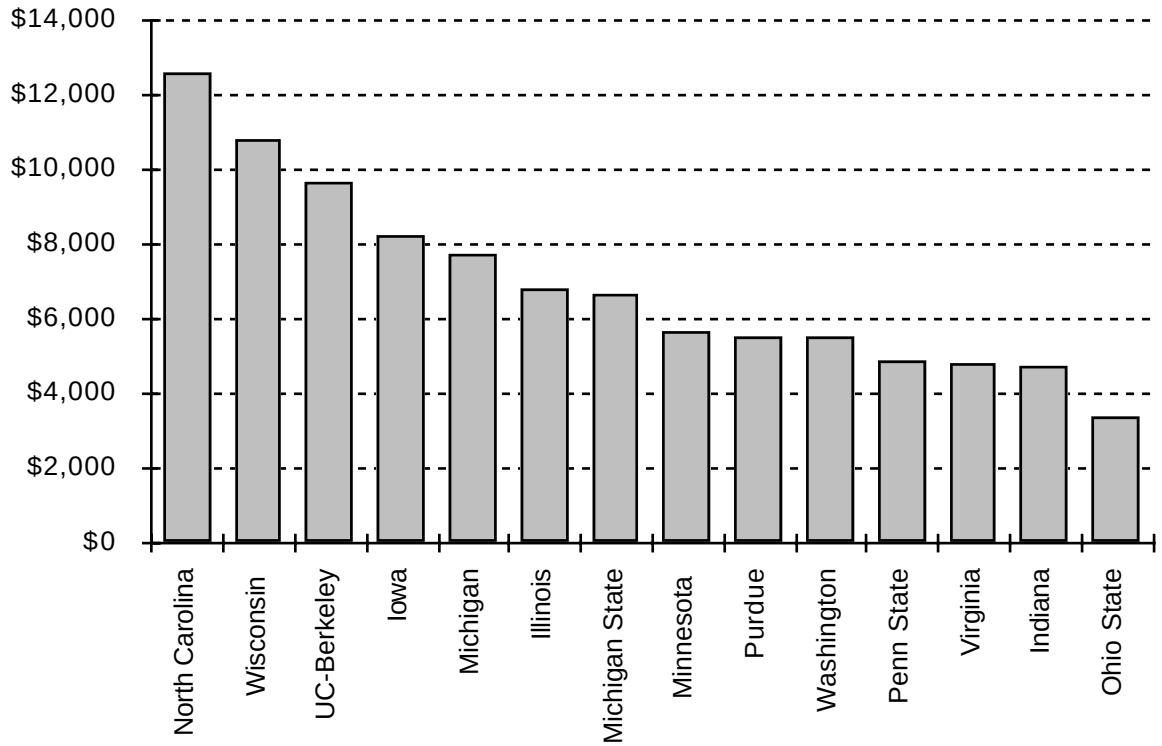
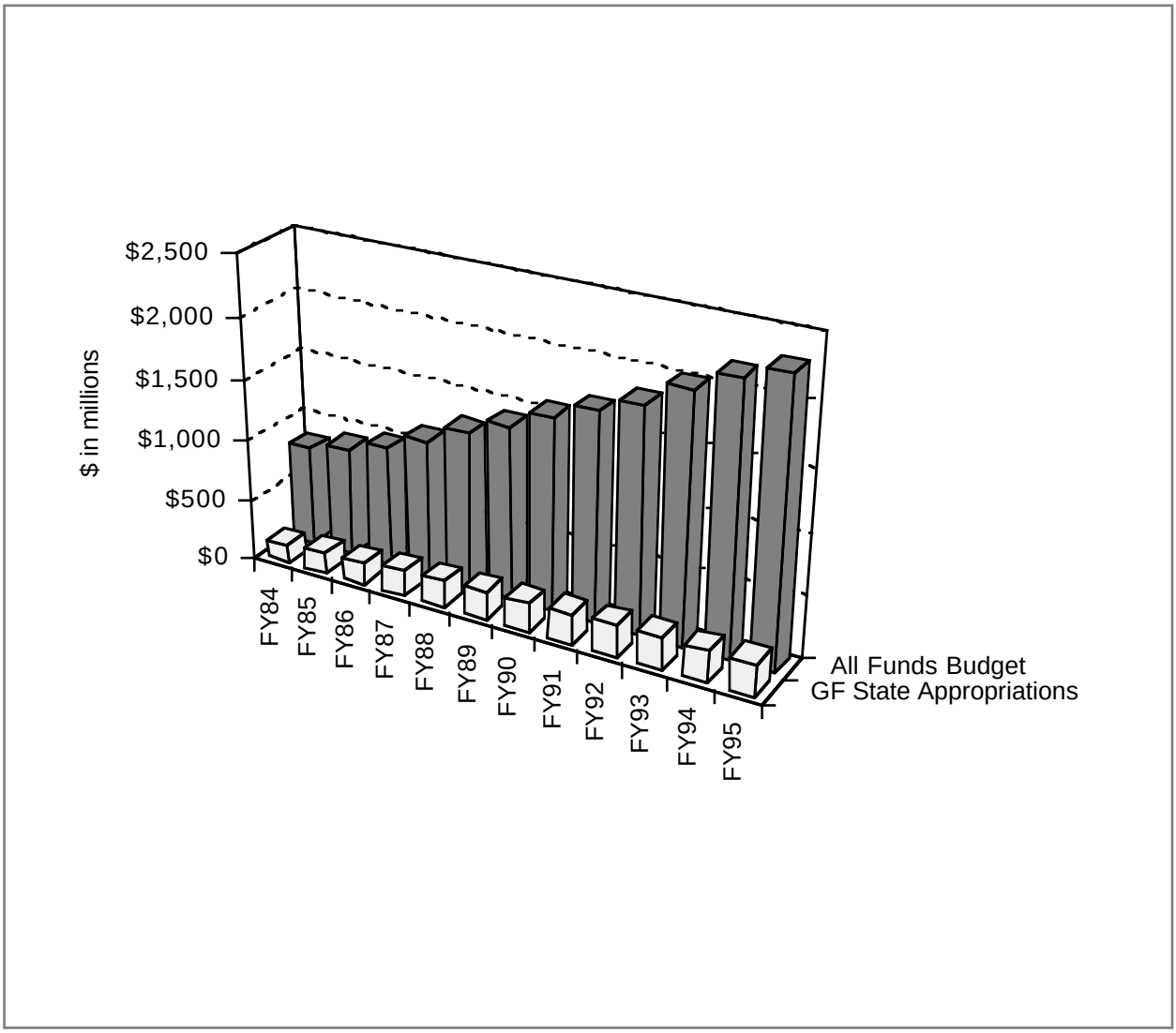


Figure 10-9 Comparison of General Fund State Appropriations and All Funds Budget



Change Since FY88:

GF State Appropriations	+20%
All Funds Budget	+70%

Figure 10-12 The Changing Mix of General Fund Revenue

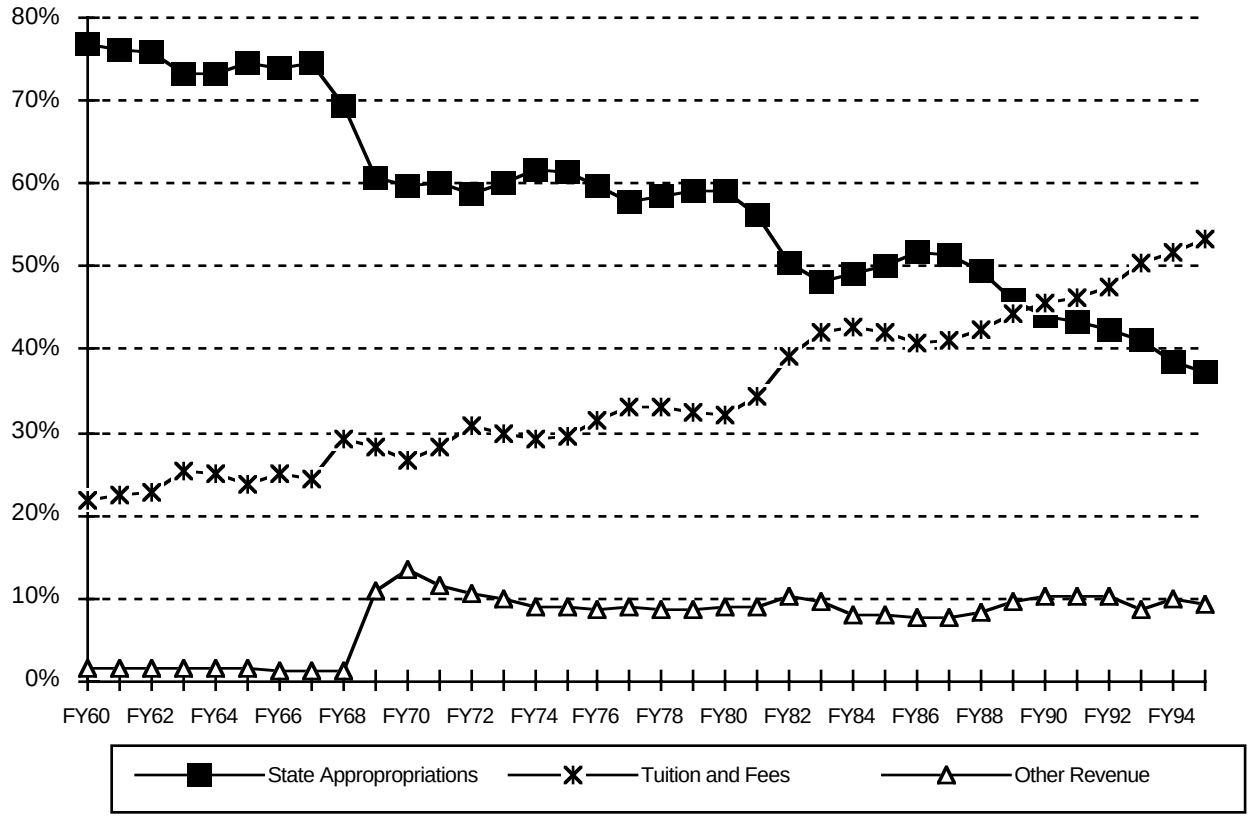
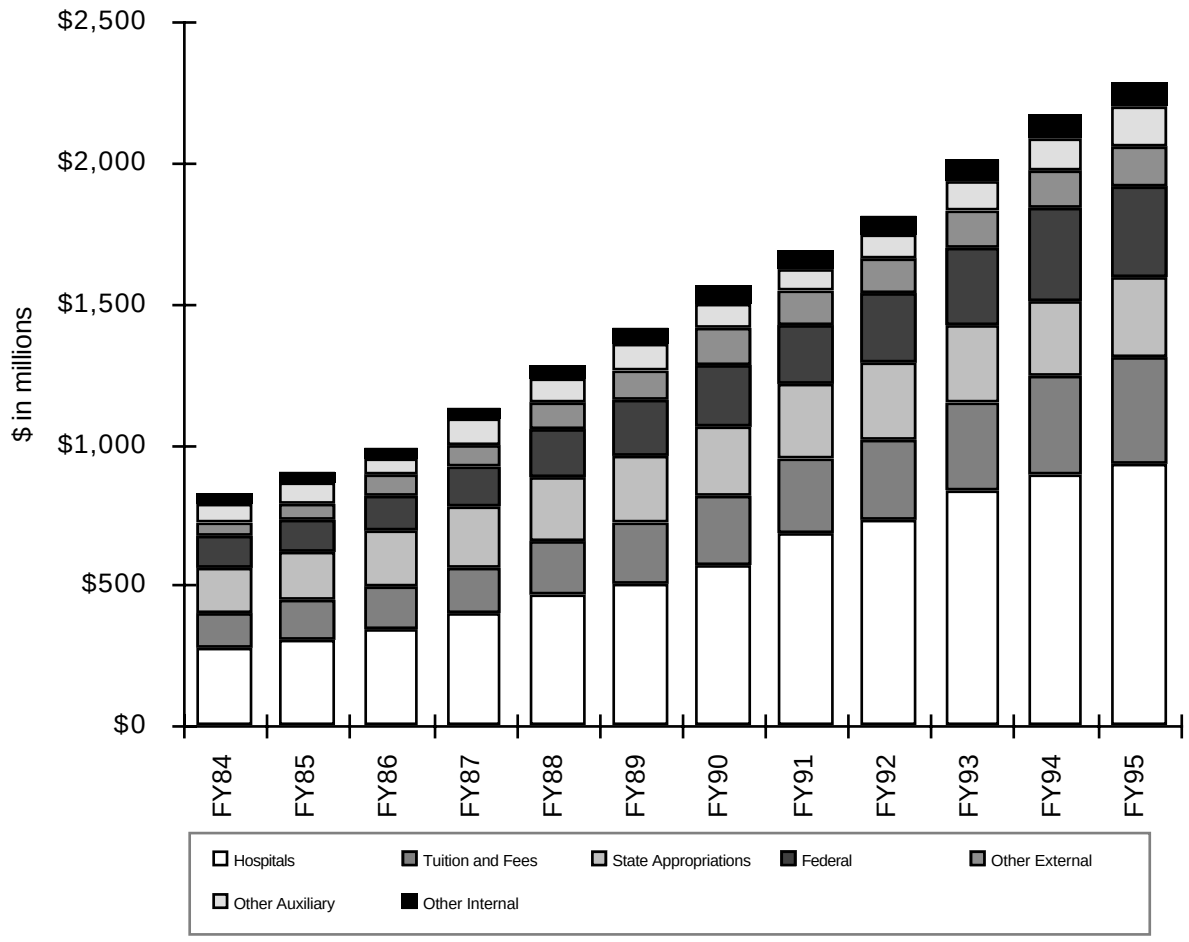


Figure 10-14 The Changing Mix of All Funds Revenue in Dollars



Change Since FY88:

All Funds Budget	+78%

Figure 12-3 Cumulative Growth in Number of Endowed Professorial Chairs

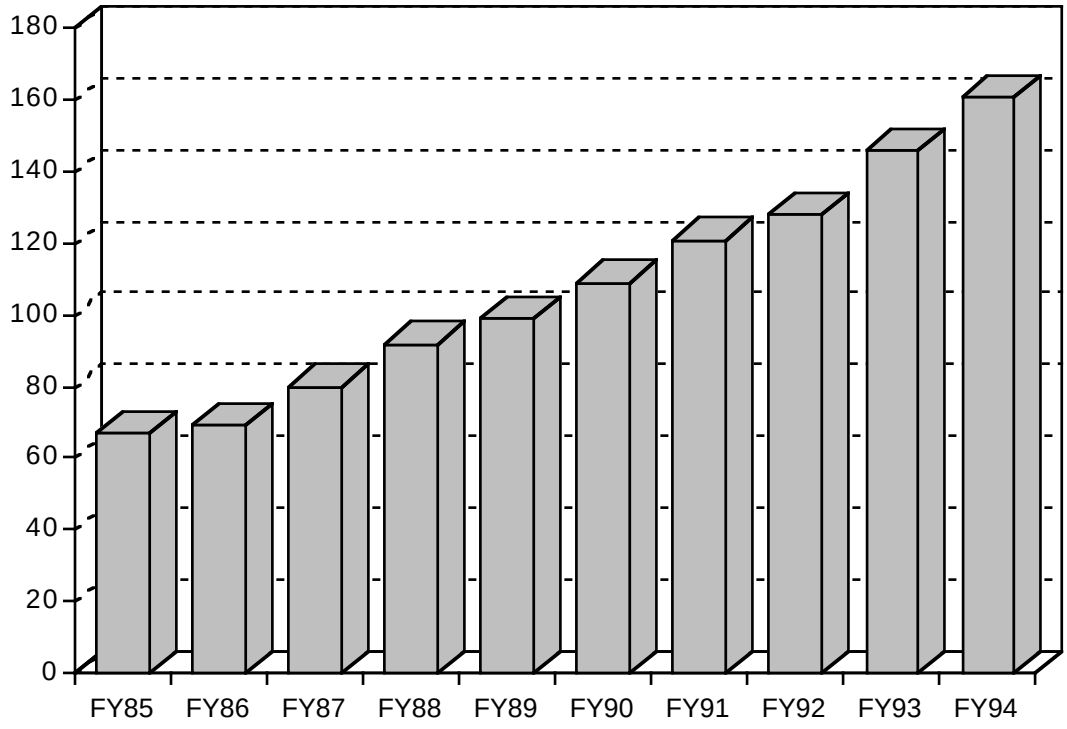


Figure 13-2 Growth in Dollars Under Investment Management

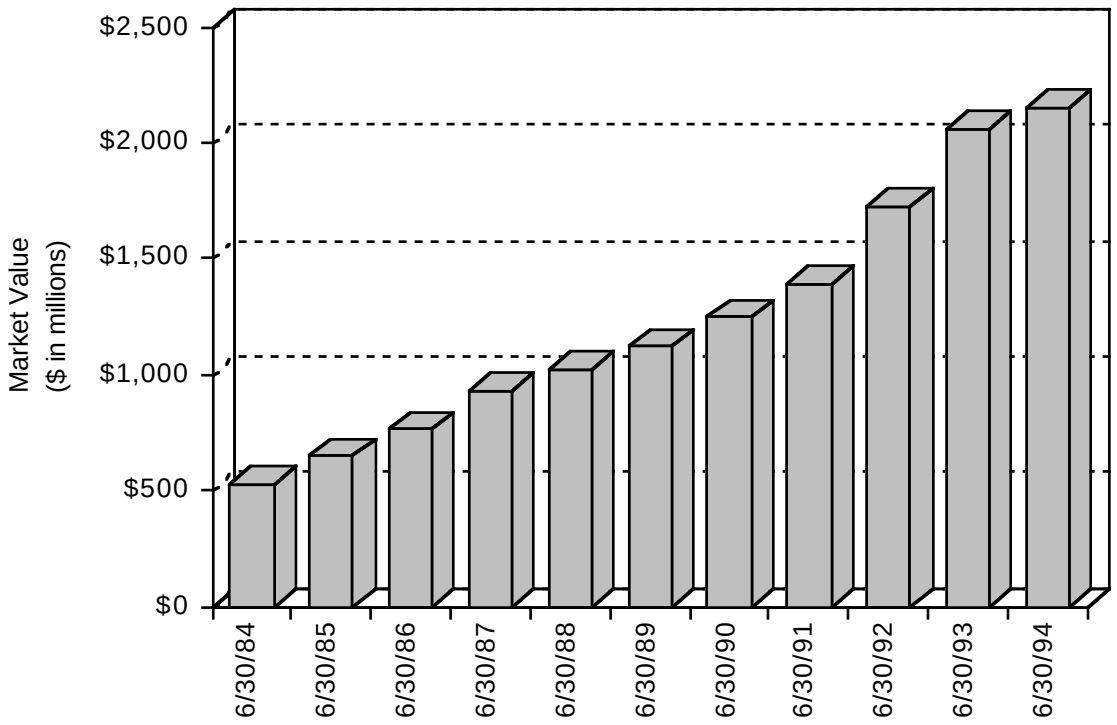
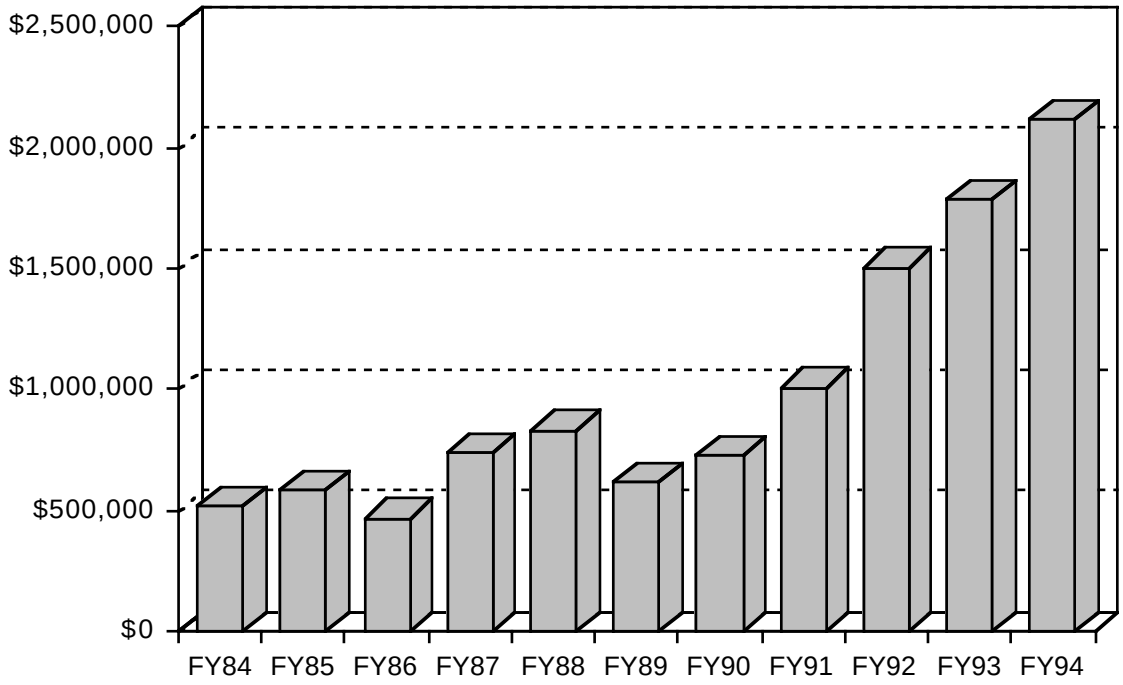


Figure 16-1 Royalty Revenue



Change Since FY88: +154%

Table 17-1 Conference and National Rankings of Men's Athletics

Men's Baseball		
	Big Ten	National
83-84	1	8
84-85	3	10
85-86	1	28
86-87	1	23
87-88	1	19
88-89	1	12
89-90	5	
90-91	5	
91-92	8	
92-93	7	
93-94	3	

Men's Basketball		
	Big Ten	National
83-84	4	
84-85	1	2
85-86	1	2
86-87	5	
87-88	2	10
88-89	3	1
89-90	3	13
90-91	8	
91-92	3	2
92-93	2	2
93-94	2	11

Men's Cross Country		
	Big Ten	National
83-84	2	17
84-85	2	8
85-86	6	
86-87	5	
87-88	6	
88-89	3	16
89-90	8	
90-91	2	13
91-92	2	6
92-93	2	5
93-94	1	
94-95	2	7

Men's Football		
	Big Ten	National
83-84	2	8
84-85	6	
85-86	2	2
86-87	1	8
87-88	4	19
88-89	1	4
89-90	1	7
90-91	1	7
91-92	1	6
92-93	1	5
93-94	4	19

Men's Golf		
	Big Ten	National
83-84	8	
84-85	3	
85-86	9	
86-87	6	
87-88	3	
88-89	8	
89-90	7	
90-91	7	
91-92	7	
92-93	7	
93-94	9	

Men's Gymnastics		
	Big Ten	National
83-84	5	
84-85	7	
85-86	6	
86-87	6	
87-88	7	
88-89	6	
89-90	7	
90-91	7	
91-92	6	
92-93	5	
93-94	5	

Part V

Vision 2017: Transformation

Part V Transformation

While the Vision 2000 was exciting, compelling, and clearly attainable for the 1990s, it was still only a short-range vision. The development of a vision for the longer term—for the University of Michigan's third century—would pose an even greater challenge because the University itself was such a dynamic institution. During the 175-year history of the University of Michigan, its mission had evolved to include teaching, research, and service across an extraordinarily broad array of disciplines and professions. We were only beginning to sense the profound degree to which the comprehensive university is evolving rapidly once again during the 1990s, broadening considerably beyond its traditional teaching-research-service mission to a array of activities which could best be described as "knowledge-intensive." Yet even this evolutionary process might just be a transitional phase to institutional forms we cannot even imagine today.

The winds of change were blowing, stirring the cauldron of higher education activity. Today many are questioning whether our present concept of the research university, developed largely to serve a homogeneous, domestic, industrial society, must evolve rapidly if it is to serve the highly pluralistic, knowledge-intensive world nation that will be America of the 21st century.

Who will determine the new paradigm for the research university in America? Who will provide the leadership? Why not the University of Michigan? After all, in a very real sense it was our university that developed the paradigm of the public university capable of responding to the needs of a rapidly changing America of the 19th century, as America expanded to the frontier, as it evolved through the Industrial Revolution, as it absorbed wave after wave of immigrants. This is a paradigm that still dominates higher education today. In a sense, Michigan has been throughout its history the flagship of public higher education in America. In a very real sense, it was in Ann Arbor that the university of the 20th century first developed.

However, perhaps it is time that in the late 20th century we once again play that role, by attempting to define the nature of the university, a university capable of educating its citizens and serving the society of the 21st Century.

Chapter 22 *Shifting Paradigms*

Vision 2000 set out an agenda for the 1990s aimed at positioning the University of Michigan for a leadership role in higher education for the next century. Largely because of this effort, the University made remarkable progress on a number of fronts—program quality, diversity, facilities, fund-raising, excitement—during the early years of the decade. While the *Vision 2000* strategy was both exciting and challenging, it nonetheless operated within the existing paradigm of the American research university of the late 20th Century. Hence, even as we moved ahead, we began to introduce a new theme. We proposed to the University community that we look at the decade ahead as a period during which we should accept the challenge of creating a new paradigm of the American university to meet the needs of a new century, to respond to a changing nation and a changing world. We suggested that it was time for Michigan to "reinvent" the university.

There were, in fact, historical precedents for such innovation. When President Angell arrived in Ann Arbor in 1878, he stated that he could not imagine a university of 5,000 students. Yet that is the size of the institution he ended up building and leading. President Hatcher faced a similar challenge; both the return of the war veterans and the nation's commitment to broadening the opportunities for a college education in the 1970s put pressure on the state's university system. Not only did the University double in size during his tenure, but two regional campuses (UM-Dearborn and UM-Flint) were added.

We committed ourselves to revitalizing this historic role of leadership in higher education, once again to define a bold vision of the future of the university in America, and to envision the actions we must take to get there. We needed to be bold and venturesome in considering our alternatives, creative and inventive in seizing opportunity and meeting the challenge.

In the 1990s we approached the end of the demographic decline of young people associated with the postwar baby boom and bust cycles. Although we had thought in terms of downsizing the University to better align our activities with our resources, we knew we needed to think instead of selective growth strategies. After all, in a knowledge-driven society, the creation and transmission of knowledge is certainly a "growth industry." Because of its quality, size, and breadth of activities, the Univer-

sity of Michigan was as well positioned as any institution in the world to take advantage of this fact.

We were not, however, proposing that we change our fundamental missions of teaching and scholarship; these must always remain the core of the University's activities. Indeed, we wanted to preserve what was most precious and fundamental about our university and its scholarly life. Rather, we believed our challenge was to rebalance our aims, to adapt some aspects of what we do best to the changing needs and conditions both within and outside the academy.

Vision 2000's strategic process took the first necessary steps toward this renewal. We rebuilt the University leadership team. We established new and stronger bonds with the constituencies we served. We articulated the themes of change we believed would dominate our society in the years ahead: cultural diversity, the growing interdependence of a global village, and a new knowledge-driven society. But now we needed to join together to focus our attention on our primary endeavors of teaching and scholarship and attempt to define the fundamental academic mission of the University in light of the changes occurring in our internal and external worlds. We proposed that we use this decade of transition to a new century to consider who we were and what we wished to become.

To this end, we developed a bolder vision, a strategic intent, aimed at providing leadership during a period of great change. This objective, termed *Vision 2017* in reference to the two hundredth anniversary of the University's founding, was aimed at providing Michigan with the capacity to re-invent the very nature of the university. This *transformation strategy* contrasted sharply with the earlier positioning strategy. It sought to build the capacity, the energy, the excitement, and the commitment necessary for the University to explore entirely new paradigms of teaching, research, and service. It sought to remove the constraints that prevented 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 a great adventure.

The Historic Character of Higher Education in America

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? 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. This will also help us to understand and benchmark the current paradigm of the university, even as we consider alternatives to this model.

What explains the power of this durable and pervasive social institution? Lord Eric Ashby points out that, whatever their flaws, "Universities are broadly accepted as the best means for social investment in human resources."[1] 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.[2] 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 to carry out our mission today in our own increasingly pluralistic society and interdependent world, a world characterized by revolutionary transformations in the very nature of our role as a university, and in knowledge itself.

What has been the particular character of higher education in America?[3] Certainly, the education of our citizens has been its primary function. Indeed, America's system of higher education went beyond this and attempted to provide an education to our entire population by creating the variety of institutions necessary to meet the differing needs and abilities of our society. The size and number of institutions have grown 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 are 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 its 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 testimony to the importance of this role.

Finally, higher education in America has provided leadership for society more generally. The university serves both as a laboratory and a model where the major problems of our society are addressed. In a sense, the university's students and faculty have been asked to confront our largest and most enduring questions.

A History of Change

> *[Professors should] create an atmosphere filled with inspirations to thought, research and culture. Young men . . . [will] resort to them to hear their lectures, to breathe their spirit, to copy their example, and to submit themselves to their guidance.*
>
> *—Henry P. Tappan, President*

The ways we teach today are so obvious and natural, it seems incredible that at one time the seminar, the teaching laboratory, and even the lecture were controversial innovations.[4] Before the university, in America's early colleges students memorized or translated the central works of the distant past, learning ancient languages, rhetoric, and simple mathematics by rote. Professors emphasized accuracy, not comprehension. Conservative and conformist, early colleges had little interest either in expanding knowledge or in inciting critical thinking. Lessons were infused with a deeply religious vision of the world and the duties of citizenship. The colleges saw themselves as bulwarks against change, training the pastors and lawyers of the next generation.

But change arrived regardless, driven by the needs of a growing society. The burgeoning Industrial Revolution and the new upper and middle class it created challenged the dominance of the old "elite" families and the old notion of "culture." By

the middle of the 19th Century, the consensus around the "classical" approach to higher education had begun to fray. College enrollments remained flat as the population of the country soared, and the prestige of graduates declined. The new powers of empirical science, the draw of research, and the pressures on higher education to have, in Laurence Veysey's terms, "utility" in the larger society began to isolate those institutions which refused to change.

During Tappan's administration, the University of Michigan was one of the first to respond. The University created the first teaching laboratory for chemistry and held what some consider to be the first seminar in the United States. Unlike other institutions, Michigan integrated new science students into the broader humanistic curriculum, creating a hybrid that drew on the best of both a "liberal" and a "utilitarian" education. And years before Harvard embarked on this dangerous course, Tappan actually allowed upper division students to choose some of their own courses.

At the same time he created a new "University Course," far ahead of its time and the precursor of later graduate schools. In Tappan's vision, students and professors would be "pursuing the latest knowledge, rather than imbibing traditional learning; concentrating on a few chosen fields, rather than following a standard and rigid curriculum." Although Tappan was more interested in advanced general education than true research, and although his most ambitious plans never reached complete fruition, his ideas nonetheless laid the foundations for "graduate" schools at Michigan and around the country.

Throughout our early years, Michigan was the site of many other "firsts" in higher education. We championed public access, charging low or no fees to our students, and became the first university to remain free of sectarian religious control for our entire history. As our first professors, Michigan hired not classicists but a zoologist and a geologist. And we were the first university in the west to pioneer professional education, establishing the Medical School in 1850, the Law School in 1859, and engineering courses in 1854.

While pedagogical change has been less dramatic in the years since Tappan's presidency, there have still been opportunities for creativity, and Michigan has responded vigorously to these opportunities. There have been many examples of innovation across campus, including the Residential College, the Teach-Ins of the Vietnam and Gulf wars, and the community service courses offered through a number of different departments and offices, to name only a few. We have made great strides in providing training for our graduate student instructors, and our Center for Research on Learning and Teaching is one of the oldest and most extensive in the nation. After

World War II, immense infusions of federal funding allowed University research efforts and graduate education to expand almost exponentially. And throughout our entire history, our classrooms have often been battlegrounds over what we will teach—from challenges to the "canon" to more recent confrontations over political correctness.

Thus, while we have held fast to our common values as an educational community, the one true constant at Michigan has been that of change. If we hope to remain relevant to our society and to our state, this tradition of adaptation and evolution must continue.

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

1. to educate students in light of certain education goals
2. to preserve, refine, and extend knowledge
3. to help define and assist in the solution of the problems of society

However, a more pragmatic view of the University of Michigan of the mid to late 20th Century 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-20th Century, today we find many other public universities with an equally serious commitment to scholarship.

To respond to these changes, during the 1970s and 1980s the University took a number of steps:

- To increase its dependence on tuition revenue (to compensate for the decline in state appropriations)
- To increase its reliance on "out-of-state" students both as a source of revenue and a source of student body quality
- To emphasize those programs with greater potential for alternative sources of funding (e.g., business administration, medicine, and engineering)
- As a first priority, to sustain its excellence in the professional schools where the University had a comparative advantage
- To attempt to reduce the scope and breadth of our activities

Yet in this effort, we did not really attempt to reconceptualize what this new environment meant for the future of our University. We did not alter our fundamental model of the university in any significant way.

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)
Broad admissions policies
Operational Objectives
Constrain tuition levels
Maximize student financial aid
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 educational 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 Agriculture 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 Michigan 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"

6. A National Leader (a variation on two themes)

Goal
National leadership in higher education (both public and private)
Priorities
Emphasize academic excellence as highest priority
Strive only for the best—in students, faculty, staff, programs
Tactics
Intensify Michigan's commitment to excellence
. . . "pick up the pace"
Stress quality over breadth and capacity
. . . "spires of excellence"
Stress priority of intellectual core
. . . e.g., LS&A …OR key professional schools
Operate Michigan as a national university
Possible consequences
Michigan becomes a leading 20th Century university

These models, while amusing, actually represent extreme cases of existing paradigms of the 20th Century. They do not provide much guidance about where the University of Michigan should head in the century ahead.

It was our belief that the University instead should consider far bolder paradigm shifts, more appropriate for the 21st Century.

Toward New Paradigms

> *Students have trouble seeing how new courses connect to a very narrow track that seems to lead only to graduate school or medical school or law school. It's hard to tell students that the real world is not just literature or history—to be a citizen of the twenty-first century you are going to have to become more flexible.*
>
> *—George J. Sanchez, UM Associate Professor of American Culture and History, and Director of the Program in American Culture*

Driven, as in the 19th Century, by unprecedented social and technological change, our society increasingly demands a new vision of education. While we celebrate our recent accomplishments, especially in undergraduate education, we know that we have only scraped the surface of the advances the 21st Century will require. It is time we thought more seriously about cracking open our entire pedagogical paradigm.[5]

We faced a particular dilemma in developing more revolutionary models for the American university. The pace and nature of the changes occurring in our world today have become so rapid and so profound that social institutions, such as the university, have great difficulty in sensing and understanding the true nature of the changes buffeting them about, much less in responding and adapting adequately. As former President Harold T. Shapiro points out, "this is always a risky and uncertain project, which continues to require both a closeness and sensitivity to society's needs and beliefs and an ability not to be captivated by society's current assumptions, social values, and priorities." Any process aimed at articulating and analyzing new models for the university must recognize 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 to illustrate the broad range of possibilities for the university of the 21st Century. What

follows are some "possible futures," educational visions of the university beyond the year 2000. They suggest the extraordinary transformations that universities must undergo in the years ahead. While a particular institution is unlikely to assume the form of any of these models alone, these paradigms may also represent paths we should explore. These include:

- the "world" university
- the diverse university
- the creative university
- the divisionless university
- the cyberspace university
- the university college
- the lifelong university
- the state-related, but world-supported, university
- the "laboratory" university ("the university within the university")
- the university as a "knowledge server"

The World University

> *Americans often lack the sense that people in other countries have different ways of seeing their lives. If we want to actually be effective in a foreign environment, we need to understand these differences. We will lose in the international arena unless we develop an educated cadre of experts.*
>
> *—Jane R. Burbank, Director of the UM Center for Russian and East European Studies and Associate Professor of History*

Many of our leading public universities have evolved over time from state universities to, in effect, national universities. Yet, because of their service role in areas such as agriculture and economic development, they have also had a decidedly international character. Perhaps it is the time for several of these institutions to evolve once again, this time into "world" universities.

Some believe that a new global culture will be formed over the next century. New "world" universities in Europe, Asia, Africa, and Latin America might serve as the focal point for certain sorts of study of international order—political, cultural, economic, and technological.[6] Since the genius of higher education in America is the comprehensive public university, these institutions might play this role for North America.

Given, too, that our institution—and our nation—is no longer self-sufficient or self-sustaining, we are also no longer immune to the shocks of the world society. We have never been more dependent on other nations and peoples. Understanding other cultures has become necessary not only for personal enrichment and good citizenship, but indeed, necessary for our very survival as a nation. Certainly we have a long way to go in this country to know what we need to know to participate fully as members of the global village. Consider, for instance, that Americans know few other languages and have inadequate understandings of other cultures. By every measure, we fall short educationally of the knowledge and skills it will take to do business, work cooperatively on common problems or advance our common ideals for humanity.

Too many of our undergraduates have never been exposed to a foreign language or visited a foreign country. Many have not had a chance to feel the texture of life in another era or another culture through literature and poetry or film. Some cannot locate Mexico or Egypt on a map. Despite the intellectual richness of our campus, we suffer still from the insularity and ethnocentrism that is the heritage of a country that for much of its history has been insulated from the rest of the world and self sufficient in its economy—perhaps even self absorbed.

Consequently, we must reexamine the way in which we foster, manage and promote the international dimension of our educational mission. We must strengthen the international component of our teaching and scholarship so that it pervades the liberal arts curriculum and that of the professional schools. We must be mindful that knowledge is not tied to geographic regions; rather the knowledge revolution is a worldwide phenomenon, and science speaks a universal language. We must be open to the challenge and excitement for our intellectual work in the disciplines that results from the infusion of experiences and perspectives of other regions, cultures

and traditions. We must ensure that our students are prepared with an understanding of how the rapidity of modern communications and ease of travel will change the texture of their lives.

Above all, we must enable our students to appreciate the unique contributions to human culture which come to us from other traditions, to communicate, to work, to live, to thrive in multicultural settings whether in this country or anywhere on the face of globe.

While many of our graduate students come from distant nations, this is much less true of our undergraduates. We send many students abroad on different programs, but this is an effort that we must work diligently to strengthen, giving as many students as possible the opportunity to experience the insights that come from seeing the world through different eyes.

Of course, many American universities have already moved quite far down the path toward becoming global institutions. For example, the University of Michigan has a number of overseas campuses and cooperative agreements with institutions to facilitate undergraduate study abroad. It has also established campuses for graduate business education in Hong Kong, Seoul, Paris, and London, facilitated by interactive two-way video and computer links. The University of California is moving rapidly to establish a major strategic presence in Asia. And there is considerable experience in multi-university associations engaged in overseas development, such as the Midwestern University Consortium for International Activities (MUCIA), involving the Big Ten universities.

From our earliest beginnings, Michigan has reached out beyond our national borders. By 1860, the Regents already referred "with partiality" to our "list of foreign students." Today, more than a hundred nations are represented at Michigan. As connections between nations increase, "a new world culture will be formed," predicts English Professor Ralph Williams. Professor Williams and others believe strongly that "a basic step in forwarding whatever we mean by [world culture] will be the establishment of three or four world universities . . . to be the focal point for certain sorts of study of the international order: political, cultural, technological, etc." Clearly, as one of the premier educational institutions in America, with perhaps the greatest breadth of international expertise, Michigan is well positioned to take up this role. And the importance of international trade to the entire State of Michigan makes advancement in this area especially urgent.

Professor Jane Burbank cautions, however, that "globalism," the increasing network of connections between cultures and nations, does not mean that we will necessarily understand each other. Each of us communicates from our own complex and often contentious context. And, making the idea of global research and dialogue even more challenging, the very idea of static "cultures" or "others" that exist out there as objects to be studied has come under increasing attack. Educating our students to grapple with these complexities will not be easy.

There are a number of interesting questions and issues raised by the possibility of a world university:

1. What would be the characteristics of a world university? What would be its primary missions?

2. *Teaching:* Whom 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 consortia, such as the Big Ten's Midwest Universities Consortium on 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?

The Diverse University

> *We don't understand them anymore.*
>
> *—Anonymous Faculty Member, UM*

> *The University must create an environment where students can affirm and celebrate their individual and cultural identities, while also recognizing the many ideas and values shared by all human communities.*
>
> *—Lester P. Monts, UM Vice Provost for Academic and Multicultural Affairs*

Much of the coming paradigm shift may be forced upon our University by the changing nature of students themselves. Many faculty members express concerns about their sense of increasing distance from their students. They recognize that their students are quite different from past generations. Some of this separation may arise from the usual generational jitters. But there is also evidence of real change.

Our classrooms increasingly contain students from many different backgrounds—cultural, economic and geographical—and this new reality will only intensify in the future. Women, people of color, and immigrants now account for 90 percent of the growth in the labor force, and in the 21st Century, the majority of young people born in the United States will not be of European descent. The University has made a major commitment, through the Michigan Mandate and the recent Women's Agenda, to ensure that this diversity is reflected on our campus as we work towards a truly egalitarian community. "One-size-fits-all" approaches cannot hope to serve everyone effectively anymore (if they ever did), and we can no longer afford to ignore the individual and structural challenges that come along with the rich potential represented by our increasingly diverse community.

Our efforts to respond both to the challenges of the "digital generation" and to our increasing diversity in the classroom have led us to surprisingly similar answers. More flexible and interactive modes of learning are helping to open many rewarding fields to a much broader range of students. Over time, we have been forced to acknowledge that there has always been more diversity on campus than we ever realized. Instead of telling students how to accomplish their work, we are learning to help them figure out approaches for themselves, at their own speed. At the same time, as noted above, our classes are increasingly shifting from isolated to collaborative learning, helping students work together, capitalizing on different ways of seeing and approaches to material, and helping students learn to communicate across difference.

The Diverse University would draw its intellectual strength and its character from the rich diversity of humankind, providing a model for our society of a pluralistic learning community in which people respect and tolerate diversity even as they live, work, and learn together as a community of scholars. Of course, diversity is essential to any university as we approach the new century. Unless we draw upon a vast diversity of people and ideas, we cannot hope to generate the intellectual and social vitality we need to respond to a world characterized by great change. For universities to thrive in this age of complexity and change, it is vital that we resist any tendency to eliminate options. Only with a multiplicity of approaches, opinions, and ways of seeing can we hope to solve the problems we face. Universities, more than any other institution in American society, have striven toward a vision of tolerance and intellectual freedom. We must continually struggle to advance this heritage and to become places where a myriad of experiences, cultures, and approaches are valued, preserved, discussed, and embraced.

This model recognizes the concise distinction 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? Our region? 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*"?

The Creative University

> *We are creating an environment where students and faculty can dream and then act on their dreams.*
>
> *—Paul Boylan, Dean, UM School of Music*

The professions that have dominated the late 20th Century—and to some degree, the late 20th 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 21st 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.*
>
> *—Jacques Attali, Millennium*[7]

A determining characteristic of the university of the 21st Century may 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 already are fortunate to have several schools which focus on the act of creation, in music, 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.

Even libraries will increasingly become places where the difference between "researching" and "doing" blurs. As Dean Atkins points out, the new information technology not only supports information retrieval, but also helps scholars actually manipulate that information. He notes that "a student could not only read about architecture, but use a computer tool at the same time to try out a design." The University will need to structure itself in a more strategic fashion to nurture and

teach the art and skill of creation. Alliances with other groups, organizations, or institutions in our society whose activities are characterized by great creativity would dramatically enhance our capacity to move in this direction.

Our new Media Union on North Campus is the centerpiece of our efforts to respond to this new creative environment. Drawing together aspects of the "virtual" and the "electronic" University, the Union is a tremendous interactive playground for imaginative scholars and students, a place for creativity. The tools in the Media Union are so easy to use that ideally they become natural extensions to everyday activity. For example, an artist and an engineer should be able to think up a new sculpture together, sketch it out in three dimensions on a computer, then show it off and discuss it in real time with colleagues both here and across the world, all without noticing the complex technology that allows them to collaborate.

But herein lies a great challenge. For while we are experienced in teaching the skills of analysis, the activities associated with creativity are far less understood. In fact, the current disciplinary culture of our campuses sometimes discriminates against those who are truly creative, those who don't fit well into our stereotypes of students and faculty.

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?

The Divisionless University

> *The danger of excessive departmentalization is that] students have imagined that the universe, in some mysterious way, is actually departmentalized.*
>
> *—Marion LeRoy Burton, UM President, 1921*

At the end of the day, I am paid by my department, assigned to committees by my department, do my undergraduate teaching in my department, and fund my graduate students through my department. Those of us involved in interdisciplinary work face frequent frustration and heavy overloads of work. It would be much simpler to stay in our departments. But we are truly interested in breaking down the traditional constraints that bind us.

—Nicholas B. Dirks, Professor of Anthropology and of History and Director of the UM Center for South and Southeast Asian Studies

Academic disciplines dominate the modern university, developing curriculum, marshaling resources, administering programs, and doling out rewards. Faculty increasingly focus their loyalty on their disciplines instead of their home institutions. As a result, I fear, we are losing the cohesiveness of a broad community of scholars. As we have built stronger and stronger disciplinary programs, we have also created powerful centrifugal forces that threaten to tear our community apart.

Yet, in the outside world, disciplinary configurations are changing so rapidly that departments have difficulty coping with new ways of seeing. Never before has the speed of change itself become a central issue of intellectual life. Today, those who are at the cutting edge of their fields are often those who travel across them. New ideas are often birthed in the collision between disciplines. Responding to these fundamental changes in the nature of knowledge is critical to the continued relevance of institutions like research universities.

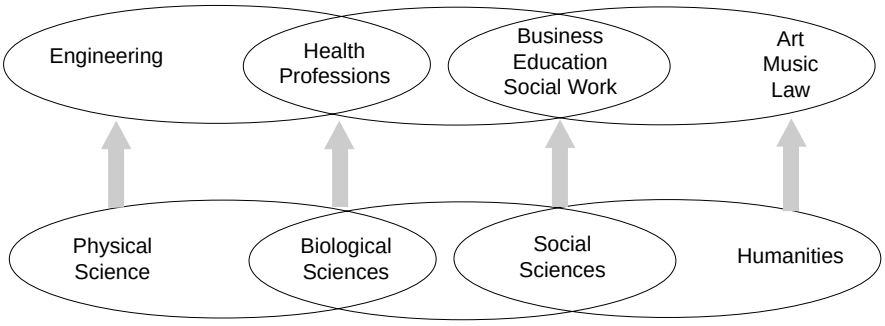
Former Michigan President Harold Shapiro argues that our disciplinary narrowness is one of the reasons for the perceived deterioration of undergraduate education. He feels we have failed "to distinguish between the transmission of [specialized] knowledge and the development of a [general] capacity for inquiry [in undergraduates]. Our predicament is that the faculty are transmitting what they know—and love—with little awareness of what the student needs to learn."

At a recent conference on undergraduate education, attendees agreed that much of our curriculum is not only disconnected from contemporary reality, but so fragmented that little useful understanding is possible. The conference concluded that "the rigid institutionalization of the disciplines is a barrier to both creative thinking and curricular change. The disciplines need to be integrated, and in some cases, seriously reformed. This will require considerable restructuring of our educational institutions." Many faculty members as well express growing frustration with the current intellectual organization of the university. They feel that our traditional structure of narrow disciplinary and professional academic programs has become increasingly irrelevant to their teaching, scholarly, and service activities.

Of course, our present organization into schools, colleges, and departments has much to recommend it. Such divisions set the norms for quality and provide a standard that relates to other academic institutions and to society at large. Further, 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. We 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 application of knowledge. For example, 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. Scholarly disciplines likely will need to be more closely integrated with professional schools through academic organization or campus location.



We might also 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:

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. become obsolete to the extent that, all too often, it only produces highly specialized clones of the present graduate faculty? It may be time for a new, broader, graduate degree.

3. Should the basic disciplines be more intimately coupled to the professions? After all, much 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?

The Cyberspace University

> *I don't think the classroom will ever go away. But technology is bringing an enormous shift in the way we will interact there. The fact is, not everyone is a master lecturer. Having a variety of options will make a big difference to many of us. We can fill the fifty minute class period with a more effective and lively mix of media presentations, lecture bits, and discussion that helps students make the material their own.*
>
> *—Diane M. Kirkpatrick, UM Professor of History of Art*

> *In a study of 143 Michigan engineering sophomores, we found that:*
> *- 67 percent learn actively, yet lectures are typically passive;*
> *- 57 percent are sensors, yet we teach them intuitively;*
> *- 69 percent are visual, yet lectures are primarily verbal;*
> *- 28 percent are global, yet we seldom focus on the "big picture."*
>
> *—Susan M. Montgomery, UM Assistant Professor of Chemical Engineering*

The reality of our new students, diverse and often technically savvy, requires new educational approaches. Encouragingly, our growing base of technology has begun to create the possibility for new, more flexible roles for both students and faculty, within and beyond the classroom. Richard Lanham calls the social, technological, and theoretical challenges that these changes create an "extraordinary convergence," catalyzing fundamental shifts in higher education, allowing more interactive learning, and giving students the ability to interrogate or even create knowledge instead of simply absorbing it.[8]

We learned long ago, however, that technology alone is no educational panacea. The "learning machines" touted at the end of World War II never lived up to their promise. However, with thoughtful planning and support, even very basic advances can have a profound impact on learning. Professor Morton Brown, for example, has revolutionized the way we teach beginning calculus using the relatively simple graphing calculator. He explains, "In science you usually have the graph first, and then you have to figure out what it means." Using the calculators allows students to do just this—see the graph first—shifting classwork from mere calculation to actual analysis. Students can begin to act more like real mathematicians, opening up a universe of possibilities we have just begun to explore.

Without new ways of envisioning education, however, even the most expensive pieces of equipment can be more distracting than helpful. The graphing calculator did not, in itself, create a new curriculum—it simply made the new curriculum possible. Many other areas of the campus have begun to explore how our new abilities can change our visions of classrooms. How, for example, does one make large entry-level engineering classes more productive, personal, and engaging?

Part of the answer is to make the class more interactive. Professor Susan M. Montgomery has developed new learning modules that allow groups of students to explore open-ended problems. For example, they have created an interactive multi-media tour of a phosphate coating system in an auto plant, challenging students to design a more efficient system. Montgomery takes time to build a foundation for teamwork in the class, testing for each student's learning style and helping them appreciate the different approaches of others. In class, students often work in small groups on problems. Out of class, students work together on the modules at their own speed. The modules promote collaboration and allow flexibility; the media capabilities allow students to view actual working equipment instead of simply learning theory from textbooks. The technology does not replace the classroom; rather, it augments it, making the time spent in class more productive.

The humanities have as much or more to gain from new technology as the sciences. Over 75 percent of Michigan's English Composition Board (ECB) classes, for example, now take place in an interactive computer classroom. In class, students write to each other in a "virtual" text discussion over a local area network. Face-to-face interaction is supplemented with text-based computer-mediated communication, making the experience more like a lab or a workshop. Wayne M. Butler, ECB associate director, notes that "we don't just teach the academic literacy of the past, we're all involved in creating a new literacy for the twenty-first century." The technology also improves participation to near 100 percent, reducing issues of race and gender, and changing the rules of discussion in positive ways. In the normal classroom, interaction is impeded by the turn-taking rules of oral discussion. Women and minorities, especially, are often unable to participate equally in the conversation. In real-time electronic conferencing, everyone can participate simultaneously in a number of concurrent conferences, so everyone has a better opportunity to be heard.

Michigan has begun to provide a broad spectrum of resources to help integrate new technology into the classroom. Our Office of Instructional Technology helps faculty apply technology to their classes and has begun to develop a wide range of software resources, from "framework" programs that can be used for many different purposes, to applications geared to very specific goals. Their programs are already in use in many courses across campus, from "the Beat Generation" to foreign language workshops.

These advances may fundamentally change what it means to be a professor and a student at Michigan. Faculty may soon become more like coaches or consultants than didactic teachers, designing learning experiences and providing skills instead of imparting specific content. Even our introductory courses may take on a form now reserved for only the most advanced seminar classes. Many hope that these new possibilities will free up time for more personal interaction. Not only do these new technologies create educational opportunities, they also represent the "literacy" of our future. The "stuff" of intellectual communication is in the process of evolving from the journal article to more comprehensive multi-media and even interactive documents. These shifts portend vast changes in the ways information is manipulated and interaction is structured in our society. Universities cannot call themselves successful unless they provide students with the central competencies they will require as they enter the world of the 21st Century.

Many people simply cannot put their lives on pause, moving perhaps hundreds of miles from home to attend a degree program at Michigan. They have families, jobs, and other commitments, barriers that prevent many qualified students, often women

and people from low-income areas, from pursuing their dreams. At the same time, as Dean Daniel E. Atkins notes, "The central talent of the university is facilitating new communities." Success in the future will require even more agility in forming and dissolving new communities in response to unexpected opportunities. New "virtual" technology may provide a partial answer to both of these problems, reducing the traditional constraints of time and distance, enhancing collaboration over thousands of miles and across disciplinary lines, and enabling new and different kinds of communities.

Some fear, however, that the move toward a "virtual" collaborative University of Michigan will lead to a decline in quality and personal connection. They envision, perhaps, lectures on videotape as a simple, often exploitative way to generate more income. While for its time "professor-in-a-box" video education was a great advance, the reality of multi-media, interactive learning today is vastly different. Michigan cannot afford to lower its standards as we reach beyond the campus. Our pilot projects in distance learning have taught us some basic lessons: successful efforts are more expensive than face-to-face instruction, take professors more time to prepare for each class, and, surprisingly, often promote more personal interaction than more familiar lecture-intensive in-person approaches. Any increased cost, however, is usually more than offset by the gains for the student by allowing them to continue their employment and eliminating the need to move themselves and often their families to Michigan.

Truly effective "virtual" learning makes use of a number of different approaches. The business school's global MBA program, for example, uses video classrooms where the professor can interact directly with students in Hong Kong and Korea. These are much like normal classes, though the limitations of the video format require more preparation and different techniques to promote discussion. Students in this program also come to Ann Arbor for a short time, taking elective courses and interacting with students in the regular MBA program, and professors visit their home countries to facilitate brief, intensive workshops. This is augmented by other asynchronous resources like computer conferencing, where students can ask professors questions and continue discussions among themselves whenever it is convenient for them outside of class. Usually current employees of sponsoring companies, students work on company projects as they refine their skills. Beyond the MBA, more technical, engineering-intensive degrees on the horizon for the College of Engineering, for example, will include interactive and collaborative multi-media learning modules as a part of their distance-education package, allowing students to work on open-ended projects out of class.

The idea of a "virtual" university is not the answer to all of our problems. For many purposes a strong residential component is critical for our undergraduates. Yet the new possibilities opened up by distance learning and distance collaboration promise to enhance the intellectual environment of all, while opening our community up to the vast potential of a world-spanning dialogue.

Perhaps most importantly, these new interactive resources represent the wave of the future for our society. As our knowledge base expands, isolated individuals will increasingly lose their ability to "know" everything they need to grapple with complex challenges. We must equip our faculty and students with the ability to exploit these new technologies in the service of what Michael Schrage calls "collaborative communities." We must learn the difficult art of communicating across disciplinary and cultural differences in the pursuit of common goals, discovering which collaborative tools serve us best for our different purposes.

Since the business of the academic research enterprise is knowledge, perhaps 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 nature of the research enterprise. Consider, for example, the following questions:

1. Will the "university of the 20th 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 21st Century and more of a medium?

The University College

A technical education—whether in law, medicine, or business—has to do with "earning a living." A liberal education gives meaning to life. It makes living a worthwhile thing to do.

—Harold T. Shapiro, UM President, 1980

Undergraduates have to be involved in the fights we are having. They need to see that "thought" is never completely formed; it is happening all the time. Large research universities can enact these debates most engagingly.

—Robert R. Weisbuch, UM Professor of English and Interim Dean of the Horace H. Rackham School of Graduate Studies

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.[9]

Universities have always been good at teaching students the facts and methods of specific fields like biology, history, or psychology. We have been much less successful, however, at helping students decide who to "be" or how to make effective and ethical choices in a complex world. In an environment where specific details become quickly obsolete, however, our students increasingly need a facility for inquiry and an ability to adapt and respond to new situations. Instead of quickly channeling young students into very narrow disciplinary tracks, we should think of at least the first two years of an undergraduate degree as an opportunity to try out different lives as they explore the richness of our diverse cultural and academic heritage.

We had already come a great distance in improving our commitment to undergraduates. In 1988 the LS&A Planning Committee on the Undergraduate Experience presented the University with a painful report, noting that Michigan's "eminence in scholarship 0was not at present equalled by its eminence in undergraduate education." The response to the Committee's critique, led by LS&A's Dean, Edie Goldenberg, was a credit to the commitment and strength of our community. We

encouraged innovative efforts and strategic actions across the entire campus. As a result, our most novice students now have the opportunity to choose from 170 to 180 first-year seminars taught by experts in their fields. Over 800 first- and second-year students each year have the opportunity to participate in actual research projects with university faculty through the Undergraduate Research Opportunity Program. We completely restructured, to national acclaim, a number of our large introductory science and mathematics classes. In an effort to improve student participation and commitment we developed an extensive leadership development program. We extended our already considerable commitment to provide community service opportunities. And we began a major effort to align student experience in the residence halls more closely to the vibrant academic and extracurricular activity of the entire University.

Yet while these efforts represented critical first steps, we needed to plan much more comprehensively. Many across campus took part in a study exercise we called the "University College," drawing on the lessons we had learned through our Undergraduate Initiative projects. As a focal point for a new academic community, the University College is designed to expose our students to the excitement of great minds, build a supportive and dynamic learning environment, draw on the vast intellectual resources of the University, and provide facilities and resources for creative and collaborative efforts. The University College is grounded in the broadly liberal spirit of the humanities, giving students a chance to explore the worldviews of scientists, philosophers, engineers, and others. Housed in a single multi-purpose complex, if implemented, the College would immerse undergraduates in the diversity, complexity, and pluralism of people and ideas that can only be found in the intellectual milieu of the modern research university.

When they leave us, our students will need not only technical knowledge, but deep connections to our increasingly complex and diverse cultural memory. They will need to make difficult decisions in the midst of terrible uncertainty, decisions that will collectively affect our entire society. We cannot show them what to decide, but we can teach them how others have struggled with dilemmas throughout our history, and in the many different cultures that make up our society. This requires a truly critical examination of our traditions and institutions and the arrangements that often unequally distribute power and resources. The University College would prepare our students to be citizens, helping them achieve the capacity to make moral and political choices with a respect for the fundamental connectedness of things and people.

As learning increasingly becomes a lifetime responsibility, the residential component of an undergraduate degree will become even more crucial. The communities students build while they are here, the decisions they make, their activities outside of class, all build a foundation for future inquiry. As a part of our effort to enhance our educational relationship with our alumni, it has become even more important that we develop a strong intellectual bond in the short time they live with us on campus. The University College would emphasize this sense of a learning community, bringing professors and students into close proximity, perhaps in a single multipurpose building, blurring the boundaries between classroom academics, extracurricular activities, and social life. The University College would also emphasize a broad range of service activities, making the needs of our community an integral part of this rich intellectual environment.

This College would not be a new academic unit; rather, it would be what we are calling a "New University" within the larger campus—fostering institutional innovation. The College would not have an extensive faculty of its own, but would encourage interdisciplinary work by attracting scholars from a wide diversity of disciplines. It would draw from our entire campus. To succeed, every unit of our campus, from areas already deeply involved in undergraduate education to professional schools like the Medical School must begin to take responsibility for our most novice students.

The Lifelong University

> *The notion that you are done with your education when you complete whatever degrees you get in your twenties is outdated . . . Many people, especially women and people of color, need new routes to education, allowing them to advance in their careers throughout their lives.*
>
> *—Carol S. Hollenshead, Director of the UM Center for the Education of Women*

The concept of a virtual university may also allow us to develop a different vision of what kinds of education we provide. In fact, many feel that traditional self-contained, time-delimited degree programs may have increasingly limited use in a world where information and skills become quickly obsolete. Education has already become a lifetime process, and with the advent of a "virtual" University comes the possibility of providing the learning people need, when they need it, wherever they happen to be.

A top executive may need to learn about corporate strategy in order to advance in her career. A structural engineer may need to learn the properties of a new construction material to branch out into a wider range of projects. A single mother with two children may need to learn accounting so that she can qualify for a pay increase. None of these people can afford to quit their jobs in order to enhance their knowledge, and none of them need a broad-based general degree. Instead, they need access to specific skills and information. A focus on lifetime education, a reconceptualization of the University as a knowledge-server in a general sense for the wider society, would allow us to serve all of these people.

With this new vision of ourselves and our mission, "alumni" will soon cease to refer to those who have graduated and moved on. Instead, joining the University of Michigan as an undergraduate may begin a potentially life-long educational relationship. Ultimately, this will be very empowering, freeing people to follow the unique life-paths that make the most sense for them, unrestricted by limitations in knowledge or skills.

Ironically, though Michigan was a leader in continuing education for much of our early history, we cannot claim today to be deeply involved in lifetime education, and we have a long way to go in providing support to non-traditional students. We have retained some jewels of continuing education, however, platforms on which to build, including the engineering summer school, our general summer school, the Inter-university Consortium for Political and Social Research, and our top-rated Executive Education program through the School of Business Administration. The Center for the Education of Women has worked for decades to enhance the educational opportunities, especially for non-traditional women students. Our newly created position of Dean of Academic Outreach was created expressly to strengthen our resources in this area.

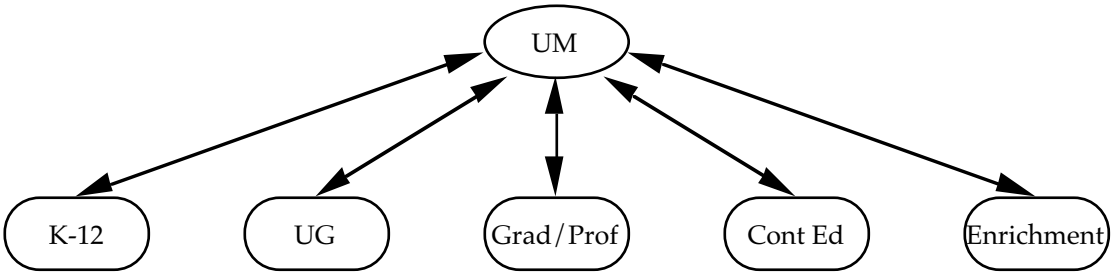
To truly respond to the needs of these different populations, we will need to re-think the way we are organized as an institution, working to eliminate institutional barriers that prevent people from continuing their education. There are many possible options; to succeed we must move beyond the idea that any particular model of education is sacrosanct and concentrate on the content and results of that education. Success as a "lifetime" university will mean the creation of a much more flexible and adaptive educational organization. "Just-in-time" courses will need to respond to the diverse and shifting needs of emerging careers, developing social problems, and opening areas of knowledge. Some classes may need to be available in modules, so that students can choose the parts they need to know. Because the job of a university is to lead and not follow, Michigan will need to stay one step into the future,

teaching the skills and anticipating the issues of tomorrow, not simply responding to the needs of today.

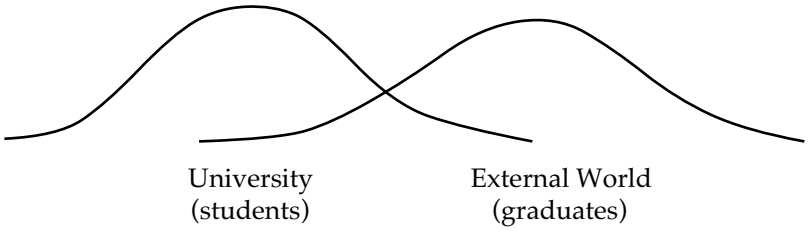
In a world in which education becomes a lifetime commitment—in which we must prepare our students for multiple-career lives—perhaps we need to rethink the university in terms of an education continuum, in which we interact through a lifetime with our students. In fact, the original concept of the University of Michigan was directed at just this objective:

> *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.*[10]

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, responding to their changing goals and needs. Once a university student/graduate, always a university student/graduate. 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.



Universities must choose carefully, concentrating on the fields we can serve most effectively. We cannot be all things to all people, and there are other institutions that can provide training in some areas more effectively. As always, as we look to the future, we must keep a close eye on our mission and on our broader goals. We must select activities and areas that have the potential to enhance the entire university: our research and the experience of our undergraduates and graduate students, as well as the options available to our "lifetime" students.

Some questions:

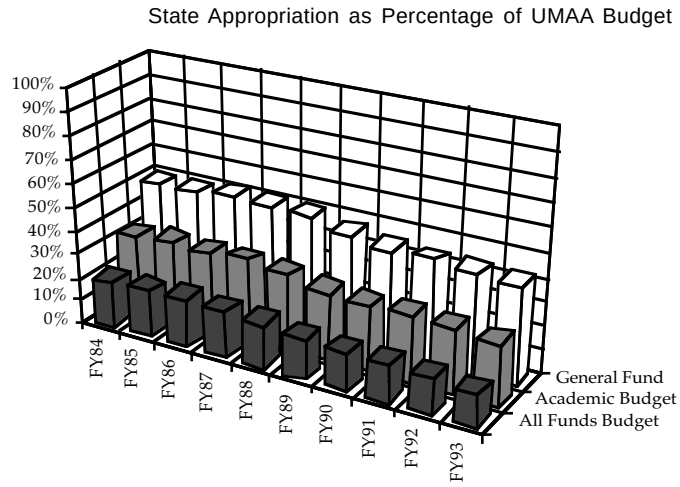
1. How would this lifetime education be delivered?

2. How would the University be 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?

The Privately Supported, Publicly Committed University

Over the past two decades, most public universities have seen a significant erosion in the share of their support coming through state appropriations. For example, 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:



Further, it seems clear that, if the present rate of deterioration continues, by the end of the 1990s, state support will amount to less than 7 percent of our total resources.

In a sense, many of our public universities long ago ceased to be state-supported institutions. Indeed, today, many are, by most measures, not even strongly state-assisted universities, 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 than does their state. Yet, despite the low level of state support, they remain very much public institutions, governed by the state through its board and committed to serving the people of the state.

Hence, we might consider a new paradigm of a public university, a *privately supported, public* university, supported by a broad array of constituencies at the national—indeed, international—level, albeit with a strong mission focused on state needs. More precisely, in many ways these universities have already become privately supported public universities, in the sense that they must earn the majority of their support in the competitive marketplace (i.e., via tuition, research grants, and gifts) much as a private university, yet they still retain a public commitment to serve the people of their state.

While the University of Michigan was among the first of the public universities 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 state university 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.

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 our universities 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 simply to observe that the present level of state appropriations is only sufficient (barely) to cover the tuition "discount" provided for state 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 our universities are vital to the state in a far more multi-dimensional way than simply education alone—through health care, economic development, pride (intercollegiate athletics), and professionals (doctors, lawyers, engineers, and teachers). Further, we might shift the public perception of our universities from that of a consumer of state resources to that as a generator of state resources. We might argue that, for a small contribution to meet the full costs, the people of our states get access to the vast resources, and benefit from the profound impact of some 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, and donors)?

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

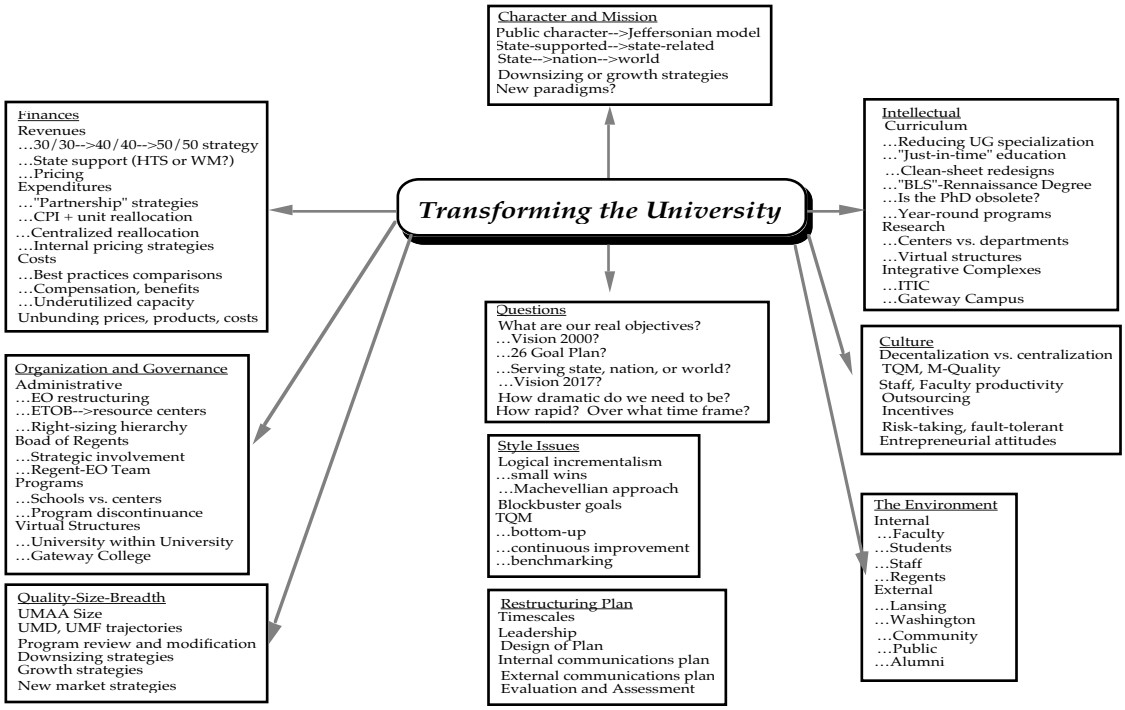
Other Possible Paradigms

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 3,600 institutions of higher education in America, with many thousands 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 seen 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.

Transforming the University

Each of these visions of the university of the 21st Century will require great change, just as it has so many times in the past. 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, of course, herein lies one of the great challenges to universities, since our various missions, 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, as suggested by the following diagram:



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 impact on our society.

To succeed, we must develop a more flexible culture, one more accepting of occa-

sional failure as the unavoidable corollary to any ambitious effort. We must learn to adapt quickly while retaining the values and goals that give us a sense of mission and community. Many view the current rigid and hierarchical structure of the university as obsolete. To advance, we must discover ways to draw upon the unique and vibrant creativity of every member of our community.

As financial resources become increasingly constrained, and as competition for students globally increases, especially with the advent of "virtual" technology, we cannot afford to hide our heads in the sand. Increasingly, many fear an age of attrition in higher education similar to that of the post-Civil War period, those institutions that cannot reestablish their sense of purpose for a new society will begin to disappear. As we ask our students to critique the received authority of their society, to examine and decide rather than accept the status quo, so must we also re-open debates about the structure and goals of our common institution.

Many in the university have not yet accepted the challenges of our new era. This is especially true for our faculty. As Richard Lanham has pointed out, "The structure of the university . . . insulates the university from the competition building up around it. . . . There is no mechanism to introduce the faculty to the future because the whole system is designed to [prevent this]."[11] This is a tremendous problem, because if we are to respond successfully, we must respond together, as a community.

We must ask ourselves: What will our students need in the 21st Century? What will citizens of our new world require? How can we forge a new mission for a changing society as we hold firmly to the deep and common values that have guided us over two centuries of evolution?

It is often scary and difficult to let go of old and comfortable roles, to open ourselves to new possibilities and ways of being. Yet change brings with it the possibility of deeper connections to our students and the potential for serving a much broader range of our society. Growth, both for an institution and for the individuals that comprise it, can come only with a step into the unknown. We move forward together, not recklessly, but thoughtfully—with care and a deep sense of commitment

to the lives and dreams of our students.

[1] Ashby, Eric,
[2] Gerhard Casper, "Come the Millennium, Where the University?", Annual Meeting of the American Educational Research Association, San Francisco, April 18, 1995.
[3] Henry Rosovsky, *The University: An Owner's Manual* (New York: W. W. Norton & Co., 1991).
[4] Frederick Rudolph, *The American College and University* (Athens: The University of Georgia Press, 1962).
[5] Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 3rd Edition (Chicago: University of Chicago Press, 1996).
[6] Philip G. Altbach, "An International Academic Crisis," *Daedalus* 126, 4 (1997).
[7] Jacques Attali, *Millennium: Winners and Losers in the Coming World Order* (New York: Times Books, 1992).
[8] Lanham, Richard, *The Electronic Word*. (University of Chicago Press, Chicago, 1993).
[9] Henry Rosovsky, *The University: An Owner's Manual* (New York: W. W. Norton & Co., 1991).
[10] Peckham, Howard, *The Making of the University of Michigan* (University of Michigan Press, Ann Arbor, 1968).
[11] Lanham, Richard, *The Electronic Word*. (University of Chicago Press, Chicago, 1993).

Chapter 23 *The Challenge of Transformation*

The recurrent theme of this book involves the need for change in higher education if our college and universities are to serve a rapidly changing world. We have recognized that the university as a social institution has always been quite remarkable in its capacity to change and adapt to serve society. Higher education has changed significantly over time and continues to do so today. Yet the forces of change upon the contemporary university, driven by social change, economic imperatives, and technology, may be far beyond the adaptive capacity of our current educational paradigms. We may have reached the point of crisis in higher education when it is necessary to reconstruct the university from its most fundamental elements, perhaps even to re-invent the university.

Each of our paradigms, our scenarios for possible futures of the university, was chosen to provoke, to jar our thinking. Yet each also contains elements that represent not only future possibilities but also links to needs and concerns of today. They provide a useful framework for discussion, for futuring, and for brainstorming.

The university paradigms outlined in the previous chapter could be regarded as abstract planning scenarios, a useful framework for discussion, for futuring, and for brainstorming. They were something far more significant for the University of Michigan. They framed not only our thinking but also our actions and our experiments.

We had recognized early that the *Vision 2000* effort, while bold and challenging, was essentially only a positioning strategy, designed to achieve excellence and leadership within the current paradigm of the university in 20th Century America. To be sure, this effort accomplished many of the tasks necessary to prepare the University for the century ahead, such as financial restructuring, reorganization of our external relations activities, and the rebuilding of our physical environment for teaching and research. But the real challenge lay ahead: to transform the university so that it could better serve a rapidly changing society in a dramatically different world.

The Challenges of Institutional Transformation

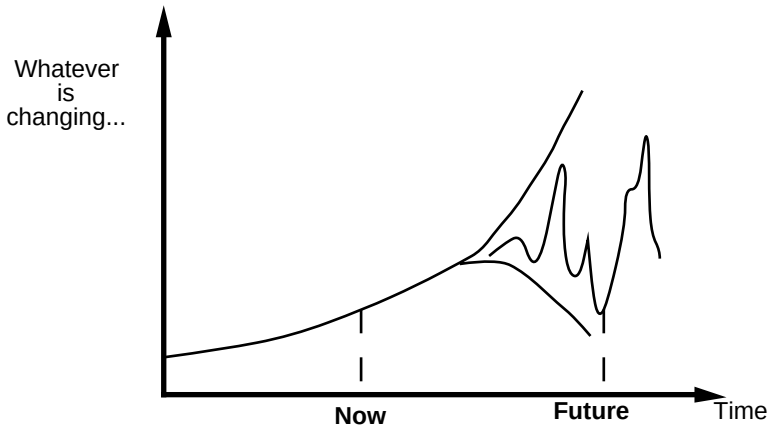
So how does an institution as large, complex, and tradition-bound as the University of Michigan go about transforming itself? Historically we have accomplished change using a variety of mechanisms:

- By "buying" change with additional resources
- By laboriously building the consensus necessary for grassroots support of change (e.g., the logical incrementalism approach[1] used in the Michigan Mandate)
- By changing key people
- By finesse, by stealth of night, (a la Machiavelli)
- By "just doing it" (a la Nike), that is, top down decisions followed by rapid execution (following the old adage that "it is better to ask forgiveness than to seek permission")

For the type of institutional transformation necessary to move toward the major paradigm shifts discussed in the previous chapter, we needed a strategic approach that was capable of staying the course until the desired changes took hold.

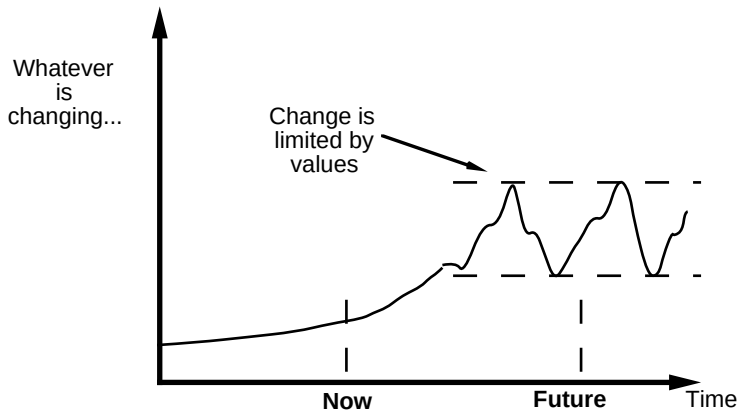
As the graph below demonstrates, in a sense, one must risk driving an organization into a state of instability in order to achieve dramatic change. Ideally, change is inspired by conveying a sense of opportunity or excitement, but more often, it is driven by threat or crisis. As one of my colleagues put it, folks must not only see the wolf at the door, but know that it is big enough to eat them!

A Graphical Depiction of the Change Process

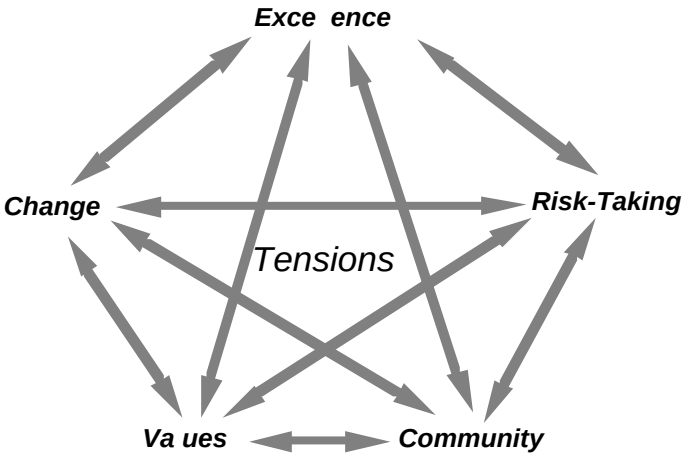


In the best scenario, the values and traditions of the institution will provide important limits on the process of change, so that the transformation process does not lead to a destructive outcome.

Limits to the Process of Change



Furthermore, beyond managing change and even instability, one must recognize and balance a number of tensions among the characteristics and goals of institutional transformation:



Some Lessons Learned

At Michigan, we had grappled with such transformation efforts for a number of years. During the early 1980s, it was necessary to restructure the financing of the University. Then, as we approached the 1990s, a series of transformations were launched in key units, such as the university medical center. Finally, in the mid-1990s, a more dramatic transformation process was launched to position the institution to face the challenges and opportunities of a rapidly changing world. Through these efforts, and from the experience of other organizations in both the private and public sector, we were able to identify several features of transformation processes at the outset:

1. First, we had to properly define the real challenges of the transformation process. The challenge, as is so often the case, is neither financial nor organizational. Rather it is the degree of cultural change required. We must transform a set of rigid habits of thought and arrangements that are currently incapable of responding to change either rapidly or radically enough.[2]

2. We wanted to achieve true faculty participation in the design and implementation of the transformation process, in part since the transformation of the faculty culture is the biggest challenge of all. But here the faculty participation must involve its true intellectual leadership in addition to the political leadership more common to formal faculty governance.

3. We had learned from others that external groups were not only very helpful but probably necessary to lend credibility to the process and to assist in putting controversial issues on the table (e.g., tenure reform).

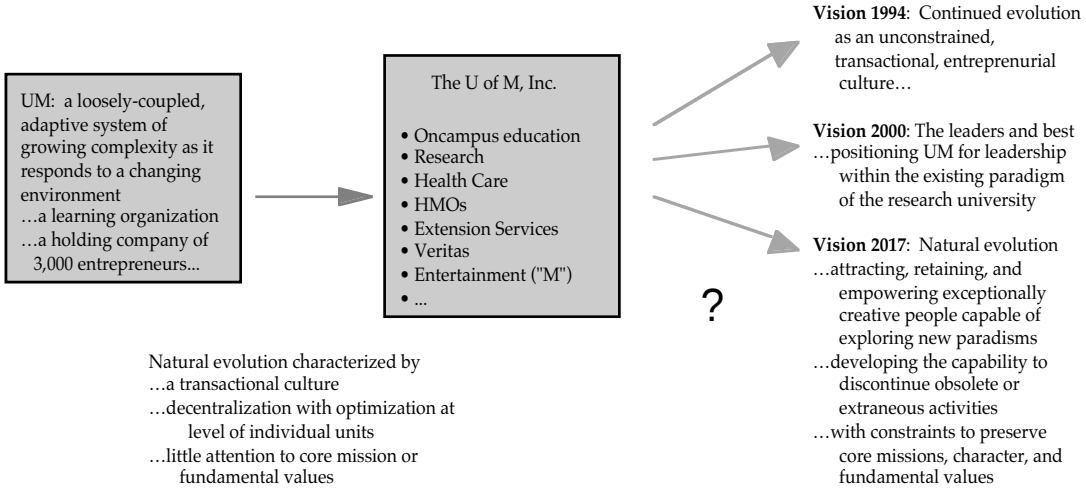
4. Unfortunately, universities—like most organizations in the private sector— rarely have been able to achieve major change through the motivation of opportunity and excitement alone. Rather it takes a *crisis* to get people to take the transformation effort seriously, and sometimes even this is not sufficient.

5. The president must play a critical role both as a leader and as an educator in designing, implementing, and selling the transformation process, particularly with the faculty.

There is a certain irony and frustration here. Throughout the years of developing and executing the *Vision 2000* strategy, we had all worked to make the University of Michigan the very finest institution we could. But we did so within the framework, the understanding, the experience of the 20th Century that we had known through-

out our own education and our own careers. And despite all we had achieved, all we could be proud of, there was an increasing sense that this was simply not sufficient. Our task was now to do it all over again.

Sometimes I imagined that a decade ago the CEO of a powerful world corporation such as IBM or GM might have addressed the company's board of directors, congratulating them on building one of the strongest corporations in the world. But they had built a corporation for a century rapidly coming to an end, a world undergoing rapid change, as the trauma of the past decade clearly revealed. In fact, I would wake up at night thinking "IBM . . . GM . . . UofM? . . ." Are we next? Have we also worked hard and effectively, but only to improve a paradigm of the past?



To respond to future challenges and opportunities, the modern university must engage in a more strategic process of change. While the natural evolution of a *learning organization*[3] may still be the best model of change, it must be augmented by constraints to preserve our fundamental values and mission. We must find ways to allow our most creative people to drive the future of our institutions.

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 achieve even higher quality and greater impact on our society.

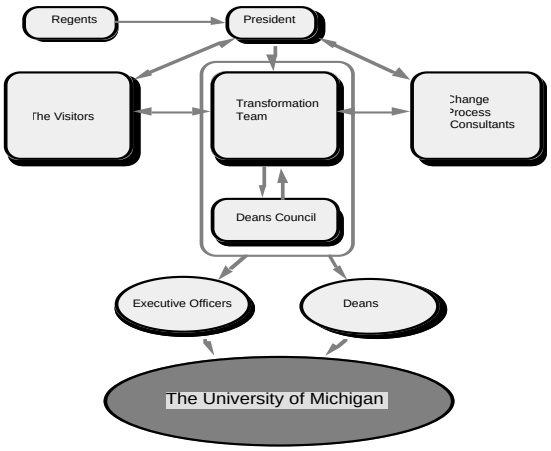
Goals of the Transformation Effort

It is important to understand the real goals of the transformation process. First, we believed it important to move beyond the positioning strategy of *Vision 2000* and the *26 Goal Plan*. To be sure, the vision of positioning the University of Michigan as a leader of higher education for the next century and the various goals proposed to achieve this vision are important and challenging. But, in reality, they involve achieving leadership and excellence within the present paradigm of the university in America, of polishing the status quo, of becoming the very best "university of the 20th Century" that we can become.

The transformation process was designed to provide the University with the capacity to explore and possibly transform itself into new paradigms more capable of serving a rapidly changing society and a profoundly changed world. Of course we did not expect that the transformation effort would actually allow us to achieve the *Vision 2017* during our tenure of University leadership. Rather, our real objective in this transformation effort was to build the capacity, the energy, the excitement, and the commitment necessary for the University to move toward such bold visions. Our objective was to enable the University to better serve our state, our nation, and the world.

The Leadership Team

It was critical that the senior leadership of the University commit to the transformation process and fully support it. The leadership for the transformation effort had to be provided by a team of executive officers, deans, and directors, augmented by an advisory group of faculty experts on organizational change and a board of visitors. We chose the following leadership structure:

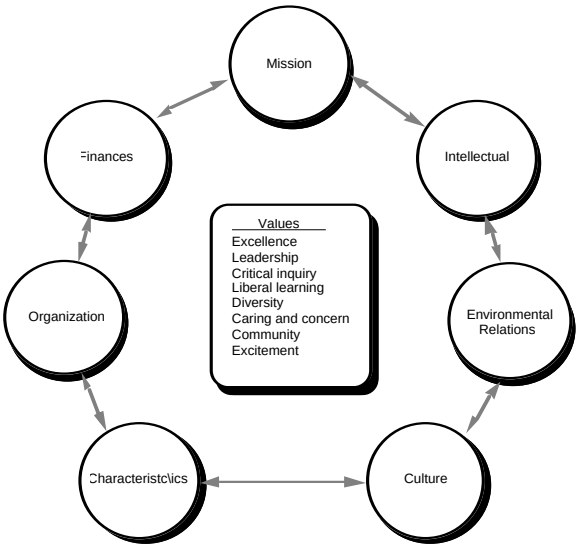


The Areas of Transformation

The transformation process involved several specific areas:

- The Mission of the University
- Financial Restructuring
- Organization and Governance
- General Characteristics of the University
- Intellectual Transformation
- Relations with External Constituencies
- Cultural Change

These transformation areas were closely coupled, and clearly efforts aimed at transformation in one area needed to be carefully coordinated with other areas:



We will return later in this chapter to consider in more detail the issues associated with each of these transformation areas.

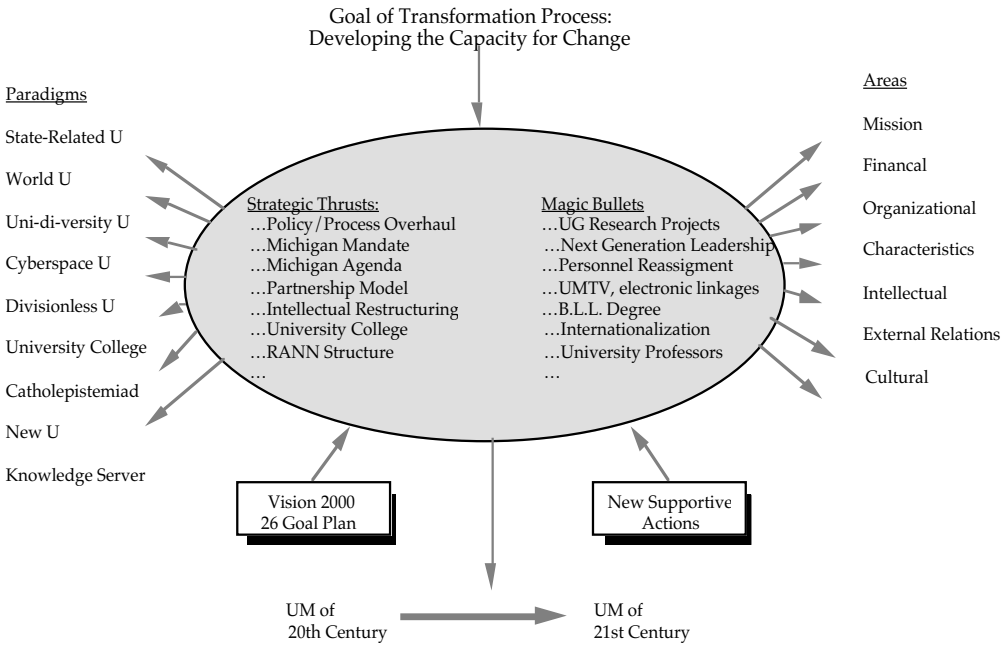
Major Strategic Initiatives

The key approach to achieving transformations across these areas that move the University toward *Vision 2017* was to organize the effort through a series of strategic thrusts or initiatives. Each such strategic thrust was designed as a self-contained effort, with a clearly-defined rationale and specific objectives, though each moved the University toward the more general (and abstract) goals of *Vision 2017*. Further, we took care to monitor and coordinate carefully the strategic thrusts, since they would interact quite strongly with one another.

Examples of possible strategic thrusts included:

- The Michigan Mandate
- The Michigan Agenda for Women
- Financial Restructuring
- Asset Management
- M-Quality
- Campus Evolution
- Intellectual Restructuring
- Research Environment
- The Superstar Project
- The University College
- Student Living/Learning Environment
- Leadership Development
- Human Resource Development
- Community Building
- The Virtual University
- The World University
- University Enterprise Zones
- Community Relations
- State Relations
- Federal Relations
- Alumni Relations
- Strategic Marketing/Communications
- Networking the University (ITD, UMTV, . . .)

The following diagram provides a sense of how these strategic thrusts related both to the areas of transformation and the *Vision 2017*:



Steps in the Transformation Process

Experience demonstrates that the process of transforming an organization is not only possible but also understandable and even predictable, to a degree. The revolutionary process starts with an analysis of the external environment and the recognition that radical change is the organization's best response to the challenges it faces. The early stages are sometimes turbulent, marked by conflict, denial, and resistance. But gradually, leaders and members of the organization begin to develop a shared vision of what their institution should become and turn their attention to the transformation process. In the final stages, grass-roots incentives and disincentives are put into place to create the market forces to drive institutional change, and methods are developed to measure the success of the transformation process. Ideally, this process never ends.[4]

Of course, much of the preparation for this transformation had already occurred earlier in my presidency, including launching several of the major strategic thrusts. A series of planning groups, both formal and ad hoc, had been meeting to discuss the

future of the University (including the Strategic Planning Teams of the late 1980s; the Futures Group in various guises; ad hoc meetings of faculty across the University; and several joint retreats of EOs, Deans, and faculty leaders). A Presidential Advisory Committee of external advisors had been formed and had been meeting regularly on strategic issues for several years. A series of joint luncheon discussions involving the Deans and executive officers had been held and focused on the change process. And extended strategic discussions with the Board of Regents had been initiated and would continue through the transformation effort.

Hence we were well positioned for a more systematic approach to the transformation process:

Step 1: Building a Shared Vision Among the Executive Officers

All members of the EO-Dean Transformation Team needed to commit to the transformation process and fully support it. We spent many meetings and countless hours, both to develop a shared vision and a cohesive team. We also provided members of the administration with ample opportunity to voice concerns and even bail out before we launched the process.

Step 2: Involving the Regents in the Transformation Effort

The Regents had to play an active role in the design and execution of the transformation process. This was made particularly difficult at Michigan by the constraints of the state's Open Meetings Act, which required that any such discussions be open to the press. We used a variety of mechanisms, including informal discussions with the Regents, both one-on-one and in public sessions; joint retreats with the executive officers on key strategic issues; joint meetings with key University visiting groups such as the President's Advisory Council; and the preparation of position papers to provide the necessary background for key decisions that the Regents would need to make as the transformation effort moved forward.

Step 3: The Use of Advisory Bodies

The use of external advisory bodies was essential, both to provide alternative perspectives and to lend credibility to the effort. We formed two such groups: a large (60-70 member) President's Advisory Council of key alumni and friends, and a smaller Visitor Group (12 members), comprised of leaders from the public and private sector.

Step 4: Implementation of Strategic Communications Efforts

Effective communication throughout the campus community was absolutely

essential for the success of this effort. Since there was extensive experience in the design and implementation of such communications programs in the private sector, we considered hiring private consultants to help design and execute this effort. However, in the end, we utilized internal capabilities.

Step 5: Launching Presidential Commissions

After the Transformation Team identified the key strategic thrusts, we formed a series of presidential commissions to study the issues associated with these initiatives and develop specific recommendations. These commissions were chaired by several of our most distinguished and influential faculty and populated with change agents. The following topics were included in these studies:

- Organization of the University
- Recruiting and Retaining the Extraordinary
- Streamlining Processes, Procedures, and Policies
- The Faculty Contract.

Step 6: Igniting the Sparks of Transformation

There are two general approaches to changing organizations: in "command-and-control" approaches, one attempts to initiate and sustain the process through top-down directives and regulation. However, since power declines rapidly with the distance from the leadership, this approach has limited effectiveness in large organizations.

The alternative approach, more appropriate for large, complex organizations such as universities, is to create self-sustaining market dynamics, e.g., incentives and disincentives that will drive the transformation process.[5] A good example here is provided by the Target of Opportunity Program for minority faculty hiring. Despite the University's commitment to increasing minority representation on the faculty, we were simply not effective using affirmative action programs and edicts from the top, since these were largely ignored by the search committees several levels down the organization hierarchy. When we put the Target of Opportunity program into place that provided the base funding to hire minority faculty through central reallocation, we created market forces at the levels of the search committees, since successful minority searches drew resources from less successful units (both a carrot and a stick). Only then did we begin to see real results.

Hence, for each of our major strategic thrusts, we needed to identify highly targeted actions, "magic bullets," which created the incentives and disincentives and ignited the sparks necessary for grassroots change. This is where the real creativity in the design of the transformation is needed.

Step 7: Streamlining Processes and Procedures

Universities, like most large, complex, and hierarchical organizations, tend to become bureaucratic, conservative, and resistant to change. They become encrusted with policies, procedures, committees, and organizational layers that discourage risk-taking and creativity. We decided to encourage decisive action to streamline processes, procedures, and organizational structures to enable the University to better adapt to a rapidly changing world.

Step 8: The Identification and Activation of Change Agents

We began to identify those individuals who would commit to the transformation process and become active agents on its behalf. In some cases we knew these people would be our most influential faculty and staff. In others, it would be a group of junior faculty. In still other situations, these agents for change would be key administrators. We had to design a process to identify and recruit these individuals.

Step 9: Selecting Leadership for a Time of Change

We took every opportunity to select leaders at every level of the University—executive officers, deans and directors, chairs and managers—who not only understood the profound nature of the transformations that must occur in higher education in the years ahead, but who were effective in leading such transformation efforts.

Step 10: Focusing the Transformation Agenda

The transformation agenda we proposed, like the University itself, was unusually broad and multi-faceted. Part of the challenge would lie in directing the attention of members of the University community and its multiple constituencies toward those aspects of the agenda most appropriate for their talents. For example, we believed that faculty should focus primarily on the issues of educational and intellectual transformation and the evolving nature of the academy itself. The Regents, because of their unusual responsibility for policy and fiscal matters, should play key roles in the financial and organizational restructuring of the University. Faculty and staff with strong entrepreneurial interests and skills should be asked to guide the development of new markets of the knowledge-based services of the University.

Step 12: Green-Field Initiatives

It is hard to persuade existing programs within an organization to change to meet changing circumstances. This is particularly the case in a university, in which top-down hierarchical management has limited impact in the face of the "creative anarchy" of academic culture. One approach is to identify, and then support, "islands of entrepreneurism," those activities within the university which are already adapting to a rapidly changing environment. Another approach is to launch new or "green-field" initiatives that are designed to build in the necessary elements for change. By providing these initiatives with key resources and incentives, faculty, staff, and students can be drawn into the new activities. Those initiatives which prove successful will grow rapidly, and, if designed properly, pull resources away from existing activities resistant to change. Green-field approaches create a Darwinian process in which the successful new initiatives devour older, obsolete efforts, while unsuccessful initiatives are unable to compete with ongoing activities capable of sustaining their relevance during a period of rapid change.

Transformation Issues

Mission

Of course, the most fundamental issues that surface in the process of institutional transformation are rooted in the changing character and mission of the University. We had to begin therefore, by asking what our real objective was. The goals of *Vision 2000: The Leaders and Best*, as articulated in the *26-Goal Plan*, were both appropriate and adequate, and achieving these goals required significant institutional transformation. The more dramatic model of the University set out in *Vision 2017* would require even greater transformation.

To better understand the issues involved in the transformation of our mission, we began by asking just why the University of Michigan had been so successful in the past. What had been our unique role, our mission? What had been the key to our longevity? At Oxford and Cambridge, the key to longevity was their role in perpetuating the British class system—and this explains in part why these institutions have recently fallen on such hard times as this class system has eroded. In the United States, Harvard existed to serve the Yankee population of the Northeast, Yale served New York City (predominantly), and Stanford participated in the extraordinary growth of California. In this context, then, it was clear that the role of the University

of Michigan was to serve the heartland of America, to implement the Jeffersonian model of an educational institution created by the people to serve all the people. Perhaps best captured by President Angell's phrase, "an uncommon education for the common man," the institutional mission to provide education, and later research and service, to far broader elements of our society had always been a key to our character.

In the past, the capacity to play this role was provided through exceptionally strong state support, at a time when the State of Michigan prospered as the industrial engine of America, and when the University of Michigan was the only major institution in the state. Yet, today, as state support had dropped to a small fraction of our resource base, one must question whether this traditional role of serving primarily the state must also change. In many ways, we evolved long ago from a state to a national university, and perhaps, today, our true constituency is the world itself.

We faced a certain dilemma here. Many, including some state politicians, the media, and numerous private citizens, still saw Michigan as predominantly a state university, with a mission to provide low-cost and, if possible and affordable, quality education and service to the state itself. Yet, there were now many institutions capable of providing low-cost education of moderate quality. Few, however, could provide the high-quality, high-reputation education, research, and service characterizing the University of Michigan. And, judging from the marketplace and, particularly, those constituents who provided the vast majority of the University's resources, this latter role, which emphasized quality rather than cost, was the mission most considered to be appropriate for our institution.

Of course, the more radical paradigm changes proposed in *Vision 2017* such as the lifetime learning or the cyberspace university would extend and reshape the University's mission quite considerably. We needed to develop the capacity to consider and debate these alternative futures.

Finances

The issues involved in the financial restructuring of the university go beyond the traditional revenue and expenditure considerations that typically dominate university concerns. The University resources fall into three categories:

Financial Resources:
- General Funds (State appropriation, tuition, interest income)
- Designated Funds (gifts, endowment income)
- Expendable Restricted Funds (sponsored research)
- Auxiliary Funds (clinical fees, housing, athletics).

Space Resources
- State capital outlay
- Private gifts
- Internally financed facilities projects
- Debt-financed facilities projects
- Utilities and maintenance
- Space allocation.

Human Resources
- Instructional faculty
- Research faculty
- Support staff
- Administrative staff
- Auxiliary unit staff
- Students
- Other clients (patients, spectators, etc).

Over the decade we considered a variety of schemes to allocate our resources. In general, our primary resource allocation scheme can be best described as "incremental budgeting," in which we accepted the continuation of the status quo, and instead looked at small perturbations from this—primarily through small increases allocated on a selective basis. Further, like most universities, we relied heavily on fund accounting, both for financial accountability and for budgeting.

Many factors make it difficult for universities to move toward the zero-base budgeting philosophies that characterize many restructured companies—tenure, for example. While the University had experimented with more substantial selective program reduction in the early 1980s, this was not a major tool in recent resource-allocation activities. Instead, we had used other resource allocation schemes like "decremental budgeting," a common practice in the 1970s and 1980s, in which all units were required to reduce base budgets by a small percentage each year. (Units were currently reducing base expenditures by 2 percent per year over a five-year period.) The University had also used "initiative budgeting," in which funds released by across-the-board cuts were then pooled and reallocated back on a selective

basis to fund specific initiatives. Examples include the Priority Fund of the late 1970s and the Strategic Initiative Fund of the late 1980s. Yet, despite these efforts, it was also the case that much of the resource reallocation occurring in the University over the past two decades had tended to follow a "squeaky wheel gets the grease" process rather than a carefully designed long-term strategy.

We had to consider even more effective schemes for resource allocation. University administrators had taken important steps in recent years to move to all-funds budgeting, in which all of the resources of units were taken into account in determining their allocation of centrally controlled funds. Some units were encouraged to move toward an "every tub on its own bottom basis," that is, as cost-and-revenue centers. Yet, we wanted to develop better tools to allocate resources toward the priorities of the University.

In 1996, we implemented a budgeting system that many private universities were already using: responsibility center management. In this system, academic, administrative, and auxiliary units of the University retained all unit-generated revenues (e.g., tuition, research support, private gifts, and auxiliary income) with the associated responsibility of covering all unit-driven costs. Funds to support centrally provided services and subvention of key academic units were generated through a small tax on unit expenditures. Units needed to make extensive use of competitive pricing and outsourcing of services to better control costs and streamline internal operations. This new system had three goals:

1. To allow resource allocation decisions to be driven by the values, core mission, and priorities of the University, rather than dictated by external forces

2. To provide a framework for such decisions, consisting of knowledge of the true resource flows throughout the University

3. To allow both academic and administrative units to participate as full partners with the central administration in making these resource allocation decisions

Beyond resource allocation, we found we also needed to address near-term budget needs. Most universities have very limited options for additional revenue. They can raise "prices," that is, increase tuition, albeit with possible market or political implications. And they can sometimes generate additional revenue through auxiliary activities such as health care or licensing. Of course, over the longer term, we saw other opportunities, such as increasing private giving, endowment growth, new "profit-generating" academic programs, intellectual property licensing, and equity

positions in spin-off companies. But these required a dedicated effort for many years before generating substantial and reliable resource streams.

On the other side of the ledger, we wanted to deal with student financial aid programs, one of the largest costs faced by most universities. Clearly, as tuition increases, the financial aid required to preserve broad access also increases commensurably. We considered "repackaging" our prices by eliminating financial aid and charging an income-dependent tuition instead. Another possibility would be "unbundling" our prices, for example, by charging tuition for basic academic instruction, separate fees for an array of student services, extra-curricular activities, transportation, etc. We debated whether we should charge a different tuition level to those international students from prosperous nations that better reflected true instructional costs. Indeed, we might even attempt to generate a profit from such students, thereby contributing to the nation's balance of payments problem.

Beyond examining alternative schemes for allocating centrally controlled resources that were more in line with our strategic objectives, we needed to consider other resource allocation and control mechanisms. We could, we thought, move more aggressively to "wean" those units capable of generating sufficient alternative resources to state appropriation in order to focus these limited resources on undergraduate education and core support services, such as our central libraries.

In addition, we needed to provide units with longer-range planning capability, even if it meant that our estimation of the central resources we could commit to these units were necessarily more conservative. For example, we considered requiring rolling five-year financial plans for each unit.

As we moved toward providing units with more control of resources through devices such as responsibility center management, we considered some "recentralization" of other controls. For example, we might need to institute faculty position control ("billet" control) similar to many private institutions.

We also needed to develop alternative funding models and policies for degree-granting academic programs (in which faculty tenure resides), and interdisciplinary centers and institutes. Contrary to the usual assumption that academic programs would be sustained unless there were sufficient cause for discontinuance, we considered placing sunset provisions on most centers and institutes.

It was critical that we also reassessed the level of funding we needed for investing in new opportunities. We hoped to recapture some capacity to generate such venture

funds. While total quality management programs could be an important first step toward cost containment, we saw other difficult issues we needed to resolve as well:

- Moving to cafeteria benefit plans would be essential. So, too, would coming to grips with the massive costs of post-retirement health care benefits.

- We needed to address the issue of staff banking sick days and vacation days and then taking these as cash payments upon retirement or resignation.

- We needed to come to grips with some serious problems with underutilized capacity at the University. While our primary target was the spring-summer term, we also needed to rethink the extraordinary number of low productivity periods in university operations, such as Christmas break and spring break (and deer hunting season for many staff). Here, we needed to do better benchmarking to see how other peer institutions dealt with these periods.

- We needed to shift more internal university operations to the status of internal suppliers, which would require them to compete with the external marketplace for the provision of products and services.

- We needed to understand better how we allocated and used resources within the university. We needed to do better benchmarking by comparing our costs with those of institutions of comparable scale and complexity in industry, government, and R&D laboratories. We also needed to take advantage of efforts underway to better cross compare costs of peer universities. We needed to understand better what the ebb and flow of central support had been to various units of the university over the 1980s (or more). Who had been the big winners and losers, in terms of both General Fund and all-funds support, and why? Was there any evidence that faculty growth had had a positive impact on the quality of undergraduate education? On closed courses? On course size distribution?

Characteristics

We have noted that achieving the goal of leadership would require a careful optimization of the interrelated features of quality, size, and comprehensiveness. It would also require excellence in selected areas and considerable innovation. While the University's unusual combination of these characteristics had been key to its success in the past, just as it would be in the future, so too would these constrain and, to some degree, determine our future options. For example, our size would demand certain organizational structures that would rule out many of the transformation

options taken by smaller private institutions. Yet the richness and diversity of our scale would also better position the University to take risks that might be unacceptable for smaller institutions.

We identified a number of key characteristics of the University that would influence our capacity to change. The size of the Ann Arbor campus was an important issue. Although the enrollment of the UM-AA had remained relatively stable, in the range from 34,000 to 37,000 for the past three decades, various units of the University had experienced significant enrollment changes. For example, the School of Education dropped from over 3,000 students to less than 500 students during this period. Engineering increased from 3,000 to 6,000 students. While there were many reasons major enrollment changes were difficult—tuition revenue and political forces, for example—we had to think about the optimum size of the University and its various units from a variety of perspectives, including available resources and academic vitality.

We also tried to cast a fresh eye toward the role and evolution of our two regional campuses, UM-Dearborn and UM-Flint. The relationships between these campuses and the UM-AA campus were relatively minimal. The campuses had quite different missions, resources, and quality standards for students and faculty. Yet the regional campuses did have an impact on the UM-AA campus, since they carried the name of the University and they drew on the time and attention of its leadership (regents, executive officers, etc.).

In the early 1980s much energy was spent on resources, on becoming "smaller but better." But in an age of knowledge in which educated people and ideas had become the wealth of nations, higher education is one of our strongest growth industries. The University had to explore a broader range of options, including possible growth in selected areas. We also needed to develop the capacity to consider more strategically differential growth among units, including the creation and disappearance of academic programs.

Our effort also included a consideration of new market strategies. Perhaps, we wondered, we needed to invent new kinds of degrees. For example, we debated whether we needed to distinguish among on-campus residential instruction, commuter instruction, and distance learning, since these were quite different educational experiences (i.e., "products") and probably should have quite different pricing. Indeed, many of our academic units were already heavily involved in non-degree education, such as the Executive Education program in the School of Business Administration or Continuing Engineering Education in the College of Engineering.

Organization and Governance

The current organization of the University into departments, schools and colleges, and various administrative units was largely historical rather than strategic in nature. This organizational structure had been nurtured over the years by our incremental style of resource allocation, in which units and activities simply continued unless a very good case could be made for doing something else. Could these existing structures be capable of such transformations? Most evidence suggested that while these units were capable of modest internal change, they generally felt threatened by broader institutional change and would strongly resist it.

We therefore needed to consider alternative structures which could not only accept and adapt to change, but to some degree, could actually stimulate it. Indeed, many companies reorganize quite frequently simply to stimulate change and to inspire fresh perspectives. We also sought to develop organizations capable of releasing the creative energies of people.

We were especially concerned about the strong departmental structure which organized many schools and colleges along disciplinary lines. While such department structures served important roles in meeting degree requirements and maintaining broadly accepted standards, they also posed a major impediment to change. They maintained a disciplinary focus that was increasingly out of step with the rapid pace of intellectual change and that proved particularly frustrating to faculty, students, and sponsors. They also perpetuated styles of selecting, evaluating, and rewarding people that hindered the development of a University community capable of serving a rapidly changing world. Further, they made strategic resource allocation very difficult, as evidenced by the cumbersome, frustrating nature of efforts to reduce or eliminate programs.

In our transformation discussions we addressed how we were going to institute such changes in our programs, what style of management we were going to follow. Most large organizations continue to pattern themselves after a command-communication-control hierarchy, largely inherited from military organizations of past centuries, in which layer upon layer of middle-management is used to channel and control information flow from the top to the bottom—or vice-versa—in the organization. Yet such hierarchical organizations are largely obsolete in an information-rich environment, where modern information technology enables direct, robust communication among all points in the organization. Although efforts were already underway to reduce unnecessary management layers within the University, we needed to think about accelerating this effort, in both administrative and academic units.

The structures of our present academic units were sustained by external constituents such as accrediting bodies. For example, the proliferating department structures in Medicine and Engineering were driven by professional licensing requirements. So, too, certain schools such as Library Science, Public Health, Education, and Social Work, existed as separate entities largely because of accreditation pressures. We needed to better understand just how restrictive these accreditation requirements were, and if found to be too constraining, work with peer institutions to modify them. For example, we had put together a group of about 30 major universities to force the engineering profession to reform accreditation policies and practices and allow far more institutional flexibility.

We began by rethinking the organization of the central administration of the University at the Executive Officer level. We took some early steps in this direction by creating "executive vice president" titles for the Provost and VPCFO to indicate system-wide responsibility, and by creating a new Vice President for University Affairs. However, we needed to look together at the portfolio of responsibilities for the executive officers and decide whether some rearrangement made sense.

Our present personnel policies were antiquated and made it difficult to reorganize rapidly and reduce unnecessary bureaucracy. Beyond restructuring our policies, we talked about the steps we needed to take to change the culture. To this end, we strongly encouraged that professional staff be rotated to new positions at regular intervals—particularly at senior levels—as a part of their career development. This action would not only loosen up the organization a bit, but it would also provide a mechanism to deal with the casualties of the Peter Principle (e.g., rising through the ranks until one gets trapped in a position where one can no longer succeed and advance).

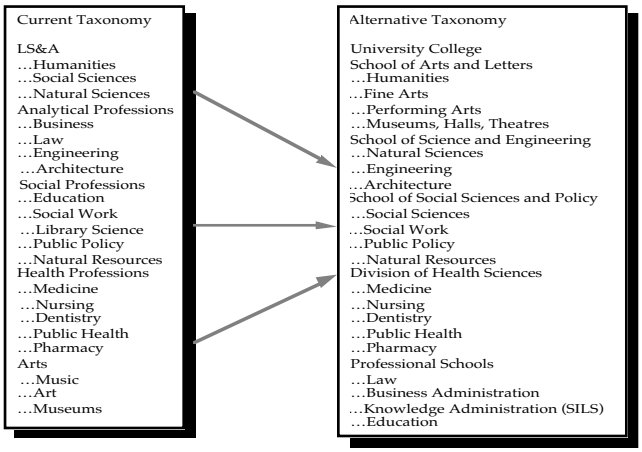
We were interested in designing novel organizational structures. Michigan had long been a leader in establishing interdisciplinary centers and institutes that reached across disciplinary boundaries. However, we needed to go further than this, building alternative "virtual" structures that drew together students, faculty, and staff. In some ways the activities proposed for both the Gateway Campus and Media Union (see Chapter 25) were products of this kind of thinking. So too, an effort might be made to establish "affinity clusters" that drew together basic disciplines and key professional schools, for instance, a cluster of biological and clinical sciences or of the arts.

Since the rapid evolution of information technology had undermined the traditional organization hierarchy, we thought we could make more strategic use of this technol-

ogy to reorganize the University into more contemporary forms. To some degree, electronic mail and computer conferencing were already doing this in an unplanned fashion. The introduction of multimedia communication through efforts such as UMTV would cause even more dramatic change. But we needed to be more strategic in how we redesigned our activities and our organizations to take advantage of this powerful and rapidly evolving technology.

Suppose we became convinced that major reorganization of the University was necessary. How would we go about it? One approach would be a simple top-down edict. For example, some institutions have simply announced a major restructuring, in which the winners and losers are identified up front.

Suppose we were to try a similar approach at Michigan. To be more specific, suppose we wanted to achieve a dramatic reorganization of the academic units of the University along the following lines with corresponding reorganization of administrative units:



Yet this approach raises a number of questions. First, it is always difficult for the university leadership to have sufficient understanding of intellectual issues to determine the best organization. Further, such top-down reorganization, while perhaps being an efficient way to respond to the present, would just create new empires which would eventually dominate the institution and constrain change, just as the present units do.

Instead of a top-down reorganization, it seemed more effective for the long term to take actions that facilitated grass-roots change and reorganization driven by our best faculty. That is, we needed to break the stranglehold of existing organizational structures so that the institution could evolve more rapidly along changing intellectual lines. Some actions along these lines included:

- More clearly identifying faculty appointments as associated with the university-at-large, rather than with a particular academic unit.

- Creating "University Professors" with university-wide appointments, perhaps housed in a school, but with rewards and resources provided by the university-at-large.

- Allocating administrative costs to units on a per full-time-equivalent basis so that there were strong incentives to organize into administrative units of efficient size.

- Creating more cross-cutting, matrix activities and structures.

- Intentionally weakening the authority of departments and schools, perhaps by imbedding them in coordinated "divisional" structures, as those planned for the arts and health sciences.

Intellectual

Many of the most important—and also most difficult—transformations would concern intellectual areas such as teaching and scholarship. These issues ranged from the structure of undergraduate and graduate programs to the organization of research, and are even as broad as the merit of degree programs generally.

It had become more and more apparent that undergraduate education would change dramatically in the years ahead. While many universities had launched major efforts to improve the quality of the undergraduate experience, most of these were within the traditional paradigm of four-year degree programs in specialized majors designed for high-school graduates and approached through solitary (and, all too frequently, passive) pedagogical methods. Yet society was demanding far more radical changes.

For example, as our graduates begin to enter a world where they will be required to change careers many times during their lives, a highly specialized undergraduate education may be inappropriate. Instead, more emphasis should be placed on breadth of knowledge and the acquisition of learning skills–that is, on a truly liberal education. Were we ready to face up to the fact that we had far too many majors and

offered far too many courses? Could we create a truly coherent undergraduate learning experience as long as we allowed the disciplines to dominate the academic undergraduate curriculum? How could we address the fact that most of our graduates are "quantitatively illiterate," with a totally inadequate preparation in intellectual disciplines that would shape their lives such as science, mathematics, and technology? Of course, the same could be said for their broader knowledge of our history and culture.

We became increasingly interested in developing a rigorous undergraduate degree program that would prepare outstanding students for the full range of further educational opportunities, from professions, including medicine, law, business, engineering, and teaching, to further graduate studies across a broad range of disciplines from English to mathematics. Far from being a renaissance degree, such a "Bachelor of Liberal Learning" would be more akin to the type of education universities once tried to provide decades ago, before the deification of academic disciplines and specialized scholarship and teaching that took over our institutions and our curricula.

As we have noted earlier, the sequential, solitary learning experiences that characterized higher education for most of this century (e.g., classroom lectures and recitation, reading and writing, problems and examinations) are inappropriate for a generation of students who have been raised in a media-rich environment in which learning tends to be interactive and experiential ("plug-and-play). The most effective learning now occurs in group situations in which students learn from one another as well as from the faculty member. Indeed, some institutions were totally restructuring general education, and others were exploring options outside the traditional four-year curriculum. Michigan needed to explore its own unique models.

Much of Michigan's instructional activity was at the advanced level, in our graduate and professional programs. In general, most of our professional degree programs had been quite responsive to the changes in our society and had adapted quite well. Examples included the new curricula introduced in Medicine and Business Administration. In contrast, despite great efforts to shorten the time to degree, our Ph.D. programs remained largely mired in the past, all too frequently attempting to clone graduate students in the mold of their faculty mentors. As our doctorate programs had become more specialized, and the time-to-degree had lengthened, these programs had also become less and less attractive to our most outstanding undergraduates. In contrast to professional degrees such as law and business which were viewed as creating further opportunities for graduates, the Ph.D. was viewed as a highly specialized degree which narrowed one's options. Perhaps the degree itself was obsolete, and what was needed is a "liberal learning" advanced degree that would prepare graduates for broader roles than simply specialized academic scholarship.

Even more provocatively, we wondered whether degrees even made sense in a society that requires a lifetime commitment to learning. More and more of our instruction was going into non-degree learning in the form of continuing education activities in our professional schools, short courses, and special seminars. These efforts were aimed at "just-in-time" education, providing learning opportunities for people when they actually need the knowledge rather than asking them to go through the rigors of a formal degree program while they are young.

At the national level, research sponsors were rapidly shifting support from single-investigator research in the basic disciplines to research teams and centers that conducted research in interdisciplinary areas. As one of my colleagues noted, "God does not divide the world's knowledge into disciplines," and now neither do funding agencies. Although we had considerable experience in creating centers and institutes that spanned disciplines, it seemed clear that we needed to go even further. Virtual structures for scholarship became increasingly appealing to us, those that relied heavily on information technology, and that were intended as short-lived organizations designed to address specific issues.

At the same time, information technology was also changing dramatically the way that scholars work together. The clear trend was toward collaborative efforts that reduced the very high cost of major experimental facilities. For example, in the experimental sciences, faculty of the University were engaged in a number of "collaboratories" in which major experimental facilities were operated remotely by scholars around the world. Examples included satellite imaging, weather sensing, seismological studies, and high energy physics.

Interestingly enough, our major effort to rebuild the campus gave us many opportunities to reorganize the intellectual activities of the University. For example, most of the new facilities in the Medical Center such as MSRB III and the Cancer and Geriatrics Center were highly interdisciplinary in character. So too, the Media Union complex on the North Campus was designed as an "integrative center" to bring together the creative disciplines of engineering, music, art, and architecture in a media- and knowledge-rich environment. The Gateway Campus described in Chapter 25 had the potential to serve as an integrative center for the Central Campus by uniting the entire faculty of the University in providing general education to lower-division undergraduate students.

In my State of the University Address, "Redrawing the Boundaries," given to the Senate Assembly in Fall, 1992, I announced a series of actions designed to reconsider the intellectual organization of the University. Some of these have now been taken,

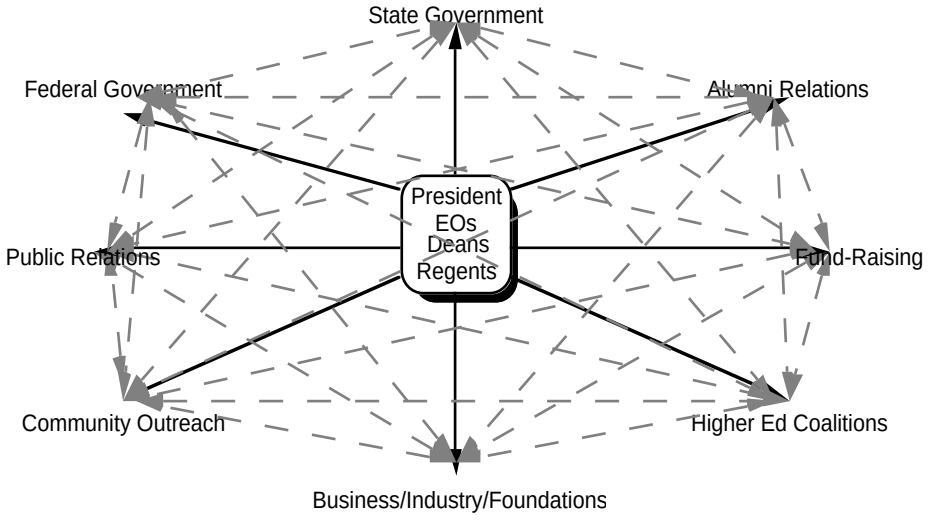
such as the reorganization of the visual and performing arts under Dean of Music Paul Boylan, the construction of the Media Union, the planning for the Gateway Campus, and, in 1994, the announcement of a second phase of open competition for the Presidential Initiative Fund. But many more actions still remain.

Another interesting approach to breaking down disciplinary boundaries would identify a series of University-wide research projects, addressing key societal issues, that would be led by our best faculty. To preserve the interdisciplinary nature of these projects, they could receive seed funding from and report to the Vice President for Research. Examples of such projects include:

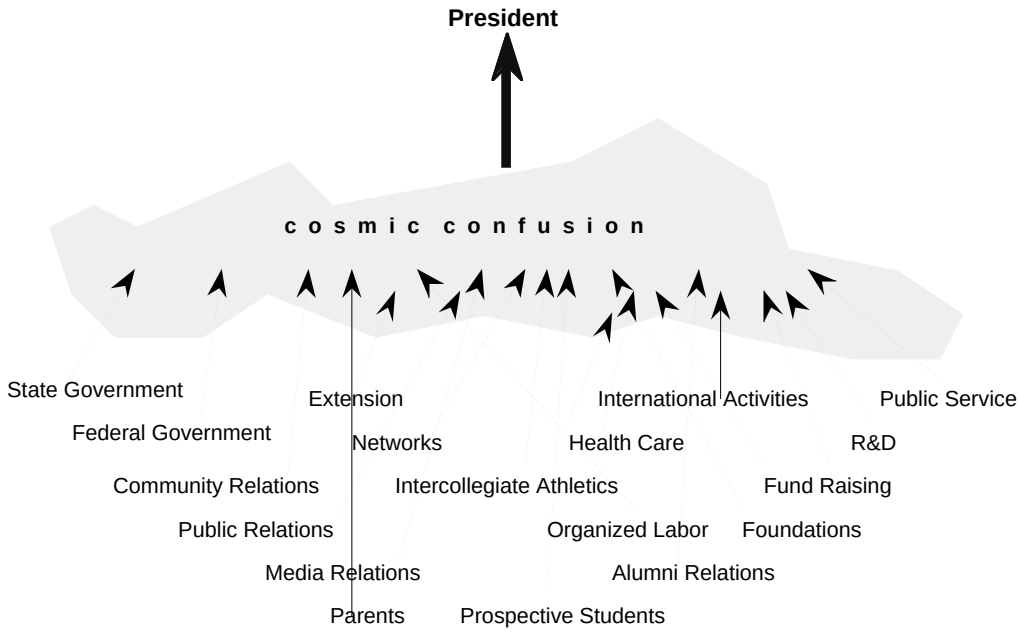
- global change
- urban studies
- K-12 education
- health care reform
- knowledge-driven societies
- the university college

Relations with External Constituencies

The University's relationship with its various constituencies—students and parents, state and federal government, alumni and friends, the media, the public at large—would, of necessity, change as the University transformed itself. As the diagram below suggested, the number and interdependence of these relationships was extensive.



As we have noted on earlier occasions, for decades our relationships with external constituencies were handled in a rather ad hoc fashion:



In recent years we had made significant progress both in strengthening our relationships with external constituencies and managing them far more strategically. But it was clear that further effort would be necessary, particularly as the University changed rapidly.

Cultural Issues

Jack Welch, CEO of General Electric, has some interesting observations about the change process.[6] He notes that the first major challenge is getting people on board. One must start with reality. Get all the facts out. Give people the rationale for change, laying it out in the clearest, most dramatic terms. In retrospect, he believes that his biggest mistake was agonizing too long over difficult decisions. He should have done everything much faster!

As I noted at the outset, the most important—and yet most difficult—transformation required is in the culture of the University. While faculty culture would be our greatest challenge, administrative, staff, and student culture would also need to change dramatically.[7]

Senior leadership of the institution must buy in to the need and nature of the transformation process if it is to be successful. This may require a good deal of time for candid discussion, but in the end, all must join in and be fully committed. Further, throughout the organization we needed aggressive, committed leaders who are willing to take major risks to reshape the university.

Faculty selection, promotion, tenure, and reward structures must change as the responsibilities of the University change. Our current promotion-and-compensation reward system, in which scholarly achievement is measured primarily in terms of the *quantity* of a faculty member's scholarship, is one-dimensional. In particular, this system neither reflects the great diversity in faculty roles, nor the ways that these roles change during a faculty member's career.

Faculty members must accept greater responsibility and accountability for their obligations to society. Society rightly expects a great deal in return for providing faculty members with the perquisites of academic life—tenure, academic freedom, generous compensation, prestige. So, too, faculty members have significant responsibilities to the University, although all too often these are regarded secondary to responsibilities to one's discipline or profession.

Across the university, faculty experience a great diversity—and inequity—in terms of the expectations placed upon them. In some areas, faculty are not only expected to be actively engaged in teaching and research, but they must also be involved in delivering professional services, such as clinical care in medicine or consulting services in engineering. Many faculty are also expected to be entrepreneurs, attracting the resources they need through competitive grants or clinical income. While this diversity in faculty roles and effort has long been an important characteristic of the research university, it is frequently misunderstood by both university insiders and outsiders.

In many ways the traditional mechanisms used for evaluating faculty performance for promotion and tenure decisions tend to discourage risk-taking and venturesome activities. The young faculty member who takes on really challenging problems or who devotes considerable effort to dramatic shifts in pedagogy is very much at risk. We decided that a fault-tolerant culture in which our best people are encouraged to take on big challenges would best encourage this kind of development. "Freeing the faculty" from the traditional arrangements and mindsets which discourage creativity and innovation would enable them to broaden their activities and become members of the University rather than simply members of a department of a school.

Here we might recall the analogy of dons in an Oxbridge college: faculty are first dons in a college with community responsibilities; they are only secondarily professors of a particular discipline.

As Roland Schmitt, former Chief Scientist of General Electric and President of RPI, points out, most universities face a great challenge in getting faculty to commit to institutional goals that are not necessarily congruent with their professional goals. Further, perhaps because of the critical and deliberative nature of academic disciplines, universities have a hard time assigning decision-making responsibilities to the most appropriate level of the organization. The best possible individuals, too, must be charged with these responsibilities. Presently, the academic tradition of extensive consultation, debate, and consensus building before any substantive decision is made or action taken often seriously delays and hampers change. This cumbersome process is simply incapable of keeping pace with the profound changes swirling about higher education. In the private sector, change is usually measured in months, not years; at the university, change is sometimes even measured in decades. Universities need to develop greater capacity to move rapidly. This requires a willingness on the part of university leaders to occasionally make difficult decisions and take strong action without the traditional consensus-building process. If higher education is to keep pace with the extraordinary changes and challenges in our society, someone in academe must eventually be given the authority to make certain that the good ideas that rise up from the faculty and staff are actually put into practice. We need to devise a system that can release the creativity of individual members while strengthening the authority of responsible leaders.

Department chairs and unit managers must be key players in the transformation process. Our current management culture has made achieving major change at this lowest level of academic or administrative leadership very difficult and encourages conservative leadership and resistance to efforts to change from higher levels of management. We need to change this culture by providing strong incentives for department chairs and managers to participate in the institution-wide transformation process, and strong disincentives to stonewalling decisions. Here, the use of change agents among faculty and staff will be critical if we are to break through the bureaucracy and stimulate grassroots pressures for change.

At the staff level, total quality management programs can help redefine and change many aspects of staff culture. Certainly, issues such as “customer service” and “total quality” are addressed through this process. But there are other important aspects that require other actions. For instance, the discrepancies between faculty and staff cultures sometimes cause confusion for staff and administration alike. University

faculty enjoy great freedom—freedom of expression, academic freedom to teach and conduct research—albeit with certain expectations for accountability. In contrast, the staff is expected to perform at high levels of professional competence, though are not necessarily provided with the same degree of choice or the same discretion as their faculty colleagues. This dual character of the university, as an academic and a professional organization, needs to be better articulated, and staff roles need to be better defined.

Unnecessary levels of management in many areas isolate those staff on the front line who provide services from better understanding customer needs and institutional priorities. We needed to continue to work hard to eliminate these levels since they not only contributed to costs, but they also made it more difficult to lead the university and to serve our many clients.

Student culture has changed rapidly, and in ways that might actually facilitate transformation. The increasing median age of students, along with their sensitivity to the importance of education for career objectives has created a greater willingness on their part to challenge the traditional teaching paradigm and to demand higher quality in their education. We seem finally to have left behind the hangover from the 1960's anarchy, the tendency to demand rights but deny responsibility for one's actions. To be sure, there have always been students who challenge authority as part of their maturation, but by asking students to accept both leadership and responsibility, we appear to have turned the corner in rebuilding a student culture appropriate for learning.

However, the intellectual content in extracurricular student life at the undergraduate level, particularly in student residential life remains inadequate. In part, this is due to a long tradition of separating academic programs from student services. But, whatever the reason, it is not conducive to providing a satisfactory learning environment and should be changed.

Finally, we need to continue to work on building a culture of tolerance and respect for all peoples on our campus, regardless of race, ethnicity, nationality, gender, sexual orientation, or any of the other characteristics which determine the richness of human diversity. Efforts such as the Michigan Mandate and the Michigan Agenda for Women have moved us toward this objective, but we still have many challenges ahead, not the least of which is intolerance of American society itself.

Supporting Activities

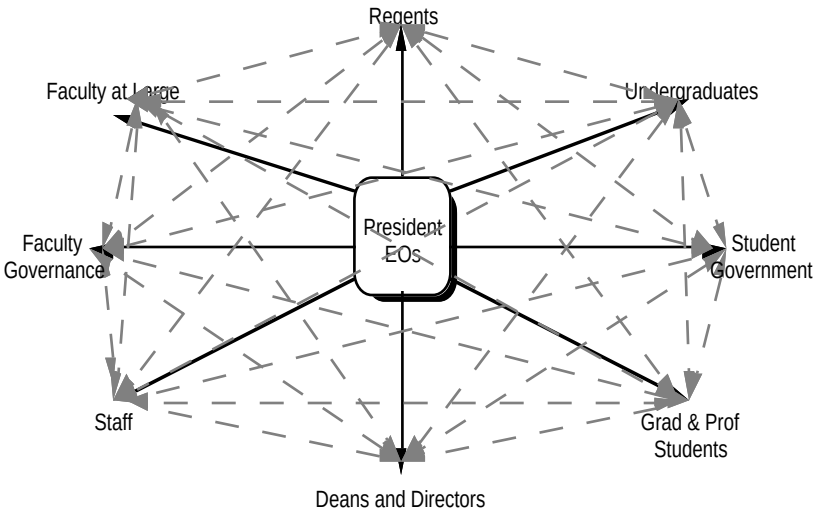
The President's Vision

Institutional transformation requires a clear and compelling articulation of the need to change, and a strong vision of where the change process will lead. While the debate over specific elements of the transformation process should involve broad elements of the University community and its constituents, the vision itself should come—indeed, must come—from the president. We made the case for transformation and both short-range visions *(Vision 2000)* and long-range visions *(Vision 2017)* in a series of documents intended to serve as the foundation for the effort. Further, these documents summarized the ongoing planning effort, developed a scheme to measure progress toward goals, and sketched a plan for transforming the University.

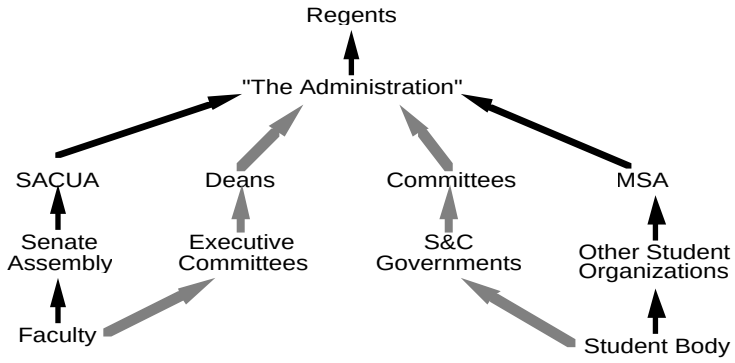
Beyond this task, as president, I served not only as the leader of the transformation effort, but also as its principal spokesman. In an academic institution, the role of the president is in many ways like that of a teacher, explaining to various campus and external constituencies the need for transformation and setting out an exciting and compelling vision of where the transformation process will lead.

Communications

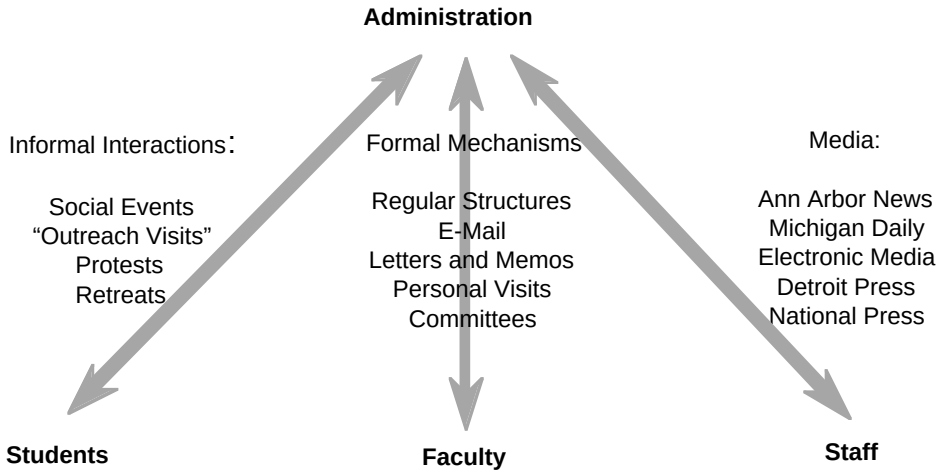
Internal communication is crucial, since without some understanding of goals and process, the university community will react to any transformation effort with fear and resistance. An effective strategic communications plan should therefore not only strive to convey the key rationale and themes of the transformation process, but should also be capable of sensing the key concerns and attitudes of various constituents within the university community. In this sense, communications efforts are more akin to those of a political campaign, establishing the key themes, and developing a sense of the mood of the electorate. Of course, we face the usual complexities of dealing with diverse constituencies. One might view the various key constituencies and their interaction as follows:



A formal organization chart would suggest a bottom-to-top information flow.



In reality, however, the flow of information is far less formal, and any effective communications plan must take into account both formal and informal communications channels.



At the same time, we must develop an effective plan for communication with various external constituencies of the university. This will be particularly challenging as the university itself continues to change.

Benchmarking and Assessment

Beyond the development of appropriate metrics capable of measuring the impact of the transformation process and our progress toward goals, the University of Michigan also needed to develop a greater capacity to benchmark itself against not only peer universities, but other organizations in the public and private sector as well. Of particular importance were comparisons of costs, productivity, and quality.

Another form of assessment, this time external, involved getting key constituents from both on and off campus to participate in opinion surveys and focus groups. The University of Michigan needed to regularly assess public attitudes toward both the institution and higher education more generally. Internally, faculty, student, and staff perspectives also needed to be measured frequently.

Some Questions and Observations

There were a number of questions and further issues related to the transformation of the University:

1. Why do we believe we need to restructure, to transform the University? After all, we certainly are accomplishing most of the 26-Goal Plan. Furthermore, there are signs that the University is rapidly moving toward the leadership position proposed in *Vision 2000*. Put another way, what is the primary challenge or threat? How do we denominate the types of change necessary?

2. To what degree do we also need to impact the entire system of higher education in America (and the world) in order to achieve Michigan's particular goals?

3. How dramatic does this transformation need to be? Will evolution suffice, or do we need revolution?

4. How rapidly should we push this transformation process, on what time scale? How rapid a pace of change can the University sustain without beginning to disintegrate?

5. Note that for change to occur, we need to strike a delicate balance between the reasons that make change inevitable (whether threats or opportunities) and a certain sense of confidence and stability that allows people to take risks. For example, how do we establish sufficient confidence in the long-term support and vitality of the institution even as we make a compelling case for the importance of the transformation process?

6. What works? What can we learn from others? Here we should not only make extensive use of internal resources such as the Change Group, but also the experience of companies which have successfully negotiated major transformation efforts (e.g., Unisys, Chrysler, Motorola, General Electric).

Our own history offers an interesting example of university transformation. The late 1950s and early 1960s were times of experimentation at the University of Michigan; the Residential College, the Pilot Program, and the Center for Research on Learning and Teaching were all developed in these two decades. But, during the 1960s this transformation became unstable, and was overtaken by political activism that sought not to transform but rather to destroy the establishment. This illustrates the danger that arises when a change process becomes entangled with ideology and special

interest agendas that divert it from the original goals. Major change does, however, involve taking a system from one stable state to another; the transition itself involves forcing the system into a period of instability that will on the one hand present certain risks, but on the other will produce the desired effects. It is important to minimize the duration of such instability, since the longer it lasts, the more likely the system will move off in an unintended direction, or sustain permanent damage.

Despite the fact that many people and institutions resist change, many others will relish it and support bold initiatives, if a convincing case can be made. It is critical, therefore, that the University of Michigan develop an effective internal marketing strategy for these transformation themes, conveying a sense of confidence that we have the will and capacity to follow through, and that the university will emerge stronger than ever.

Thus far, most of our discussion of transformation planning and proposed actions had stayed at the institutional level. But the transformation plan should also consider possible strategic alliances with other institutions—academic or otherwise—to achieve change. These might include:

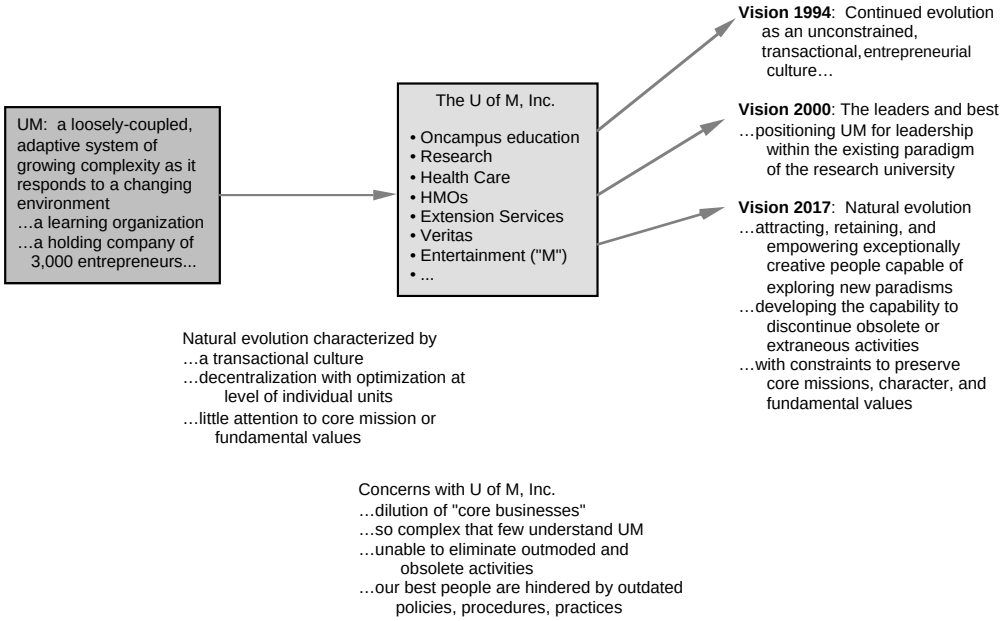
- partnerships with other institutions in programmatic areas (possibly using distance learning, rather than simply transporting students and faculty back and forth)
- alliances with peer institutions in high-cost teaching and research areas
- sharing of resources, such as a merged library system
- alliances with small, high-quality liberal arts colleges in which they provide high-quality advanced students and we provide their faculty with scholarly experiences

Concluding Remarks

Leaders of American higher education increasingly attest to the fact that the next decade will represent a period of significant change on the part of our universities. Our collective common sense tells us that universities must develop the capacity to transform themselves into entirely new paradigms, better able to serve a rapidly changing society and a profoundly changed world.

Our institutions of higher education are remarkably resilient, because they are well designed for such change. They are in part intensely entrepreneurial, transactional cultures. We have provided our faculty the freedom, the encouragement, and the incentives to move toward their personal goals in highly flexible ways, and they have done so through good times and bad. Unfortunately, their efforts have all too frequently led to organizations that have become far too comprehensive, complex, and detached from their core mission of learning.

Our challenge is to tap the great source of creativity and energy of entrepreneurial activity at the University in a way that preserves our fundamental mission, our fundamental values. We need to continue to encourage our tradition of natural evolution, which has been so successful in responding to a changing world, but do so with greater strategic intent. We must also develop a greater capacity to redirect our resources toward our highest priorities. Rather than allowing the university to continue to evolve as an unconstrained, transactional, entrepreneurial culture, we need to guide this process in such a way as to preserve our core missions, characteristics, and values:



In summary, we have entered an era of extraordinary changes in the nature of higher education, and the nature of our institutions. Our challenges, as institutions, as complex communities, will be to learn how to work together to provide environments in which such change is regarded not as threatening, but rather as an exhilarating opportunity to engage in the primary activity of the university which, of course, is learning. This capacity for change, for renewal, is the key objective that we have to strive for in the years ahead–a capacity that will allow us to transform ourselves once again as the university has done so many times in the past, to become an institution capable of serving a changing society and a changing world.

[1] James Brian Quinn, *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry* (New York, Free Press, 1992), p. 474

[2] Kelly, Eamon, Presentation to American Association of Universities, Indiana University (1994)

[3] Senge, Peter M., The Fifth Discipline: The Art and Practice of the Learning Organization (Doubleday Currency, New York, 1990) 424 pp.

[4] C. K. Prahalad, and G. Hamel, "The Core Competence of the Corporation," *Harvard Business Review* 68:79-91, (1990).

[5] James Brian Quinn, *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry* (New York, Free Press, 1992):

[6] Tichey, Noel M. and Stratford Sherman, *Control Your Destiny or Someone Else Will* (Doubleday, Newyork, 1993), p. 384.

[7] Donald Kennedy, "Making Choices in the Research University," The American Research University, *Daedelus*, Vol. 122, No. 4, (Fall, 1993).

Chapter 24 *The Michigan Transformation Strategy*

While the *Vision 2000: The Leaders and Best*, was exciting, compelling, and clearly attainable for the 1990s, it was still only a short-range vision. Developing a vision for the University of Michigan's third century would pose an even greater challenge because the University itself is such a dynamic institution. During its 175-year history, the University's mission has evolved to include teaching, research, and service across an extraordinarily broad array of disciplines and professions. And the comprehensive university was evolving rapidly once again during the 1990s, expanding its traditional mission to support a spectrum of "knowledge-intensive" activities. Even this recent evolution, however, was itself just a transitional phase.

Some of our critics suggested we should settle for the positioning strategy represented by *Vision 2000* and not attempt to venture further. The University, they argued, should take the necessary steps to preserve its options, to create flexibility, to develop the capacity to adapt to and control change, and to open up opportunities during the 1990s. They saw the *Vision 2000* strategy as a way to clearly identify the goals that would enable the University of Michigan to adapt to a changing world in a far more organic, evolutionary manner. But such a *laissez-faire* approach to the future was not the Michigan style. The University tends to flourish when it has been enlivened and emboldened by challenging visions of the future. While acknowledging the difficulties and the risks inherent in long-range planning exercises, we nevertheless decided 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. The development and articulation of a *Vision 2017* was, we thought, a fitting exercise for an institution aspiring to become "the leader and best."

Although we have already discussed the development of a mission and vision statement for the *Vision 2000* positioning strategy in earlier chapters, it is useful to briefly summarize these once again in this chapter to contrast them with the *Vision 2017* transformation strategy.

Mission, Vision, and Strategic Intent

The Mission of *Vision 2000*

The University of Michigan's mission involves the creation, preservation, integration, transmission, and application of knowledge to serve society. The University produces not only educated people but knowledge and knowledge-intensive services such as research and development, professional consultation, health care, and economic development. Yet all of these activities are based upon the core activity of *learning*.

> *Mission*
> *The mission of the University is learning . . . in the service of the state, the nation, and the world.*

The Vision

Our simple vision statement that borrowed a phrase from the University's famous fight song, "The Victors," captured the heritage of our past and this aspiration for the future:

> *Vision 2000: "The leaders and best"*
> *The University of Michigan should position itself to become a leading university of the twenty-first century, through the quality and leadership of its programs, and through the achievements of its students, faculty, and staff.*

This leadership vision required a comprehensive strategy to improve and optimize all of the key characteristics of the University: quality, capacity (size), breadth (comprehensiveness), excellence, and innovation. *Vision 2000* enabled the University of Michigan to make very considerable progress over the decade.

The Strategic Intent

Even as we took pride and satisfaction in the achievements of the *Vision 2000* strategy, we seized the opportunity to define a bolder vision, to develop a *strategic intent* aimed at achieving excellence and leadership during a period of great change. Strategic intent gives organizations a "stretch vision," one that cannot be achieved with current capabilities and resources[1]. While the traditional view of strategy focuses on the fit between existing resources and current opportunities, strategic intent creates an extreme misfit between resources and ambitions. Ideally, this forces organizations to be inventive and to make the best use of resources. We called our strategic intent *Vision 2017* in reference to the year of the 200th anniversary of the University's founding. The plan aimed at providing Michigan with the capacity to transform itself into an institution better capable of serving a new world in a new century, and, indeed, to re-invent the very nature of the university.

Vision 2017 depended for its success upon upholding our most cherished values and our hopes for the future: excellence, leadership, critical and rational inquiry, liberal learning, diversity, caring and concern, community, and excitement.

In addition, we retained many of the University's institutional qualities, those that were important to preserve. We wanted to continue to be characterized by the following descriptors:

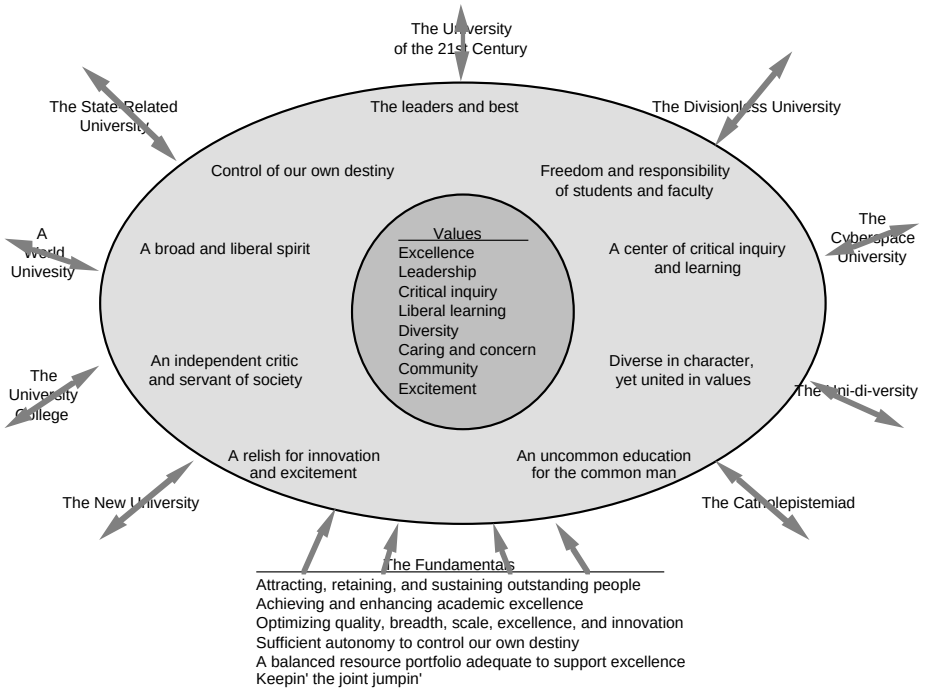
- "The leaders and best"
- "An uncommon education for the common man (person)"
- "A broad and liberal spirit"
- "Diverse, yet united in a commitment to academic excellence and public service"
- "A center of critical inquiry and learning"
- "An independent critic and servant of society"
- "A relish for innovation and excitement"
- "Freedom with responsibility for students and faculty"
- "Control of our own destiny comparable to private universities"

Undergirding these values and characteristics were our fundamental aspirations, those actions and goals that must receive 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 between quality, breadth, scale, excellence, and innovation
- Sufficient autonomy to control our own destiny
- Diversifying our resource portfolio, providing 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!

In this spirit, then, *Vision 2017* suggested one possible model for the University of Michigan that was built on a foundation of our traditional values, but still recognized the challenges and opportunities we would face in the decades ahead.



Notice that we have arranged around this core of values and characteristics a number of paradigms of the university:

1. The State-related, but World-supported, University: A university with a strong public character, but supported primarily through resources it must generate itself (e.g., tuition, federal grants, private giving, auxiliary enterprises).

2. The World University: As a new world culture forms, a number of universities will evolve into learning institutions serving the world, albeit within the context of a particular geographical area (e.g., North America).

3. The Diverse University: A university drawing its intellectual strength and its character from the rich diversity of humankind, providing a model for our society of a pluralistic learning community in which people respect and tolerate diversity even as they live, work, and learn together as a community of scholars.

4. The Cyberspace University: A university that spans the world (and possibly even beyond) as a robust information network linking together students, faculty, graduates, and knowledge resources.

5. The Creative University: As the tools for creation become more robust (e.g., creating materials atom-by-atom, genetically engineering new life forms, or generating artificial intelligence or virtual reality with computers), the primary activities of the university will shift from a focus on analytical disciplines and professions to those stressing creative activities.

6. The Divisionless University: The current disciplinary and professional organization of the university is viewed by many faculty members as increasingly irrelevant to their teaching, scholarship, and service activities. The university of the future may be better integrated and less specialized through the use of a web of virtual structures that provide both horizontal and vertical integration among the disciplines and professions.

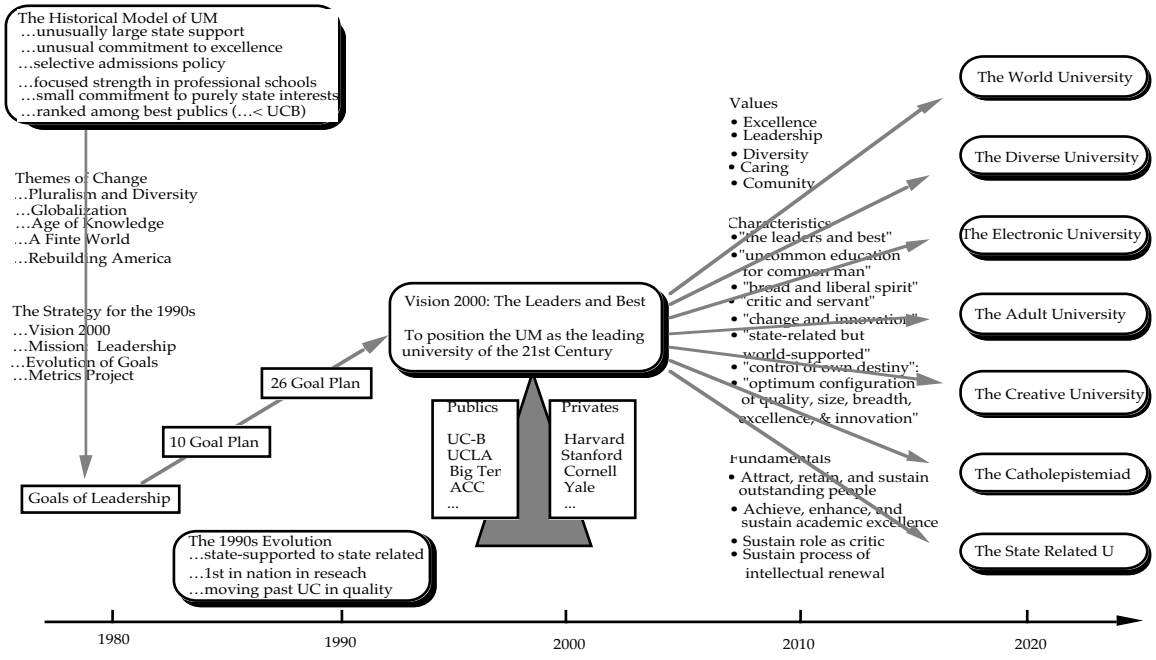
7. The University College: We need to develop a new paradigm for undergraduate education within the complex environment provided by a comprehensive research university. This "university college" should draw on the intellectual resources of the entire university: its scholars, libraries, museums, laboratories, graduate and professional programs, and its remarkable diversity of people, ideas, and endeavors.

8. The Lifelong University: Since education will increasingly require a lifetime commitment, the university should reinvent itself to span the entire continuum of education, from cradle to grave. It could form strategic alliances with other components of the educational system, and commit itself to a lifetime of interaction with its students/graduates, providing them throughout their lives with the education necessary to meet their changing goals and needs.

9. The New University: Could we create within our institution a "laboratory" or "new" university that would serve as a prototype or test bed for possible features of the university of the twenty-first century? The "New U" would be an academic unit consisting of students, faculty, and programs. Its mission: to provide the intellectual and programmatic framework for continual experimentation.

10. The Knowledge Server: Perhaps the triad mission of the university—teaching, research, and service—is simply the twentieth-century manifestation of the more fundamental roles of creating, preserving, transmitting, and applying knowledge. While this fundamental "knowledge server" definition of the university does not change over time, it seems clear that the particular realization of these roles is changing rapidly (e.g., digital convergence, collective learning, strategic research).

While none of these alone would appropriately describe the University as it enters its third century, each was a possible component of our institution, as seen by various constituents. Put another way, each of these paradigms was a possible pathway toward the University of the 21st Century. Each was also a pathway we believed should be explored in our effort to better understand our future. Our new challenge was to move from the successful positioning strategy of *Vision 2000* to a new strategy designed both to test these various possible new paradigms and then to transform the University.



To be sure, any of these visions of the University of Michigan, circa 2017, would require significant change in our institution. As it had so many times in the past, the University needed to continue to change and evolve if it was to serve society and achieve leadership in the century ahead. The status quo was no longer a viable option.

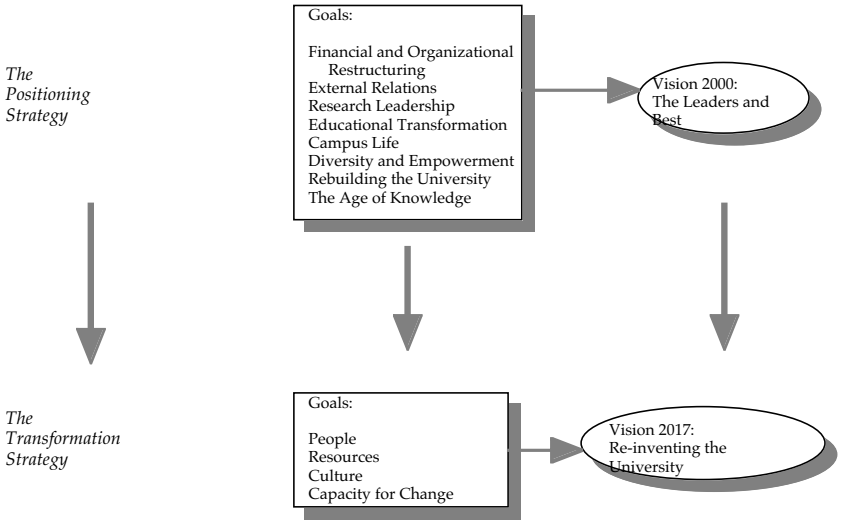
Hence, our strategic intent, the *Vision 2017*, was aimed at providing Michigan with the capacity to re-invent the very nature of the university, to transform itself into an institution better capable of serving a new world in a new century.

> *Vision 2017: Re-inventing the University*
> *Our objective for the next several years is to provide the University with the capacity to transform itself into an institution better capable of serving our state, our nation, and the world.*

This transformation strategy contrasted sharply with the earlier positioning strategy, Vision 2000, which had characterized the previous decade. It sought to build the capacity, the energy, the excitement, and the commitment necessary for the University to explore entirely new paradigms of teaching, research, and service. It sought to remove the constraints that prevented 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 members of the University community to embark on a great adventure.

The Goals

As noted earlier, the transformation process outlined in *Vision 2017* was designed to allow the University to develop the new paradigms that our rapidly changing society and a profoundly changed world require. Building on the positioning strategy of *Vision 2000*, our real objective was to build the capacity, energy, excitement, and commitment necessary for the University to move toward such bold visions. The diagram below depicts this evolution from a positioning to a transformation strategy.



We proposed several, simply stated goals to help move the University toward both the leadership positioning of *Vision 2000* and the paradigm-shifting of *Vision 2017*:

Goal 1: People

To attract, retain, support, and empower exceptional students, faculty, and staff.

Goal 2: Resources

To provide these people with the resources and environment necessary to push to the limits of their abilities and their dreams.

Goal 3: Culture

To build a University culture and spirit that values: adventure, excitement, and risk-taking, leadership, excellence, diversity, caring, concern, and community.

Goal 4: The Capacity for Change

> To develop the flexibility, the ability to focus resources necessary to serve a changing society and a changing world.

These four concrete goals had profound implications, and each would be deceptively challenging to execute. While we had always sought to attract high-quality students and faculty to the University, we tended to recruit those who conformed to more traditional measures of excellence. If we were to seek "paradigm breakers," then other criteria such as creativity, intellectual span, and the ability to lead became important.

We needed as well to acquire the resources to sustain excellence, a challenge at a time when public support was dwindling. Yet this goal also suggested that we needed to focus resources on our most creative people and programs. And we needed to acquire the flexibility in resource allocation to respond to new opportunities and initiatives.

While most people and institutions would agree with the values set out in the third goal of cultural change, many would not have assigned such a high priority to striving for adventure, excitement, and risk-taking. However, if the University was to become a leader in defining the nature of higher education in the century ahead, this type of culture would be essential.

Developing the capacity for change, while an obvious goal, would be both challenging and controversial. We needed to discard the status quo as a viable option, challenge existing premises, policies, and mindsets, and empower our best people to drive the evolution—or revolution—of the University.

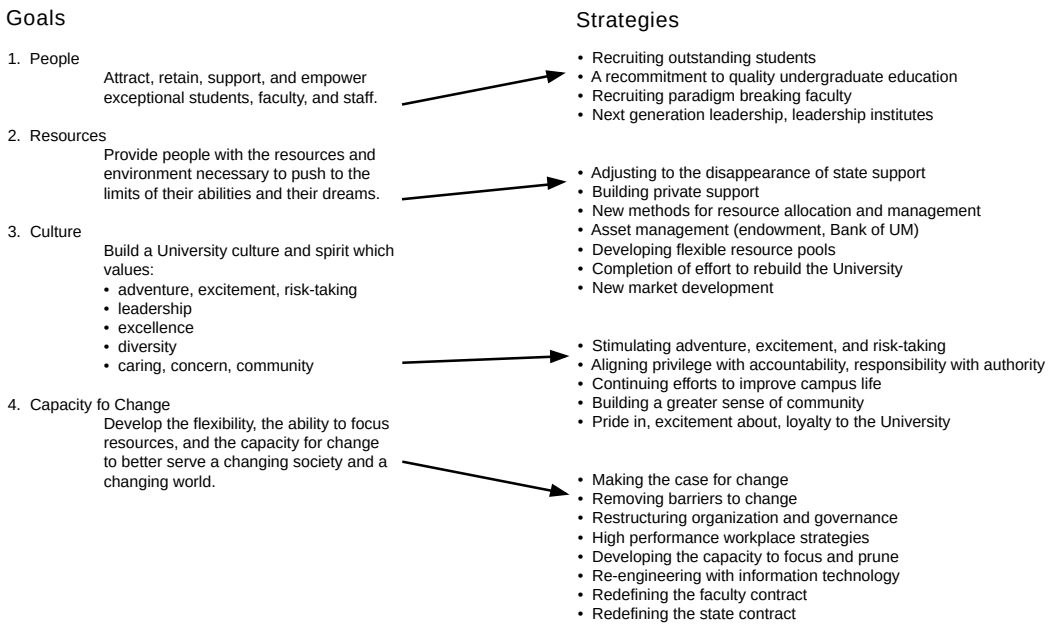
The Strategy

Strategic Initiatives

To achieve transformations across these areas that moved the University toward *Vision 2017*, we organized the effort through a series of strategic thrusts or initiatives. Each strategic thrust was designed as a self-contained effort, with a clearly-defined rationale and specific objectives. However, all such initiatives moved the University toward the more general goals of *Vision 2017*. Further, we wanted to ensure that each

strategic thrust was monitored and coordinated carefully, since they would interact quite strongly with one another.

The strategic initiatives associated with each of the goals of *Vision 2017* are identified in the chart below:



1. People

In our effort to develop our first goal to attract and sustain exceptional students, faculty, and staff, we launched the following strategic initiatives:

Recruit Outstanding Students: We believed the University needed to place more emphasis on identifying and attracting students of truly exceptional ability and creativity. This effort depended upon a major expansion of merit scholarship programs that would augment our existing need-based programs. We attempted to extend the dual admission practice (which our Medical School currently uses) to other professional and graduate programs to attract outstanding undergraduate students. We also needed to reduce the disciplinary barriers between various graduate and professional programs to attract the very best graduate students.

Recommit to High-Quality Undergraduate Education: High on the list of priorities was a renewed commitment to high-quality undergraduate education that utilized the full resources of the University. In particular, the University embarked on an effort to develop a unique paradigm for undergraduate education that would reflect the strengths of a comprehensive research university. This plan was aimed at integrating the University's multiple missions of teaching, research, and service.

Recruit Paradigm-Breaking Faculty: We allocated base resources toward the recruitment of truly exceptional faculty through a University-wide effort. We also sought to develop institution-wide appointments such as University Professorships.

Support Next-Generation Leadership: We began to develop and select leaders for key University roles who relished the challenge and excitement of leading during a period of change and transformation.

Develop Human Resources: The University made a conscious effort to give higher priority to human resource development throughout all areas of the institution. The major restructuring of our human resources organization was an important first step, as was our renewed commitment to education, training, and career planning for both staff and faculty.

2. Resources

As with any transformation effort, we had to pay significant attention to the acquisition and deployment of the resources necessary for excellence and leadership. Many of the strategic initiatives associated with such an agenda were quite successful:

Adjust to the Disappearance of State Support: The only prudent course was to assume that state support would continue to decline in the foreseeable future, from its level of 10 percent of our total budget (and 17 percent of our General and Education Fund) to perhaps 5 percent by the end of the 1990s. We needed to seek alternative sources of funds to compensate for the continuing loss of state support.

Balancing this decline in state support, however, were the extraordinary opportunities afforded by a society that was becoming increasingly knowledge-dependent. With vision, skill, and commitment, the University should have little difficulty generating adequate resources to sustain its quality, breadth, and capacity. It should be able to do so while protecting its fundamental character as a public institution—although, of course, the nature of the "public" it serves will broaden far beyond the state to include the nation and the world.

In order to adjust to declining state support, the University needed to be able to determine its own destiny, to take the steps necessary to move in new directions in new ways. In this sense, protecting the constitutional autonomy of the University would prove to be far more important—and perhaps far more challenging—than sustaining the current level of state support.

Build Private Support to Levels Adequate to Replace State Support: Since the early 1980s, increasing private support of the University, both through private giving and income from the endowment, had become a critical element in adapting to a future of increasingly constrained state support. Successful fund-raising campaigns are a sophisticated asset-management strategy for endowment, and they bolster our coffers. The University set a goal for the year 2000 of building private support—annual gifts plus income distributed from the endowment—to a level comparable to state appropriation ($300 million/year). With private support increasing from $75 million/year in 1988 to $255 million/year in 1996, we were well on our way toward this objective. In the future, it is possible that endowment income alone might exceed the University's state appropriation—although this may be interpreted more as a measure of our pessimism about future state support than our optimism about growth in the University's endowment.

Strategic Methods for Resource Allocation and Management: We took a series of important steps to restructure the University financially in order to respond better to the challenges and opportunities of the 1990s. We moved beyond the constraints of incremental fund accounting to adopt all-funds budgeting and management. We implemented a responsibility center management strategy in which academic, administrative, and auxiliary units of the University would retain all unit-generated revenues (e.g., tuition, research support, private gifts, and auxiliary income) with the associated responsibility of covering all unit-driven costs. Funds to support centrally provided services and subvention of key academic units were generated through a small tax on unit expenditures. More extensive use of competitive pricing and outsourcing of services now enables units to control costs better and streamline internal operations. This new system had three objectives: 1) to allow resource allocation decisions to be driven by the values, core mission, and priorities of the University rather than dictated by external forces; 2) to provide a framework for such decisions based on knowledge of the true resource flows throughout the University; and 3) to allow both academic and administrative units to participate as full partners with the central administration in making these resource allocation decisions.

Financial Management: We developed and executed a sophisticated and effective investment strategy for managing the financial assets of the University. Largely as a result of this strategy, the endowment of the University rose from $280 million to $2.0 billion over an eight-year period, on track to our goal of achieving an endowment of $3.0 billion by the year 2000. The University also put in place a central banking structure to manage its roughly $1.5 billion of working assets more effectively.

Develop Flexible Resources ("Venture Capital"): Moving the University forward required more flexibility to support new initiatives and change. While the responsibility center management system provides some of this capacity, it would also be important to attract or reallocate sufficient "venture capital" to support the array of initiatives associated with University transformation over the next several years.

Rebuild the University: One of the great challenges the University faced through the 1980s was the need to replace an aging physical plant. A combination of low interest rates and construction costs, available state capital outlay, generous private support, and income from auxiliary activities enabled the University to launch a massive effort to rebuild its campuses. Over a five-year period, the University was able to launch and complete over $2.0 billion of construction, either renovating or replacing essentially every facility on our campuses.

Develop New Markets: As both the need for and capacity to deliver educational services become increasingly decoupled from space and time, the University recognized a need to explore new markets for its activities. Efforts ranged from on-campus programs such as summer sessions and continuing education to world-wide educational programs facilitated by multimedia computer networks. To this end, we established a new Division of Academic Outreach. In the mid-1990s the University joined with other institutions to launch a series of "virtual universities" aimed at delivering educational services on a global scale.

3. Culture

Particularly important—and complex—were an array of initiatives designed to stimulate changes in the institutional culture necessary to respond to a changing world:

Stimulate a Sense of Adventure, Excitement, Risk-taking: During a period of rapid change, the University's capacity to try new things, to be adventurous and experimental, had become increasingly important. The unusual size, comprehensiveness,

and quality of the institution should have provided us with an unusual capacity for such risk-taking. But, ironically, Michigan's culture was quite conservative and adverse to risk. Hence, one of our early objectives was to create a more fault-tolerant community, in which risk-taking was encouraged, failure was anticipated and tolerated, and creativity and innovation were prized. One of the most effective approaches in this effort was the launch of a number of major experiments aimed at exploring various possible paradigms of the University of the 21st Century. For example, the University launched a new School of Information to explore the interface between information technology and society. It designed and constructed the Media Union to explore the cyberspace university and develop creative university themes and designed the Millennium Project to build an ongoing laboratory for exploring future university structures.

Sustain the University's Commitment to Diversity: Many members of the University community stepped forward to embrace the importance of diversity and committed themselves to the strategic efforts outlined in the Michigan Mandate and the Michigan Agenda for Women. Many others continued to resist such changes. It was clear that such efforts needed to continue to rank among the very highest priorities of the institution. This agenda would therefore continue to receive the highest level of attention from all members of the University leadership.

Align Privilege with Accountability and Responsibility with Authority: We recognized the need for steps to align more directly responsibility with authority and privilege. All too often those who were responsible for various decisions or goals did not enjoy the authority or trust necessary to accomplish these objectives. Then, too, there were those, including many members of the faculty, who were in positions of great privilege and yet were reluctant to acknowledge their responsibility and accountability to the University or the society it serves.

Align Faculty/Staff Incentives with Institutional Priorities: While the highly decentralized, entrepreneurial culture of this modern university was remarkably adaptive to change, faculty generally moved toward individual or local unit goals rather than embracing institutional goals. As we have noted, part of our challenge was to tap the extraordinary energy of this entrepreneurial spirit and align it with institutional goals. This effort focused on establishing strong incentives, such as incentive compensation and promotion criteria, to reflect the broader goals of the University.

Continue Efforts to Improve the Quality of Campus Life: We were able to do much to improve the quality of campus life for students, faculty, and staff. For example, we improved campus safety by developing a campus police organization; we made major

investments in campus lighting and landscaping; and we implemented special programs such as the Sexual Assault and Prevention Center, the Nite Owl transportation service, and Safewalk. Student leadership joined with the administration authoring a new code of Student Rights and Responsibilities. We undertook broad programs to address student concerns about substance abuse on campus, with particular attention focused on alcohol consumption and smoking.

We also enhanced opportunities for learning in the student living environment and through extracurricular activities. Finally, we restructured intercollegiate athletics programs to broaden the participation of women and to integrate student-athletes more effectively into the broader campus community.

Achieve a Commitment to Community, Tolerance, and Respect: The increasing specialization of faculty and the long tradition of decentralization had eroded faculty commitment to general institutional goals and the sense of a learning community. All too frequently faculty, students, and staff focused primarily on professional goals rather than on the welfare of the University. In part because of the very nature of academic inquiry, students and faculty tended to view their roles more as critics of the University rather than as members of the Michigan community. We believed it important to launch efforts to engage the University community in both discussions of and active participation in determining the future of the institution.

Establish a Sense of Pride in, Respect for, Excitement about, and Loyalty to the University: This transformation agenda was intended to involve faculty, staff, and students actively in determining Michigan's future by changing their attitudes about the University. Beyond this, we developed a sophisticated strategic future of the communications effort to give members of the University a better understanding of the challenges, opportunities, and responsibilities facing the University.

4. Capacity for Change

Many of our most important strategic initiatives were aimed at providing the University with more capacity for change:

Make the Case for Change: One of our key objectives was to develop a shared vision for the future of the University. This included designing a compelling mission statement, which meant assessing the challenges, opportunities, and responsibilities facing the University in the years ahead. As the first step in this process, we launched extensive discussions and planning exercises that involved faculty, staff, and Regents of the University, and held discussions with leaders of higher education

and society more broadly. This dialogue then broadened to include other segments of the University community, including additional faculty, staff, students, and alumni, as well as an array of our external constituents.

Remove Barriers to Change: Universities, like most large, complex, and hierarchical organizations, tend to become bureaucratic, conservative, and resistant to change. To streamline processes, procedures, and organizational structures, we launched a "process inventory" of the University to identify and remove barriers to change. As part of this effort, we focused on policies concerning personnel (both faculty and staff), resource allocation, and program review and modification. Also of particular concern here was modernizing our personnel policies and tackling the difficult issue of faculty tenure and appointment practices. We had to develop more capacity to make programmatic changes consistent with institutional priorities (e.g., a redesign of the program discontinuance policies).

Reconnecting the University with its past: Ironically, part of the cultural change necessary at the University was establishing a deeper understanding and respect for Michigan's remarkable history, traditions, and values. In a very real sense, this history provided the foundation for the changes that would be necessary in the years to come, an anchor to valued traditions and accomplishments. Yet, like many other activist campuses, the University had lost its connection with much of this history during the activist years of the 1960s and 1970s. As we will describe in Chapter 25, a series of actions were taken to once again establish these important ties, including the renovation of important historical facilities such as the Detroit Observatory, and launching a series of efforts to gather and document important historical materials.

Protect the Autonomy of the University: One of the most important characteristics of the University is its constitutional autonomy, as vested in the Board of Regents, which allows the University to control its own destiny and adapt to change. Unfortunately, in recent years this autonomy had come under attack from a number of quarters. Michigan's sunshine laws, now regarded as among the most intrusive in the nation, had jeopardized the operation of the University and its selection of leadership. Both the Governor and the Legislature had attempted to dictate key policies of the institution, including tuition, nonresident enrollments, and academic focus. In addition, the media had made a concerted effort to push the University toward the mediocrity of a broader populist, anti-intellectual strain already in evidence in parts of our society. The University needed to vigorously resist these threats to its autonomy, but also actively seek ways to re-establish its capacity to control its own destiny.

Develop Spires of Excellence: While we were concerned about retaining the breadth and capacity of our programs, we believed that the University's primary emphasis in the decade ahead should be on program quality. Resource constraints required us to build "spires" of excellence in key fields, rather than try to achieve a uniform level of quality across all of our activities. Here we did not propose to focus the resources of the University in order to build only a few isolated areas of excellence, in the manner of a small liberal arts college, for example. Nor did we accept models that distributed resources to achieve a uniform level of necessarily lower quality across all programs. Rather, we believed that within each of our academic units—our schools, departments, centers, and institutes—we should seek to build a number of spires of focused excellence. Constrained resources meant that we would therefore have to accept that some areas would be very good as opposed to excellent. In our effort to focus resources and to prune or even discontinue programs, we had to revise and streamline many current policies and procedures.

Restructure Organization and Governance: As a third class of initiatives, we continued to explore alternative corporate structures for the diverse range of University activities. The current organization of the University into departments, schools and colleges, and various administrative units was largely historical rather than strategic in nature. To some degree it was more a byproduct of our incremental style of resource allocation, with its presumption that units and activities continue unless a very good case can be made for doing something else, rather than a conscious strategy of intellectual objective. We had to assess whether existing organizational structures would be capable of the transformations we were requesting. Most evidence suggested that while these units were capable of modest internal change, they generally felt threatened by broader institutional change and would strongly resist it. For example, it was clear that the present organization of our schools and colleges was increasingly incompatible with intellectual, human, and financial resource-management goals. Our administrative organizations also needed to be restructured to support better the multiple missions of the University. With the appearance of more University-owned subsidiaries to provide services, we needed to experiment with alternative corporate structures such as holding-company models.

We also worked to delineate alternative structures that could not only accept and adapt to change, but to some degree, could actually stimulate it by tapping the creative energies of people in the organization. For example, we explored creating University-owned subsidiary corporations similar to M-Care in our health-care system development. We also explored the possibility of creating more partnerships with independent foundations. The Board of Regents' involvement in all of these activities was critical.

Design Strategies for a High-Performance Workplace: We needed to help all units of the University move toward more progressive work environments and practices. Moving away from rigid, highly compartmentalized job definitions, allowing more flexible workplace experiences, stressing staff career-development counseling and educational opportunities, and utilizing incentive reward systems were all positive changes we encouraged.

Re-engineer with Information Technology: We had only scratched the surface in our application of information technology to the activities of the University. In particular, the rapid evolution of networking and communications technology had the capacity to release the University from the constraints of space and time, permitting students, faculty, staff, and external constituents to interact with our programs from any place at any time. This technology would eventually permit us to re-engineer the work of the University to achieve higher quality and efficiency. It could provide better information to support strategy development and decisions.

Renegotiate the Faculty Contract: One of the most difficult challenges to institutional change results from the nature of faculty appointments. While tenure and the disappearance of mandatory retirement policies are frequently noted as barriers to flexibility, perhaps even more challenging is the extraordinary degree of disciplinary specialization and the narrowness of faculty roles resulting from our current hiring and promotion policies.

Redefine the State Contract: Over the past three decades, state appropriations had eroded to the point that today the state was only a relatively minor shareholder in the support of the University. We believed it was time to renegotiate the University's "contract" with the people of Michigan, redefining just what services the state should expect and what kind of control it could exert for the ever-diminishing support it provided.

Cross-Cutting Themes

There were several important themes that cut across the four goals associated with *Vision 2017*. We proposed that each of these cross-cutting themes be addressed by a series of additional strategic initiatives:

1. Educational Transformation

The University College: There is no more compelling—nor difficult—challenge facing the research university than reaffirming its commitment to undergraduate education.

We believed that we needed to develop an undergraduate experience that draws on *all* of the University's resources to prepare our students for the 21st Century. While individual colleges had taken some important steps, these had been largely efforts to improve upon the current paradigms of undergraduate instruction. Far more important and challenging were those efforts to create new paradigms for undergraduate education that weave together the multiple activities of the University—teaching, research, and service—with student academic programs and residential life.

We believed that Michigan should develop a more coherent academic program for all undergraduates, reducing the amount of specialization offered in degree programs, and striving to provide instead a more general liberal learning experience. We attempted to rapidly expand experiments in pedagogical alternatives to classroom learning, including collective learning experiences, the use of research and/or creative projects, and integrating community service experiences into our educational programs.

The Gateway Campus: Unlike most degree programs, lower-division undergraduates have no physical focal point for their education, as they are dispersed across the campus. We proposed to build a major complex, the Gateway Campus, sited across from the primary residence halls for first-year students, to provide the "gateway" to a Michigan education. (For more details, see Chapter 25.) One of the unique features of this plan was to relocate our principal exhibit museums into the complex, including our museums of art, archeology, anthropology, and natural history. Since the site was adjacent to the University's major performance centers, it would provide a marvelous opportunity to design an undergraduate experience around some of the most important "artifacts" of our civilization. The Gateway Campus was estimated to cost roughly $150 M, and it would be funded through both private gifts and University funds. Although we were unable to secure adequate funding to launch the project during our Campaign for Michigan, we viewed it as an important priority for the early 21st Century.

Living/Learning Environments: A more comprehensive undergraduate experience requires a major restructuring of the student living environment and those programs and facilities supporting extracurricular activities. Much of undergraduate learning occurs through student interactions and experiences in the residential environment. Over the years, the University had launched a number of successful experiments in building living/learning communities, e.g., the Residential College, the Pilot Program, the 21st-Century Program, and the Women in Science and Engineering Program. However, we needed to develop a more comprehensive and strategic approach to address the needs of not only those students living in University hous-

ing, but also those living in other environments such as the Greek system or independent housing.

Linkages between Professional Schools and Undergraduate Education: The presence of an unusually broad array of professional schools is one of the great strengths of the University and clearly one of the major factors in attracting outstanding undergraduates. We needed to develop closer linkages between undergraduate education and these schools, so that students could have the opportunity to explore and choose among various careers. Indeed, many professional-school faculty seek more direct interaction with undergraduate students.

Restructuring the Ph.D.: While the Ph.D. degree continues to be superb preparation for a research career, it has become clear that most Ph.D. students will continue on to other careers in teaching oriented colleges and university or in the public and private sectors. For this and other reasons, recent national reports have challenged the excessive specialization and length of time of many Ph.D. programs. We believed the University should provide leadership in examining and perhaps restructuring its Ph.D. programs to better serve the students enrolling in them and the society they will serve.

Continuing Education and "Just-in-Time" Learning: In a knowledge-intensive society, learning must become a lifetime commitment, both by individuals and by academic institutions. Indeed, many question whether the credentialling role of the university through degrees will be increasingly augmented and perhaps even replaced, to some extent, by the specific introduction of "just-in-time" learning programs which provide the knowledge sought by students at particular times during their careers. Several of our professional schools have already developed leading programs in continuing education, including Business Administration, Engineering, Medicine, and Law. A more comprehensive University approach to such lifetime education needed to be developed, perhaps including an institutional commitment to provide any of its graduates with the educational services they need throughout their lives.

2. Intellectual Transformation

Lowering Disciplinary Boundaries: The University needed to take steps to assist its students and faculty in responding to the extraordinary pace of intellectual change. In order to do this we had to break down the constraints posed by disciplinary organizations—e.g., academic units such as departments, schools, and colleges, and academic degree programs at the undergraduate, graduate, and professional level. To allow faculty and students to teach, study, and learn where the need and interest

are highest, we needed greater flexibility. In this regard, we developed more flexible structures that spanned disciplinary boundaries (e.g., centers and institutes), and instituted faculty appointments that could span multiple disciplines. More effort needed to be made to coordinate faculty appointments, academic programs, research activities, and resource allocation among academic units.

Integrative Facilities: We developed and designed key facilities that integrated the activities of schools and colleges. One such effort was the Media Union, which integrates the teaching and scholarship of Engineering, Music, Art, and Architecture through a sophisticated information technology environment. The proposed Gateway Campus was also intended to unite all of the faculty of the University, along with its principal performance centers and exhibit museums, in addressing the needs of undergraduate education.

The New University: One of the most exciting projects that received attention throughout the remainder of this decade was "the New University." Our goal was to create an experimental "university within the University," a prototype for possible features of a 21st-Century university. An academic unit consisting of students, faculty, and programs, the "New U" would provide 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 education, bringing together students, faculty, and alumni to pool knowledge, work in teams, and address real problems. 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. To lead this effort, we established a research center, the Millennium Project.

3. The Diverse University

Articulating the Case for Diversity: We needed to sustain and broaden our commitment to creating a university characterized by great diversity. As with biological organisms or ecosystems, the diversity of the University may well be the key characteristic that will allow it to flourish in a rapidly changing environment. Diversity goes far beyond racial and ethnic representation to include almost every aspect of the human condition: race, gender, nationality, background, and beliefs. Our challenge would be to

build an institution in which people of different backgrounds and cultures come together in a spirit of respect and tolerance for these differences while working together to learn and to serve society.

The Michigan Mandate and the Michigan Agenda for Women: While we had made great progress in achieving racial and ethnic diversity through the Michigan Mandate, this needed to remain among the highest priorities of the University. So too, the Michigan Agenda for Women would be of great importance to the University and to broader society, and we needed to be steadfast in our commitment to its success. As we moved ahead, we also needed to engage the campus community in a broader dialogue concerning the importance of diversity to the future of the institution.

The World University: While sustaining our commitment to diversity through the Michigan Mandate and the Michigan Agenda for Women, we hoped to broaden these efforts to build the character of the institution as a true "world university," attracting students and faculty from around the world and educating our students to become true citizens of the world.

4. The Faculty of the Future

The changing nature of the university and the society it serves compels us to think carefully and creatively about the nature of the faculty of the University in the years ahead. For example, we need to discuss the definition and role of the faculty, particularly in the face of the growing diversity in missions and activities of our various academic units (e.g., the contrast between clinical departments in medicine and performance departments in music). As the character of the faculty and its activities evolves, we must rethink the privileges and responsibilities of faculty members, including the nature of appointments, tenure, rewards, and retirement. These will be difficult but important discussions that should occur both within and among major research universities.

Our efforts to work with the faculty to understand its future role, opportunities, and responsibilities were key in this regard. For example, with the end of mandatory retirement and the increasing pace of intellectual change, it is clear that the idea of the faculty contract with the institution needs to be reconsidered. Is the current faculty career model still viable (i.e., a three-rank promotion structure accompanied by academic tenure in the advanced stages)? Should there be more thorough mechanisms for performance evaluation throughout a faculty member's career?

Other issues that needed to be addressed included: 1) the nature of a faculty member's responsibility to the University as a whole rather than simply to a department or a school; 2) the appropriate balance between long-term faculty appointments and flexible staffing such as lecturers or research scientists; 3) the nature of faculty responsibilities associated with extra-academic student activities such as student life or organizations; 4) the use of "distant faculty appointments," i.e., faculty who rarely set foot on the campus but rather telecommute to teach, conduct research, or supervise student activities.

5. Serving a Changing Society

Further Evolution of the UM Health System: The evolution of the University of Michigan Medical Center into a statewide health system required careful attention. At the top of the agenda, we needed to determine the appropriate form of leadership/governance for the Medical Center and its associated academic units. In addition, the corporate organization of the system required significant overhaul to enable it to thrive in a highly competitive health care marketplace.

Research Applied to State and National Needs: The University intended to launch a series of institution-wide research/service projects aimed at addressing issues of major state and national interest, including global change, human capital, health care, and the knowledge society. In addition to allowing the university to respond effectively to the needs of the society it serves, there was ample evidence that such efforts could add great excitement and energy to our on campus academic programs.

University Enterprise Zones: The University moved ahead with a series of actions aimed at regional economic development as part of the "university-enterprise-zone" effort. Beyond revising policies and procedures to stimulate technology transfer, the University stood prepared to make significant financial investments in these activities. We believed that on a broader scale, the University (and Ann Arbor) would play an increasingly important role as an economic engine of the Midwest.

K-12 Education: The University had a responsibility to develop and implement a broader strategy concerning K-12 education. Although hundreds of faculty and staff were already deeply involved with public schools, these efforts were uncoordinated and rarely recognized. We needed to establish a University-wide strategy.

Public Service: As it had throughout its history, the University needed to acknowledge its public nature and be attentive to the needs of the society it serves. While it was important that these efforts naturally complement the University's academic

programs and objectives, it was also clear that we would be asked in the years ahead to consider a very broad array of activities in support of our public mission. Developing the capacity to assess such opportunities and responsibilities, and then to make rational decisions about which to accept, was crucial. We needed to develop the capacity to say "no" when a societal request either did not align well with our academic mission or could better be performed by other institutions.

6. Preparing for the Future

Next-Generation Leadership: Throughout the University, the selection and appointment of leaders who had great vision, energy, and a sense of adventure was key to preparing for the future. Simply selecting leaders to maintain the status quo would not be adequate. We needed to build a leadership team that would be committed to the necessary transformations in the University and that relished the role of leading during a time of challenge and change.

Campus Evolution: The continuing effort to rebuild the Ann Arbor campus stood as one of our highest priorities. Ongoing projects needed to be managed to completion, and new projects needed to be launched as the last stages of the renovation of Central Campus. While we did not anticipate a need for a great deal of new construction in the latter half of the decade, there would be a few projects of great importance, including the Gateway Campus. In the meantime we planned to continue our efforts to build up our financial resources to eliminate the deferred maintenance backlog and to sustain our rapidly improving physical plant.

Our campus facilities must continue to evolve so we can better serve our various units and the surrounding community. For example, the development of additional outpatient care centers in southeastern Michigan would be a high priority. We also needed to acquire or develop additional facilities in Ann Arbor to accommodate the business and administrative operations of the University, and the University needed to continue to expand its off-campus activities, both through extension services and computer networking.

Academic Outreach: This strategic effort examined the changing educational needs of our society in order to address the changing marketplace for higher education. We believed it was crucial to understand the appropriate role for the University in distance learning and lifetime education. It also was important to explore and develop new paradigms of teaching, research, and service. As lifetime education becomes a necessity for a high quality of life, the University must become involved to some degree with the full continuum of education, from K-12 education through

our traditional degree programs at the undergraduate, graduate, and professional levels to continuing education and intellectual enrichment. In this regard, we wanted to explore educational product differentiation, for instance, contrasting residential (campus-based) educational programs and distance learning.

The Cyberspace University: We pursued paradigms for offering educational services based on sophisticated information technology networks as one of our central goals. Because of its leadership role in building and establishing the Internet, the University stood well-positioned to become a leader in developing the paradigm of a "cyberspace" university, in which students, faculty, and alumni were linked together worldwide.

Strategic Alliances: Over a longer time frame, the higher education enterprise in America will clearly undergo significant restructuring. Anticipating this, we began exploring and establishing strategic alliances with regional institutions (e.g., the Big Ten universities), national institutions (e.g., the AAU), and international institutions (e.g., Europe and Asia). We also began investigating alliances with other knowledge-based institutions in the public and private sector (e.g., software and entertainment companies or national laboratories and institutes).

Leverage Points

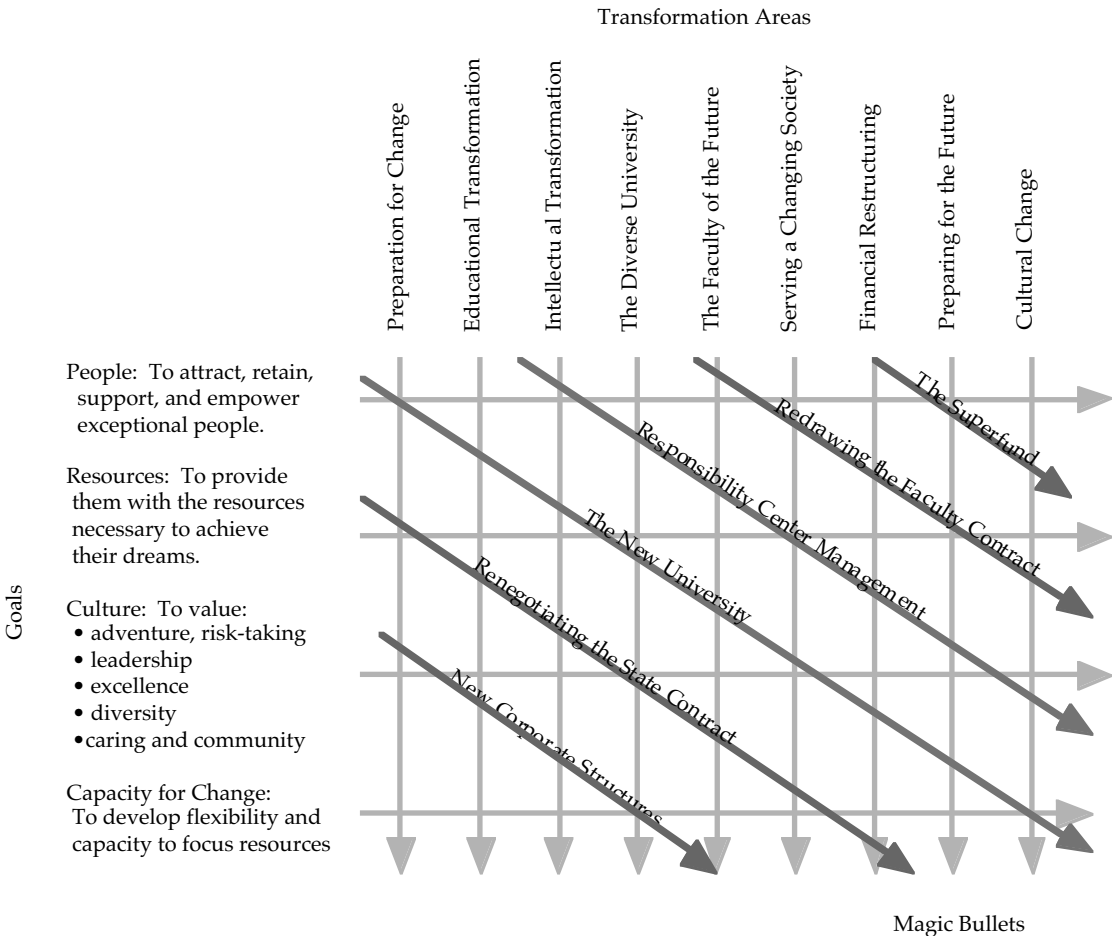
There are two general approaches to changing organizations. In "command-and-control" approaches, one attempts to initiate and sustain the process through top-down directives and regulation; this approach has limited utility in large organizations. The alternative approach, more appropriate for large, complex organizations such as the University, is to create self-sustaining market dynamics (e.g., incentives and disincentives) that will drive the transformation process. Hence, for each of our major strategic thrusts, we needed to identify highly targeted actions, leverage points that create incentives and disincentives and that ignite the sparks necessary for grassroots change. There the real creativity in the design of the transformation must come into play.

We identified the following focused actions as leverage points:

- The University College ("A Michigan Education")
- The New University
- The Diverse University
- The Cyberspace University
- The Creative University

- The World University
- Responsibility Center Management
- Restructuring of the UM "corporate" organization
- Redefining the faculty contract
- Redefining the state contract
- Next-generation leadership
- Research applied to national and state needs
- Academic outreach
- Alignment of faculty/staff incentives with University priorities

The diagram below provides a sense of how the strategic initiatives, crosscutting themes, and leverage points or "magic bullets" associated with Vision 2017 relate to one another.



Concluding Remarks

The strategic planning process described in this chapter involved a great many people and groups, both within and outside the University, during the 1990s. As we have noted, the *Vision 2000* strategy was very much a *positioning* effort designed to position the University of Michigan as a leader of higher education by the end of the decade. It did not propose a specific direction beyond this point. The task of determining just where the University would lead in the 21st Century remained the second phase of the effort, the strategic intent, *Vision 2017*.

Institutions all too frequently chose a timid course of incremental, reactive change because they view a more strategically-driven transformation process as too risky. They are worried about making a mistake, about heading in the wrong direction or failing. While they are aware that this incremental approach can occasionally miss an opportunity, many mature organizations such as universities would prefer the risk of missed opportunity to the danger of heading into the unknown.[2]

But, today, incremental change based on traditional, well-understood paradigms may be the most dangerous course of all, because those paradigms may simply not be adequate to adapt to a future of change. If the status quo is no longer an option, if the existing paradigms are no longer viable, then transformation becomes the wisest course.

[1] C. K. Prahalad, and G. Hamel, "The Core Competence of the Corporation," *Harvard Business Review* 68:79-91, (1990).

[2] R. C. Heterick, Jr., and C. A. Twigg, "Interpolating the Future," *Educom Review*, 32 (1), (1997).

Chapter 25 *The New University*

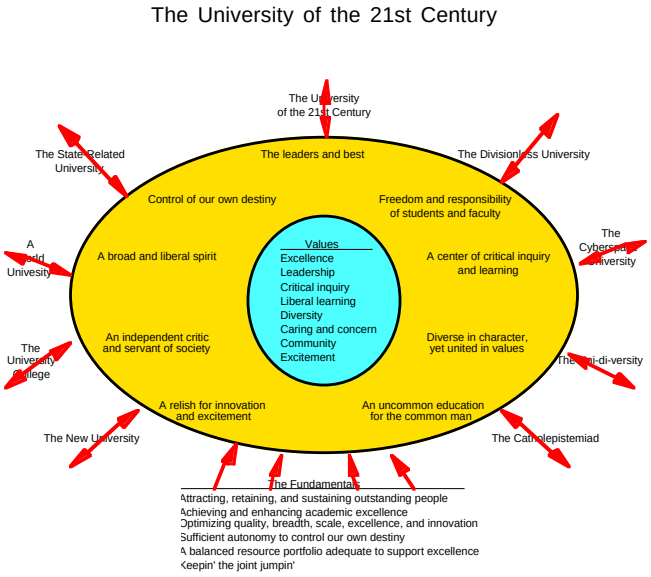
Experience has revealed the difficulty of approaching university transformation by changing existing programs and activities. While such a direct approach may suffice for incremental changes at the margin, an effort to achieve more dramatic change usually creates so much resistance that little progress is possible. It is far more effective to take a "green-field" approach by building separately a model of the new paradigm, developing the necessary experience with it, and, then, propagating successful elements of the model to modify or, perhaps, replace existing programs.

One possible approach to major university transformation taken in earlier and more affluent times was to build a separate campus. The efforts of the University of California in the 1960s to explore academic colleges built around research themes at UC-San Diego and residential learning at UC-Santa Cruz, are examples of this approach. However, the resource-limited 1990s are substantially different from the population-boom-driven 1960s, and it is difficult to justify such separate new campuses to explore new educational paradigms–not to mention finding sites comparable to the bluffs overlooking the Pacific. But there is a more important reason to consider an alternative approach: we believe that it is far more effective to develop and explore such new paradigms of the university directly, within an existing university community, better to prototype and rapidly propagate successful efforts.

The New University

To this end, at Michigan we considered a concept known as *the New University*, an environment in which creative students and faculty could join with colleagues from beyond the campus to develop and test new paradigms of the university. In some ways, the New University would be a laboratory where the fundamental missions of the university—teaching, research, service, extension—could be redeveloped and tested. But it would also be aimed at developing a new culture, a new spirit of excitement and adventure, that would propagate to the university at large. In such an academic enterprise, we would hope to build a risk-tolerant culture in which students and faculty were strongly encouraged to "go for it," in which failure is accepted as part of the learning process, and is associated with ambitious goals rather than poor performance.

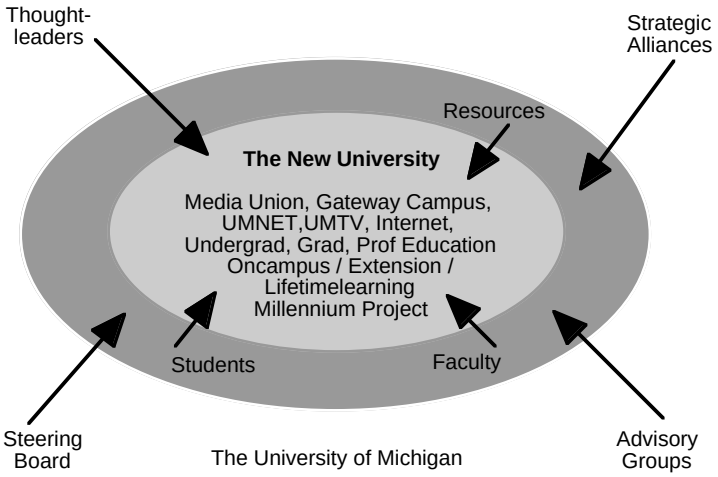
Although we took only the early steps in designing and creating the New University during the last years of my presidency, the concept did guide many of our actions. More specifically, we saw this laboratory university allowing us to experiment with the various paradigms proposed in the *Vision 2017* plan:



The New University would have both a physical and a virtual presence. For example, we developed new physical facilities, such as the Media Union, to serve as environments for these experiments. These exciting new centers were designed both to explore and test many of the more exciting innovations that may well determine the character of the university in the years to come. This includes integrating the use of information technology to provide students and faculty with access to the world, collective and interactive learning, and immersion in the cultural artifacts of our civilization.

These physical facilities were augmented by a virtual environment based on information technology and networks that would extend across and beyond the campus. The role of the University in the Internet II project provided a particular opportunity. We launched other activities, such as an array of digital library projects, a University-wide interactive video system (UMTV) with over one hundred broadcasting channels available to students and faculty, collaboration-technology projects, and a set of broad linkages to hundreds of institutions, both in this country and abroad.

In terms of structure, we saw the New University organized, not along conventional disciplinary lines, but, rather, stressing integrative themes. Further, while it would offer academic degrees, such programs would stress far stronger linkages among undergraduate, graduate, professional, and lifetime education programs than those offered by the traditional university. We also envisioned the New University more effectively integrating the various activities of the University by engaging its students in an array of teaching, research, service, and extension activities. Further, the New University would almost certainly involve an array of outreach activities, e.g., linking alumni to the on-campus activities of the University or providing richer and more meaningful international experiences for students.



While the New University would enroll a significant number of students, it would not have a large, permanent faculty or staff. Rather, it would draw faculty from across the University and throughout the world who would become associated with the New University for specific programs. This would allow it far greater flexibility, since it could avoid the constraints posed by faculty appointments and tenure.

An element of particular importance within the New University would be a center for the study of the future of the university. This center would draw together leaders from across a broad range of interests—education, technology, business, government, world affairs—to focus on the evolution of the University. This center was established as the Millennium Project, described in more detail below.

The success of the New University would depend in large part upon its governance and advisory structure. Although it would report through the normal University

channels (e.g., to the Provost, President, and Board of Regents), it would also have its own steering board comprised of leaders from many sectors of society. It would also make extensive use of external advisory groups for its various activities.

Reconnecting with the University's History and Tradition

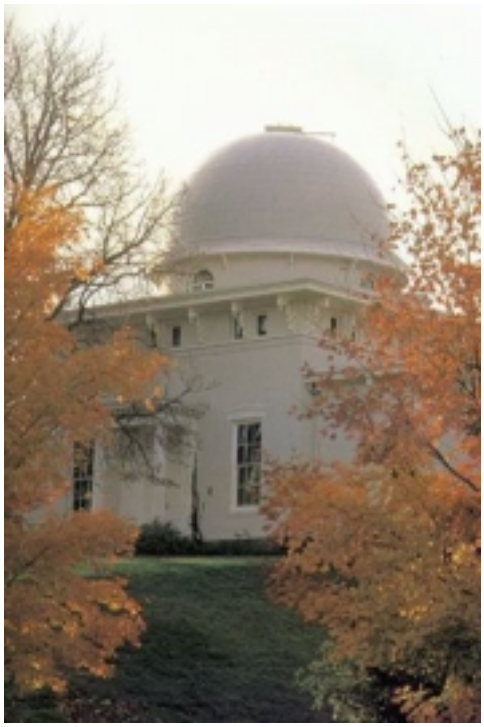
Ironically, even as we explored concepts such as the New University to prepare Michigan to face a challenging and quite different future, we simultaneously launched an effort to reconnect the University with its past. We noted earlier our belief that only a concerted effort to understand the important traditions and values of the past, the challenges of the present, and the possibilities for the future would enable institutions to thrive during a time of such change.

Here, part of the challenge in making this connection between the past, the present, and the future was the degree to which the activism of the 1960s and 1970s had essentially decoupled the University from its past. In their efforts to reject "the establishment", students—and many faculty and staff—almost took great pride in ignoring the University's earlier history and traditions. We had long been aware of the effort that eastern private universities such as Harvard and Yale had taken to preserve and appreciate their remarkable histories and pass their traditions down through generation after generation of students and faculty. We believed that while the University of Michigan had just as distinguished a history as any private university–in fact, Michigan had time and time again provided the model for the evolution of higher education–this recognition had simply not been woven into the University culture. Hence the challenge was to take a series of steps to better connect the University with its remarkable past.

The first step was to create a formal University History and Traditions Committee, appointed by the president and staffed by the Office of the President. Robert Warner, former Director of the National Archives and Dean of Library Science agreed both to chair this Committee and to accept a Regental appointment as the first University Historian. He was joined on the Committee by Francis Blouin, Director of the Bentley Historical Library, Nick and Peg Stenick, who had spent years in both prserving University historical materials and teaching an undergraduate course on the history of the University, and Anne Duderstadt, who had taken a particular interest in the history of the University, reading the biographies and writings of past presidents and University historians and developing a deep appreciation for Michigan's remarkable history and tradition and its impact on higher education.

Certain early steps had already been taken. For example, in my earlier role as provost I had established base funding for the Stenecks' course on the history of the University, since this had always been at some risk due to changing funding whims in LS&A. The Bentley Library was given a more formal role as archive for the University's historical materials, and guidelines were established for historical documentation and preservation.

One of the most important efforts of the History and Traditions Committee was historical preservation. Anne Duderstadt stimulated the effort to restore and preserve the Detroit Observatory, one of the earliest scientific facilities in America and key to the early evolution of the research university.



The Observatory Project

This particular effort not only required enlisting the support and interest of key members of the University administration including the Vice President for Research, Homer Neal, but it also required a substantial fund-raising effort to raise the roughly $2 million necessary to renovate and preserve the facility. Key in this effort was the role of Sandy Whitesell, who not only led the detailed renovation project and served as the first curator of the new facility, but also wrote a scholarly history of the role the Detroit Observatory played in the history of the research university in America.

There were a number of other historical preservation efforts. An extensive effort was made to restore the Inglis House estate, using original plans of the house and grounds to renovate its interior and restore its English gardens to their original grandeur. The University obtained the furnishings of the room of one of Michigan's first students and displayed this in a special gallery constructed in the new Heutwell Visitor Center. Sometimes these efforts involved simply documenting the importance of a particular site or facility on campus and placing an appropriate historical marker, for example, the President's House or the East University plaza (the eastern boundary of the original campus). At other times it involved a more significant effort to identify and protect a particular piece of history, such as the Professor's Monument.

A process was launched to obtain personal oral histories from earlier leaders of the University, including Harlan and Anne Hatcher, Robben and Sally Fleming, Allen and Alene Smith, and Harold and Vivian Shapiro. The University's 175th anniversary provided a marvelous opportunity to host a symposium involving the living presidents of the University.

The Panel of Presidents for the 175th Anniversary

Five Generations of Michigan First Families

An effort was also commissioned to update the popular history of the University by Howard H. Peckham, *The Making of the University*.

Other Experiments

No one knows what this profound alteration in the fabric of our world will mean, both for academic work and for our entire society. As William Mitchell, Dean of Architecture at MIT, stresses, "the information ecosystem is a ferociously Darwinian place that produces endless mutations and quickly weeds out those no longer able to adapt and compete. The real challenge is not the technology, but rather imagining and creating digitally mediated environments for the kinds of lives that we will want to lead and the sorts of communities that we will want to have."[1] It is vital that we begin to experiment with the new paradigms that this technology enables. Otherwise, we may find ourselves deciding how the technology will be used without really understanding the consequences of our decisions.

The School of Information[2]

Several years ago we became so convinced of the potential impact of information technology for the future of our institution that we thought about launching a "skunkworks" operation to explore and develop various paradigms for what a 21st Century university might become. Rather than building an independent research center, we instead decided to take our smallest academic unit, the former School of Library Science, and put at its helm one of our most creative scientists, Dan Atkins, with the challenge of developing new academic programs in "knowledge management." The result has been the rapid evolution—indeed, revolution—of this unit into a new School of Information.

Put simply, this school is committed to developing leaders for the information professions who will define, create, and operate facilities and services that will enable users to create, access, and use information they need. It intends to lead the way in transforming education for the information professions through an innovative curriculum, drawing upon the strengths of librarianship, information and computer science, business, organizational development, communication, and systems engineering. Its activities range from digital libraries to knowledge networks to virtual educational structures.

The Media Union[3]

In 1996 the University of Michigan launched another key experiment: a fascinating new center known as the Media Union. It is designed to be a testbed for developing, studying, and perhaps implementing the new paradigms of the university enabled by information technology. It will give us the chance to try out different possibilities before they become widespread realities, helping us avoid potentially expensive or even dangerous mistakes while maximizing the extraordinary capacities of our new tools.

The Media Union creates an environment where students and faculty can join with colleagues beyond the campus, developing and testing new visions of the university, exploring teaching, research, service, extension, and other areas. Even more importantly, the Media Union fosters a new spirit of excitement and adventure. It provides the foundation for a risk-tolerant culture, where students and faculty are strongly encouraged to "go for it," accepting failure as a part of the learning process as they reach for ambitious goals. Organized around dynamic, integrative themes, the Media Union works to break down the compartmentalized nature of the larger university.

Originally we envisioned the Media Union as a common connecting point between the four schools on the University's North Campus: Engineering, Architecture and Urban Planning, Music, and Art, all of which are intimately concerned with the act of creation. Although all four facilities operate within close proximity of each other, in the past there have been few collaborations between them. This makes little sense. Increasingly society demands designs that combine aesthetics, efficiency, and durability. As engineers become more like artists, artists and musicians have become more interested in new environments for their creations; and architects are increasingly concerned with the structural integrity and beauty of their designs.

We soon realized, however, that the Media Union must be a resource for the entire University. The need for interdisciplinary collaboration extends beyond the North Campus schools, and as a facility designed in part to bridge the limitations of time and distance, what better place to bring the North and Central Campuses together? The Media Union acts as a catalyst, helping faculty and students from different fields realize their similarities while capitalizing on their differences.

The University of Michigan Media Union

More specifically, this 250,000 square foot facility, looking like a modern version of the Temple of Karnak, contains almost 1,000 workstations for student use—including Pentiums and Macs and Unix machines such as Suns and Hewlett Packard workstations. It has thousands of more network jacks for students to plug in their laptops, and wireless modems if they wish to work in its surrounding plazas and

gardens during the summer. The facility contains a 1.5 million volume library for art, science, and engineering, but perhaps more significantly, it is the site of our major digital library project. There is a sophisticated teleconferencing facility, design studios, visualization laboratories, and a major virtual reality complex. Since art, architecture, and music students work side-by-side with engineering students, the Media Union contains sophisticated recording studios and electronic music studios. It also has a state-of-the-art sound stage for "digitizing" performances, as well as numerous galleries for displaying the results of student creative efforts. Consequently, the Media Union is open 24 hours a day, seven days a week, so that students have round-the-clock access to its facilities.

The "virtual" nature of the research teams in the Media Union will entice not only campus scholars, but exciting thinkers around the world to participate. While groups may meet physically from time to time, many of the members of these project teams will participate through interactive technology. Members will not need to leave their home institution or even their homes to join in close collaboration with other scholars who are thousands of miles away.

Similarly, libraries will always have books, but the Media Union's library will not be judged by its number of volumes. Increasingly, information will be stored electronically, and its data will be dispersed across the globe. We are talking about more than just text; the Internet already contains archives of images and sounds, audio and visual information that scholars can retrieve at the touch of a button. Eventually a researcher will not have to find a VCR to view movies or locate a tape recorder to listen to the score of a symphony. And published "papers" will increasingly include images and sounds as an integral part of their presentation.

The Media Union library will eliminate much of the drudgery usually associated with information retrieval. Quasi-intelligent software programs will search out data for even the most unique topics, tracing connections within a broad spectrum of research that scholars might have missed using manual techniques. While this will never replace human insight, the wide-ranging character of these searches will help break down the invisible barriers that often separate disciplines today. The most useful resources for a psychologist working on an aspect of "panic" might well turn out to have been written by an anthropologist or an English professor or even an engineer.

Libraries will also increasingly become places where the differences between "researching" and "doing" blur. The new information technology not only supports information retrieval, but also facilitates manipulation of that information. A student

can not only read about architecture, but use a computer tool at the same time to try out a design.

For the Media Union to succeed, we must take risks, accepting that we may stumble before we can walk. When we began this project in the 1980s, our challenge was to envision a building that could become a campus "commons," both physically and virtually. We struggled with designing a place that would allow colleagues from very different disciplines and across great distances to collaborate with each other. Ultimately, we had no final answers—just ideas. We know we probably would not get it all right from the beginning. In fact, it is clear that stagnation will have arrived if the Media Union ever settles comfortably into any single form.

One of the problems in centers like the Media Union at other universities has been that projects often move in when the facility is built—and then never leave. Limited paradigms take hold and then can't be shaken loose. Instead of propagating flexibility within the larger university, the reverse often happens; and these centers find themselves infected by the stolid, incremental "disease" of large institutions. Creating a fluid structure that continually embraces new ideas will be a great struggle. A related challenge will be learning to sustain spaces that are truly neutral in their academic orientation.

Another difficulty we have been grappling with is finding ways to let the energy and enthusiasm from the Center's cutting-edge research projects trickle out into the common areas of the building, and ultimately to the entire University. The new interactive library is open to all members of the Michigan community, but much of the rest of the building will be reserved for a wide spectrum of research projects and groups. Researchers and scholars need space of their own to work together, but we worry that if they remain isolated behind closed doors (even glass doors), we could lose the opportunity for our students and colleagues to experience their excitement. Even allowing the outside world "virtual" access to the Union's projects may not be enough. As Architecture Dean Robert Beckley notes, "there are ways in which we would like the building to have the messy, intriguing look of a house for mad scientists." If we expect the Media Union to be a catalyst, changing the common practices of our community, we must find ways for these new practices to move beyond the building's studios.

The Gateway Campus

It seems appropriate to mention one major project that we were unable to launch, the Gateway Campus–but still believe could be an important part of Michigan's future. This would have been the focal point of undergraduate education at Michigan.

As we have noted elsewhere, the University of Michigan has a major commitment to undergraduate education. In fact, the College of Literature, Science, and Arts enrolls over 18,000 students in liberal arts-based undergraduate education. Yet, despite the rich array of resources on our campus, there is no architectural focal point for undergraduate education. To be sure, there are important undergraduate facilities such as the Shapiro Library and the Michigan Union. But there is no facility that creates a sense of place and commitment for undergraduates, in the way that the Law School does for law students or the College of Engineering does for engineering students, for example.

To this end, we developed a plan to build a major cluster of facilities on the east side of the Central Campus that would accomplish the following objectives:

- It would provide a physical space, a location, that would be clearly identified by students, faculty, and alumni as the University's focal point for undergraduate education.

- It would include major facilities for undergraduate instruction, including lecture halls, classroom clusters, and multimedia spaces.

- It would be the location for key student services, including undergraduate counseling, student organizations, study-abroad programs, and undergraduate deans and administrators.

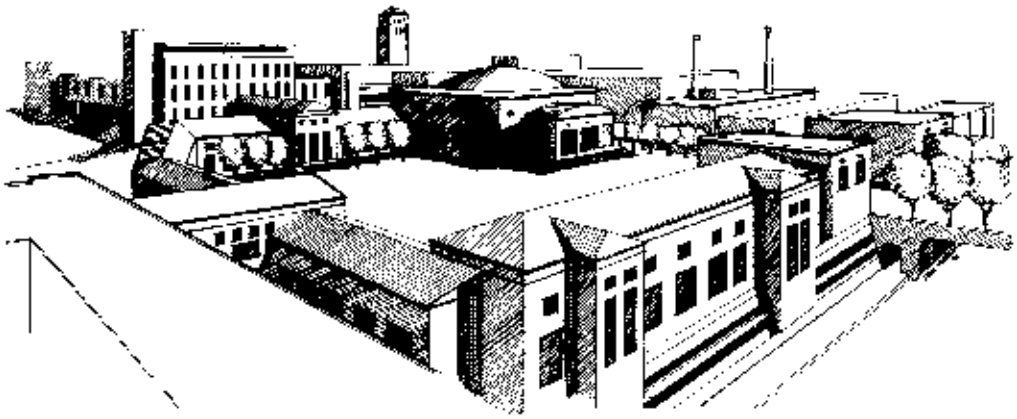
- It would also house several of our most important museum collections–noteably our Museum of Art, the Kelsey Museum, and perhaps some components of the collections of the Museums of Anthropology and Natural History.

- This complex would also provide an entry point to the University for various external communities attracted by our museum collections and performing arts.

We referred to the complex as the Gateway Center, both because of its role in providing students with the "gateway" to their undergraduate education and its

function as a gateway to the campus. The Gateway Center would be sited adjacent to the Hill Group of Residence Halls, connected with a plaza spanning a lowered Washtenaw Boulevard, thereby linking students directly with the rest of the campus. Its location adjacent to the University's principal museums and performing arts facilities (Hill Auditorium, Power Center, and Mendelssohn Theatre) would allow us to better integrate these cultural activities into undergraduate education.

The complex itself would consist of roughly 500,000 square feet of facilities, plazas, and gathering spaces. A class of architectural students created a rough sketch of the concept—partly in jest, since it blended together Angell Hall and Jefferson's Academical Village (or the Pantheon) in the illustration—to illustrate the linkage between undergraduate education and the cultural achievements of our civilization:



Further discussions extended the concept of the Gateway Campus to that of a Gateway College, a separate academic unit of the University, focused on providing general education of the highest quality to all first and second year undergraduates enrolled in the University (including those enrolled in professional schools such as Engineering and Nursing). The Gateway College would have an independent dean and administration, on 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, drawing most of its faculty from all of the other units of the University. In this sense, it would function very much as an undergraduate analog to the Rackham School of Graduate Studies. All first and second year students would be admitted initially to the Gateway College rather than to LS&A or professional schools. They would shift into specific majors (concentrations) in LS&A or into professional schools in their junior year.A financing plan was devel-

oped for the Gateway College, using a combination of private gifts, state support, and internal University funds. However, we were unable to raise the nucleus private support (estimated at $75 million) to launch the project.

The Michigan Virtual Auto College[4]

In 1996 we created a new institution, the Michigan Virtual Auto College, designed to explore the implications of digital technology for higher education. This was a collaborative effort among the University of Michigan, Michigan State University, the State of Michigan, the state's other colleges and universities, and the automobile industry. It was formed as a private, not-for-profit, 501(c)3 corporation to broker technology-enhanced courses and training programs for the automobile industry, including the Big 3 and Tier 1, 2, and 3 providers.

The MVAC serves as an interface between higher education institutions, training providers, and the automotive industry. It works to facilitate the transfer of credits between and among institutions to facilitate certificate and degree attainment for those participating in courses and training programs offered under its auspices. The MVAC offers courses and training programs, ranging from the advanced post-graduate education in engineering, computer technology, and business administration to entry level instruction in communications, mathematics, and computers. Although technologies are rapidly emerging, it is expected that MVAC will broker courses which utilize a wide array of technology platforms including satellite, interactive television, Internet, CD-ROM, videotape, and combinations of the above. The MVAC will seek to develop common technology standards between and among providers and customers for the ongoing delivery of courses.

In a sense, MVAC was designed as a "green field" experiment where colleges and universities can come together to test capabilities to deliver their training and educational programs at a distance and asynchronously. The MVAC is a college without walls. Courses and programs can be offered from literally any site in the state to any other technologically connected site within the state, the United States, or the world. It will eventually serve as a platform for the State of Michigan to build an education export industry.

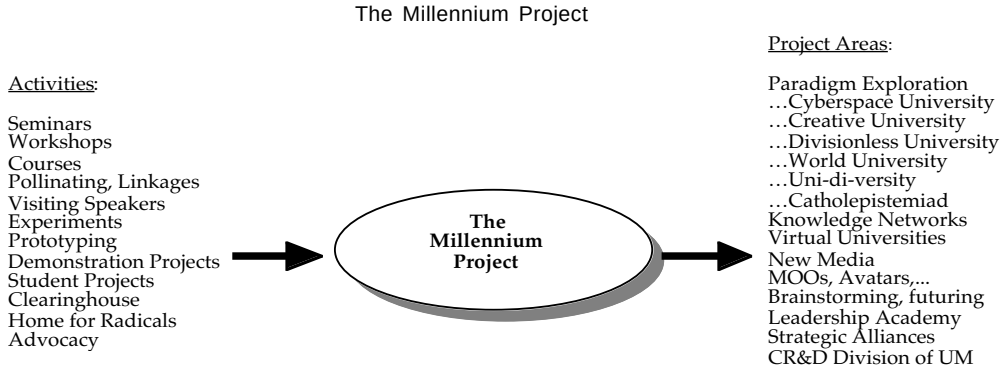
Capitalization for MVAC was provided by members of the partnership: the State of Michigan ($5 million), the universities ($2 million), and the automobile industry ($5 million). However it is expected that the effort will rapidly become self-supporting, based on student fees. The schedule for the MVAC was an aggressive one, with formal incorporation in fall of 1996, delivery of the first array of pilot courses by February, 1997 and a full curriculum in place by Fall of 1997.

The Millennium Project[5]

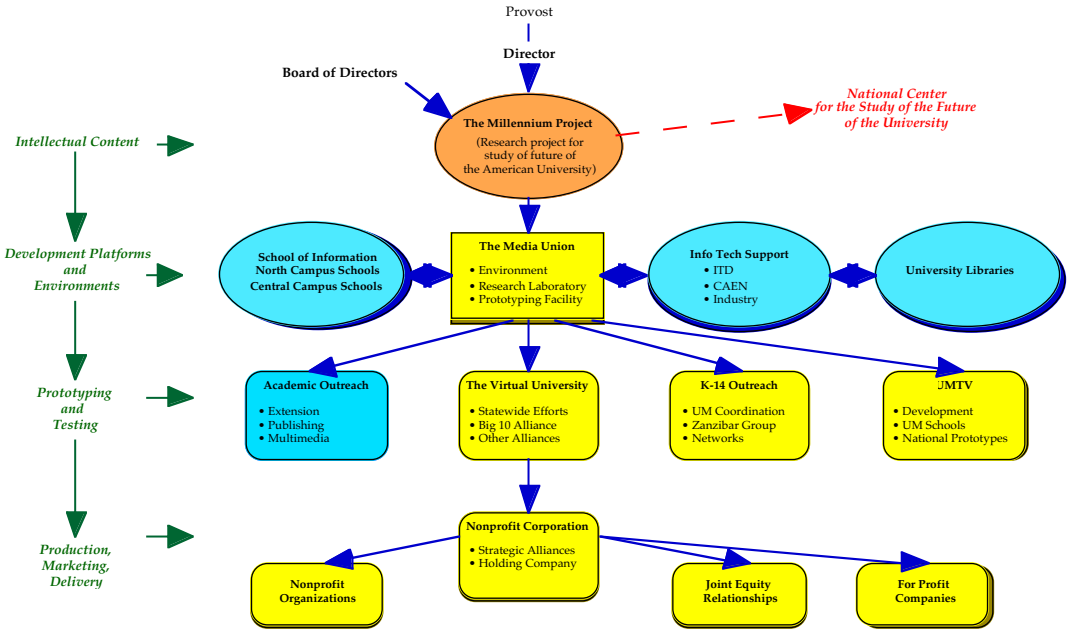
Within the University of Michigan we developed the Millennium Project, aimed at providing an environment in which creative students and faculty could join with colleagues from beyond the campus to develop and test new paradigms of the university. In some ways, the Millennium Project is an analog to a corporate R&D laboratory, an incubation center. Yet, rather than being a "think-tank," ideas are generated and studied, it is a "do tank" where ideas lead to the actual creation of new organizations which are then available for study. Housed within the Media Union, the project draws together scholars and students to develop working models or prototypes to explore possible futures of the university. Like the famous Lockheed Skunkworks, every so often the hanger doors of the Millennium Project open, and something really weird is wheeled out and flown away.

For example, rather than simply exploring the various issues characterizing computer-mediated distance learning, the Millennium Project has instead participated in the development of a virtual or cyberspace university, the Michigan Virtual Auto College. Rather than examining various elements of international education, the Millennium Project has joined others in an effort to build a truly global university, the Open University for the Jewish People. And rather than simply studying the various social, political, and economic issues swirling about the ever more pervasive use of information technology in our society, the Millennium Project is actually trying to build new types of learning communities, in which information technology provides people and their institutions with ubiquitous and robust access to rich knowledge resources and powerful learning opportunities.

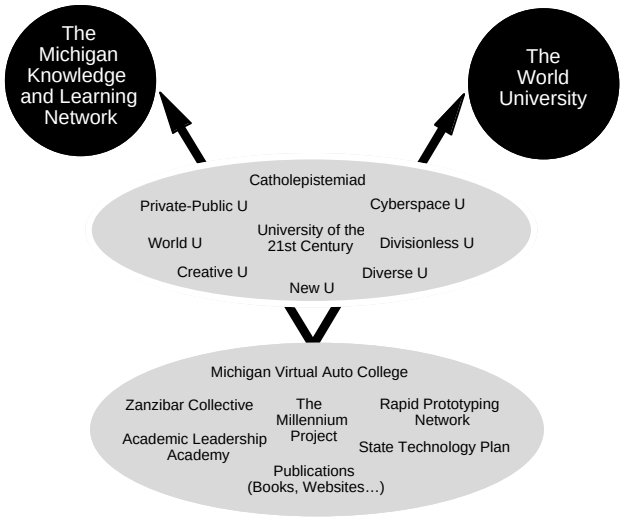
The Millennium Project was launched on seed funding from the University for an initial five-year period (to the year 2001, the Third Millennium). But we have had strong interest and support from both the federal government and private foundations, and the Project could eventually evolve into a major national center or institute for the study of higher education.



The interrelationship among these various roles is best illustrated by the diagram in the figure below, which characterizes the Millennium Project as providing the intellectual content for a sequence of activities ranging from fundamental research to development to prototyping to actual production and delivery.

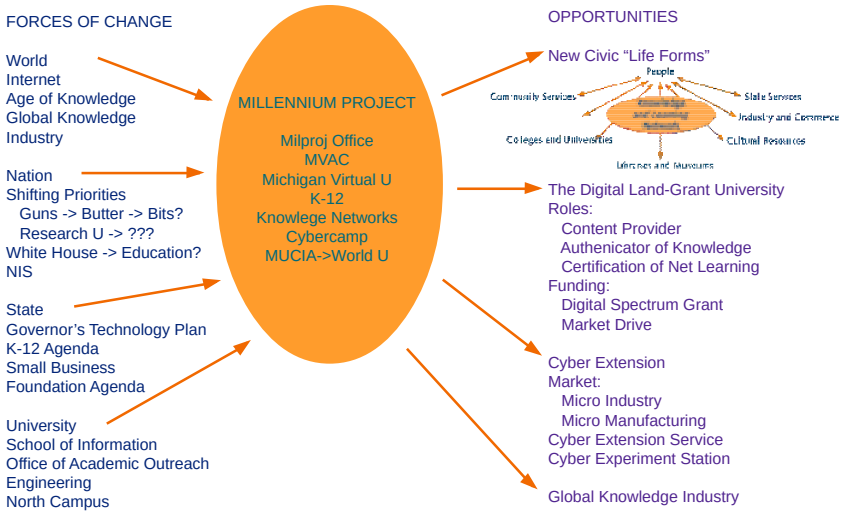


More specifically, the Millennium Project explores various paradigms for the future of higher education both within the extraordinary environment provided by the Media Union, and those that might also be sustained through strong interactions with academic units, in particular, the School of Information and the North Campus schools and colleges, the Information Technology Division, and the University Libraries. Currently, the Millennium Project interacts extensively with other ongoing efforts such as academic outreach, K-14 education, UMTV, and new initiatives such as virtual universities. New organizations will be formed to take successful paradigms beyond the prototyping and testing stage, such as nonprofit corporations and alliances with for-profit companies.



The Millennium Project works closely with a number of the academic outreach initiatives of the University. These partnerships work to develop so-called "virtual" or cyberspace universities at the state, nation, and international level; explore new methods for the delivery of educational services such as multimedia; and design and launch a major new academy for the education of future academic leaders.

From the early experiences, it is clear that the activities of the Millennium Project are evolving rapidly. This can best be seen through a simple diagram:



Some of the projects the Millennium Project has been working on include the CyberSchool, a new approach to K-12 education using the Internet, the development of new civic "life-forms" which integrate a variety of social services, and a broader examination of the emerging global knowledge/learning industry.

Concluding Remarks

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 impact on our society. To succeed, we must develop a more flexible culture, one more accepting of occasional failure as the unavoidable corollary to any ambitious effort. We must learn to adapt quickly while retaining the values and goals that give us a sense of mission and community. To advance, we must discover ways to draw upon the unique and vibrant creativity of every member of our community.

As financial resources available to higher education become increasingly constrained, and as competition for students increases globally, especially with the advent of "virtual" technology, we cannot afford to hide our heads in the sand. Increasingly,

many fear an age of attrition in higher education similar to that of the post-Civil War period, when those institutions that cannot reestablish their sense of purpose for a new society will begin to disappear. Yet the opportunities presented by the age of knowledge are extraordinary.

As we ask our students to critique the received authority of their society, to examine and decide rather than accept the status quo, so must we also re-open debates about the structure and goals of our common institution. We must ask ourselves: what will our students need in the 21st Century? What will citizens of our new world require? How can we forge a new mission for a changing society as we hold firmly to the deep and common values that have guided us over two centuries of evolution?

It is often scary and difficult to let go of old and comfortable roles, to open ourselves to new possibilities and ways of being. Yet change brings with it the possibility of deeper connections to our students and the potential for serving a much broader range of our society. Growth, both for an institution and for the individuals that comprise it, can come only with a step into the unknown. We move forward together, not recklessly, but thoughtfully, with care and a deep sense of commitment to the lives and dreams of our students.

[1] William J. Mitchell, *City of Bits: Space, Place, and the Infobahn* (Cambridge : M.I.T. Press, 1995).
[2] http://www.si.umich.edu/
[3] http://www.ummu.umich.edu/
[4] For an excellent example of such virtual universities, see the website for the Michigan Virtual Automotive College at http:/www.mvac.org, and also the article by Scott Bernato, "Big 3 U", *University Busines*s, (September/October, 1998) 20-27.
[5] http://milproj.ummu.umich.edu/

Part VI

A Roadmap for the Future

Part VI A Roadmap for the Future

We became increasingly convinced that the University faced a pivotal moment in its history, a fork in the road. Taking one path could, with dedication and commitment, preserve the University as a distinguished—indeed, a great—university, but only one among many such institutions.

However we believed there was another path, a path that would require great vision and courage in addition to dedication and commitment. By taking this second path, the University would seek not only to sustain its quality and distinction, but it would seek to achieve leadership as well.

We believed the University could—and should—accept its heritage of leadership in public higher education by taking that second path. We saw the 1990s and beyond as a time similar to that extraordinary period in the late 19th century when the University of Michigan was a primary source for much of the innovation and leadership for higher education. In a sense, I and my colleagues believed the University has the opportunity to influence the development of a new paradigm of what the university will be in 21st Century America, a new model capable of responding to the changing needs of both our state and our nation. But this would require clear vision, an unusual commitment to excellence, and strong leadership.

Hence our strategic focus shifted from building a great 20th Century university to transforming Michigan into a 21st Century institution. More specifically, we adopted a new plan, Vision 2017, aimed at providing the University with the capacity to transform itself into an institution more capable of serving our state, our nation, and the world during a time of great change.

Chapter 26 *Remaining Challenges*

For the past decade we have led an effort at the University of Michigan to transform ourselves, to re-invent the institution so that it better serves a rapidly changing world. We created a campus culture in which both excellence and innovation were our highest priorities. We restructured our finances so that we became, in effect, a privately supported public university. We dramatically increased the diversity of our campus community. We launched major efforts to build a modern environment for teaching and research using the powerful tools of information technology.

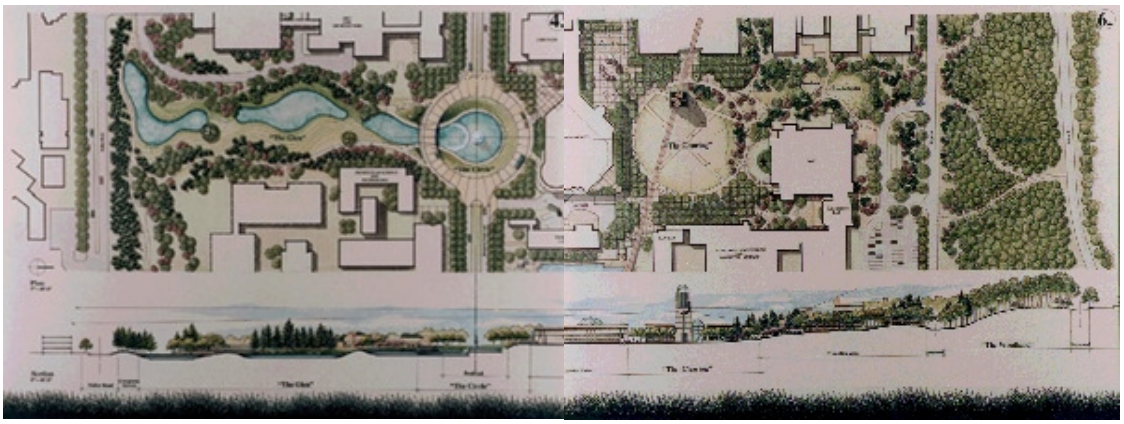
One by one, many of the goals set out in the *Vision 2000* positioning plan were achieved. One by one, many of the actions included in the *Vision 2017* transformation plan were taken. Yet, despite the remarkable progress of the past decade, there nevertheless were some important tasks that we were unable to accomplish or fully complete. This chapter will review what I believe are the most critical remaining challenges.

Completion of the Rebuilding Effort

By 1996, essentially all of our projects to rebuild the University of Michigan were either completed, underway, or funded. Over the next two years several dozen of these facilities projects would be completed and dedicated. During spring of 1996 we had managed to obtain a commitment to provide an additional $137 million of state appropriation, including $79 million for the Ann Arbor campus. This amount was sufficient to complete the renovation of the Central Campus, including the last key LS&A facilities: the LS&A Building, Haven Hall, Mason Hall, Frieze Hall, West Hall, and the Perry Building. Since this required a 20% University match, we had developed a funding plan that would use University funds to renovate Hill Auditorium and the Rackham Building as our contribution. Since we realized that construction costs were likely to increase rapidly with a prosperous economy, we arranged to have these projects fast-tracked with the intent to have them completed by late 1998.

The funding was in place, the plans had been completed, and we were ready to proceed through the state capital construction process. Unfortunately, these important projects came to a halt in 1997. At that time a decision was made to hire a new campus master planning architect and all such projects were put on hold to allow a new re-evaluation. As of mid-1999, there has been no further progress on completion of the Central Campus, and the original construction estimates of $80 million have now soared to over $140 million.

The master plan for completing the North Campus met a similar fate. In 1994, the University conducted a blind competition involving several of the nation's leading planning firms to develop a new landscaping plan for the North Campus. A jury panel consisting of Michigan's North Campus deans selected a very novel design submitted by Johnson, Johnson, and Roy. Their Northwoods plan created an exciting new character to the North Campus, based on two circular areas surrounded by plantings, fountains, streams, and community areas. Throughout 1995 and 1996 the first steps were taken to execute this plan, concurrently with the completion of the Media Union, the Lurie Tower, and the Lurie Engineering Center. Yet, in 1997, all such actions were once again brought to a halt and remain suspended to this day.



The Northwoods master plan for the North Campus

Although the University benefited greatly from the successful effort to rebuild the various campuses of the University, it was frustrating to see the effort halted when it was so close to completion.

A State-Related University

As I have noted, the University of Michigan has evolved over the past three decades from a strongly state-supported university to the point at which the state appropriation has fallen behind other support such as tuition, federal research contracts, and, soon, private giving. Our level of state support will probably continue to decline relative to other funds from federal or private sources in the years ahead. In fact, simply extrapolating the growth rates of our various revenue streams from the experience of the past decade suggests that state support will drop to roughly 7 percent of our total revenue base by 2000 and 3 percent by 2010. Put another way, over the last half of the 20th Century, the University of Michigan has evolved from a "state-supported" to a "state-assisted" to a "state-related" institution. We are, in effect, a privately supported public university, just as we have become a nationally supported state university.

Ironically enough, however, even as the state's participation in our support has declined, the effort of state government to control our activities has became ever more intense. Furthermore, the press has climbed on the bandwagon, calling for even tighter control of the University, supposedly to protect the interests of the Michigan taxpayers, though they rarely acknowledge the interests of those other constituencies who currently pay over 90 percent of our bills: students, parents, patients, the federal government, donors, and the like.

We have little hope of returning to the generous level of state support we experienced in the 1960s and earlier decades in the foreseeable future. The constraints on tax revenue and the priority of other needs will constrain any significant growth in funding for higher education in Michigan. Furthermore, political pressures will continue to make it very difficult to prioritize state support for flagship institutions such as the University of Michigan. Instead, these same forces will drive a leveling process in which state appropriation per student gradually will tend to equalize across the state. Of course, this situation likely will be the future of other flagship state universities in the years ahead. The very concept of the comprehensive public state university, whose quality is comparable to that of the finest private universities, is in serious jeopardy, at least to the degree that we expect these institutions to be supported in a significant way from state appropriations.

In attempting to address this future, we set out a three point strategy in our initial "business plan" of *Vision 2000:*

- To take steps to build alternative revenue streams (tuition, federal grants and contracts, auxiliary enterprises, and private giving) to levels sufficient to compensate for the loss in state support.

- To deploy our resources far more effectively than we had in the past, focusing to achieve quality at the possible expense of breadth and capacity, and while striving to improve efficiency and productivity.

- To enhance the University's ability to control its own destiny, by defending our constitutional autonomy and building strong political support for our independence.

While we were highly successful in achieving the first two objectives, we fell far short in the last two efforts.

Institutional Autonomy

The relationship between the public university and the broader society it serves is a particularly delicate one, because the university has a role not only as a servant to but as well as a critic of that society. It serves not merely to create and disseminate knowledge, but to assume an independent, questioning stance toward properly accepted judgments and values. To facilitate this role as critic, universities have been allowed a certain autonomy.

Historically, universities have enjoyed three important traditions: academic freedom, tenure, and institutional autonomy. Although there is a considerable degree of diversity in practice (as well as a good deal of myth) there is a general agreement about the importance of these traditions. Academic freedom is generally defined as that aspect of intellectual liberty that relates to the teaching and scholarly activity of the academic community. It is based on the premise that the role of critic can only be accomplished in an atmosphere entirely free from administrative, political, or ecclesiastical constraints on thought or expression.

The concept of faculty tenure is closely related. After a certain probationary period, faculty are provided with protection against removal on the basis of what they teach or study. Although actual practice has extended the definition of tenure to provide a broader form of job security, sometimes even protecting faculty members against incompetence, in theory it is intended to secure academic freedom.

Institutional autonomy is intended to insulate all decisions bearing upon the university's academic mission from political interference. While private institutions are generally distant enough from interference, public institutions rely on a more fragile autonomy from the society and the government that supports them. In many cases, explicit provisions in the state constitution vest exclusive management and control of the institution in its governing board, presumably to the exclusion of direct control by state executive and legislative officials. In other cases, institutional autonomy is provided in a far less effective form through statute.

Of course, no matter how formal the autonomy of a public university, whether constitutional or statutory, other factors can lead to the erosion of their independence. For example, in many states, sunshine laws relating to open meetings of public bodies or freedom of information laws have been extended to the point where they can paralyze the operation of public institutions. Public attitudes, as expressed through populist issues such as control of tuition levels or admission standards, also hinder public institutions from time to time. As one governor has noted: "The most threatening general thing affecting higher education is the state of mind of the voters, the people. If they are dissatisfied, the politicians will prey on their dissatisfactions."

Constitutional or statutory autonomy usually refers only to those matters clearly designated as within the exclusive control of the governing board. Those powers clearly within the prerogatives of the legislature (e.g., the power to appropriate) or the executive branch (e.g., the governor's budget recommendation and veto power) are exercisable even against constitutionally autonomous institutions. Such autonomy also needs to be reasserted from time to time through judicial test. Universities urgently need to firmly, if politely, challenge attempts by state government to intrude on their autonomy through judicial tests.

The University of Michigan has just such constitutional autonomy, established in the original state constitution and reaffirmed by each successive constitutional convention. The autonomy is vested in the University's board of regents, a constitutional body as firmly founded as the legislature, governor, judiciary, and equal to each of these bodies in its power over the academic and budget affairs of the university. This autonomy has been successfully defended in numerous court tests.

Of course, there is a trend in many states that poses even a greater threat to the long-term viability of public higher education than excessive government intrusion: benign neglect. This is presently manifested as an alarming trend both at the state and national level to abandon the two fundamental principles underlying the public research university: the public principle of general tax support for public universi-

ties, and the partnership between the federal government and the universities for the conduct of basic research.

We viewed the issue of institutional autonomy as a particularly serious one. The past decade had made it clear that the University could only maintain its quality by addressing a far broader market than the state alone.

Public Perceptions

The people of the state held tight to the persistent belief that they "owned" the University of Michigan, that their taxes paid most of the costs of our activities, and that we should focus all of our efforts on serving state interests. State government, the press, and the public at large demonstrated little awareness that the state had become the smallest investor in the University. Motivated by this viewpoint, the state legislature frequently passed legislation that intruded on University operations. It attempted to dictate who we admitted, how much tuition we charged them, what we taught them, and even who taught them. At the same time, the University of Michigan, like most flagship institutions, has long been plagued by the populist view that what is good enough for local colleges is good enough for the University of Michigan. The administration was under constant attack by those, including the media and the Legislature, who viewed our efforts to achieve excellence as both elitist and arrogant.

We attempted to develop a strategy to respond to this public perception. The early effort was aimed at getting citizens to understand the multiplicity of ways that the University was vital to the state. Beyond simply providing a place to send the kids to college, we hoped to convince them of the broad impact of the University in areas such as health care, economic development, the production of professionals, the arts, and broader entertainment (the Michigan Wolverines). Beyond this, we considered portraying the University as an important national and world resource, that through a small "subvention" from the state's taxpayers, the University not only was located in Michigan, but it devoted a great deal of its attention to responding to needs of the state. Furthermore, we sought to shift the public perception from the University as a consumer of state resources to, instead, an institution which attracted and stimulated very considerable resource growth in Michigan. In fact, we could demonstrate that for every Michigan taxpayer dollar invested in the University, it generated almost $10 dollars of additional support and roughly $100 of related economic activity.

However, as these arguments frequently fell on deaf or unsympathetic ears, we considered a more pragmatic approach. One cynical approach would be aptly de-

scribed as "you get what you pay for". We could determine the real costs of all of the University's services, like undergraduate education, professional education, or public service, and then offer to "sell" these services to the state in return for our appropriation. We imagined presenting the state with a menu containing both services and prices, and then inviting it to purchase whatever it wished. We suspected that this would have made for a very interesting appropriations hearing.

The Board of Regents

As we will note later, one of the most serious manifestations of this populist streak arose through the changing composition of the University's Board of Regents. The fragmented political character of both political parties (labor vs. liberals in the Democratic Party, and religious right vs. moderates in the Republican Party) began to have a serious impact on the character and quality of candidates nominated by the party conventions to serve on the governing boards of Michigan's three constitutional universities: the University of Michigan, Michigan State University, and Wayne State University. Not only was it increasingly difficult for individuals with broad experience, stature, and strong interests in higher education to make it through the political gauntlet leading to nomination and election, but both parties increasingly nominated individuals with either special-interest or populist agendas. By the mid-1990s, Michigan's elected education boards had largely evolved into trustee bodies with primary responsibility for the welfare of the University to, instead, a state oversight agencies, whose agenda was to make certain the state's universities served their particular political constituency and, at times, even their personal agendas.

The tragic irony of this shift is that throughout much of the University's history, its Board of Regents had served as a buffer, protecting the University from the political forces swirling about it and threatening its quality. The unusual constitutional nature of the Regents gave them the opportunity to play a critical role in protecting the autonomy of the University. As the Board evolved into a watchdog committee, it began to focus on constituency concerns and intensify special interest political forces on the University.

The Press

There was similar politicization of a second constituency that had once also protected the University: the press. The press increasingly exhibited the same populist tendencies that were surfacing in state politics, developing a deep suspicion that only increased as the University became less dependent on state support. Of course,

the press had long challenged the state's universities on a broad range of issues, from tuition to affirmative action to nonresident students. However, during the 1990s, a new tendency evolved in which the press launched efforts aimed at exerting more direct influence and control over these institutions, just as it had over government. Some of this pressure was indirect, by using the power of the press to apply pressures to elected governing boards, thereby influencing their decisions. But some of the effort to control was far more overt and took particular advantage of the state's excessively intrusive sunshine laws.

The University of Michigan was hit particularly hard by these laws. Prior to the mid-1980s, the Regents and executive officers had been able to meet in informal, private sessions to discuss difficult matters. However, the Open Meetings Act (OMA), one of the state's sunshine laws, eliminated this avenue of private communication. For a time, the Board was able to continue to meet with the administration in subquorum groups, but the courts subsequently interpreted this also as a "constructive quorum" and outlawed such meetings. Hence, by the late 1980s, the Board had absolutely no mechanism that allowed them to meet with the administration for candid, confidential discussions other than those rare occasions when the OMA allowed special executive sessions. As a result, communications between the Board and the administration became very difficult and time-consuming. Further, the public Regents meetings frequently became circuses, with some regents playing to the media and posturing on various political stances, particularly during election years.

This situation became even more difficult when in 1993 the Michigan Supreme Court ruled that the University's use of a subquorum search process in conducting the search for a president in 1987-88 was in violation of the law (the search that resulted in my own selection as president). Although the court's ruling was a close five-four vote and a somewhat ambiguous decision, a local circuit court judge placed the Board under a permanent injunction to follow the OMA to the letter in any future presidential search. Indeed, in one court interpretation, any private conversation between two Regents amounted to a constructive quorum and hence would be a violation of the injunction.

In 1995, the Regents retained independent legal council to provide guidance on how to deal with the OMA and the FOIA. Attorneys from two of the leading law firms in the state concluded that both laws could probably not be applied to the University—particularly in presidential searches—because of the University's constitutional autonomy. While they were willing to give a formal, legal opinion to this effect, they understood well the political and public relations difficulties in getting a court decision along these lines. When faced with these considerations, the Regents

decided not to seek relief from the State Supreme Court. As a result, the University's operations continue to be more and more tightly constrained by intrusions of the media through the state's sunshine laws.

Legal Challenges

In the past, the University had protected its constitutional autonomy by challenging intrusion by the state through the courts. Of course this was done carefully, since we did not want to bite the hand that fed us. Furthermore, we were careful to select issues that were both of considerable importance and which we were convinced that we could win. Any legal challenge to the press's increasingly intrusive behavior would also have to challenge the state's ability to pass laws that conflicted with the constitutional autonomy of the University.

We realized that it was important that we take up this battle soon, before the University was permanently crippled. We realized, too, the danger of triggering highly negative public and political reactions. For example, an offensive strategy to protect our ability to set tuition might well trigger a backlash of middle-class concerns. So too, a direct attack on the sunshine laws might trigger a perception that we were trying to hide our activities from the public.

Some consideration was given to possible legislation that might set the University of Michigan apart as a more "independent" university, or that would at least relax the state's web of controls to a level more commensurate with our increasingly limited state support. In the end, however, we concluded that such efforts would be unrealistic in view of the current political environment. Hence our concerns about the eroding autonomy of the University remained unaddressed.

Can a state responsibly and effectively maintain institutions like the University of Michigan which are distinctive in terms of their mission to provide the highest quality advanced graduate and professional education, and research? Can it simultaneously sustain these universities' comprehensiveness in terms of student body, programs, and statewide responsibility? Will such universities have the necessary autonomy, integrity, freedom from political interference, and bureaucratic controls? In some states it may be that the centripetal forces of political and educational regionalism, the tempting but destructive urge to involve higher education in partisan politics, will prevail for a time. If so, the quality of all higher education will suffer, and the distinctive and comprehensive role of the state university may be destroyed.

Governing Boards

Many university presidents, and particularly those associated with public universities, believe that one of greatest challenges to their institutions lies in reforming the manner in which their institutions are governed, both from within and from without. Most universities have a style of governance that is more adept at protecting the past than preparing for the future. The web of governance, from lay boards to complex relationships with state and federal governments to "shared governance" between the administration and the faculty, is awkward at best and certainly not conducive to decisive action.

The recent National Commission on the Academic President[1] reinforced these concerns when it concluded that the governance structure at most colleges and universities is inadequate. "At a time when higher education should be alert and nimble, it is slow and cautious instead, hindered by traditions and mechanisms of governing that do not allow the responsiveness and decisiveness the times require." The Commission went on to note its belief that university presidents were currently unable to lead their institutions effectively, since they were forced to operate from "one of the most anemic power bases of any of the major institutions in American society."

Ironically enough, the use of lay boards of trustees or regents to govern universities evolved in large measure to protect the university from political interference. Most other nations rely on government control through structures such as a ministry of education. The lay board has been the distinctive American device for "public" authority in connection with universities.

The function of the lay board in American higher education is simple, at least in theory. The governing board has final authority for key policy decisions and accepts both fiduciary and legal responsibility for the welfare of the institution. But because of its very limited expertise, it is expected to delegate the responsibility for policy development, academic programs, and administration to professionals with the necessary training and experience. For example, essentially all governing boards share their authority over academic matters with the faculty, generally acceding to the academy the control of academic programs. Furthermore, the day-to-day management of the university is delegated to the president and the administration of the University, since this is comprised of professionals with the necessary experience in academic, financial, and legal matters.

While governing board members are not expected to become personally involved in the detailed management of the institutions, they are expected to serve as trustees, always acting to protect and preserve the institution for current and future generations. While they may not always agree with the university—its faculty, students, and administration—they are expected to be "loving critics," always acting in the institution's interests and never on their own agenda or for their own constituencies.

While most governing boards of private institutions do approach their roles in this spirit, governing boards of public institutions frequently fall victim to politics, focusing instead on narrow forms of accountability to the particular political constituencies represented by their various members. Political considerations are frequently a major factor in appointing board members and often an important element in their actions and decisions.[2],[3] Many public board members view themselves as "governors" rather that as "trustees" of their institutions more concerned with their personal agendas or accountability to a particularly political constituency than with the welfare of their university.

A recent study commissioned by the Association of Governing Boards highlighted many of the weaknesses of public boards.[4] As Tom Ingram, Executive Director of AGB, put it, "The trusteeship of American public higher education requires sweeping reform it if is to serve its public purpose. Successful reform depends on state lawmakers, trustees, and public higher education leaders developing a mutual understanding of the appropriate roles, responsibilities, and authority of the modern university's governing board. Central to this new understanding is a heightened awareness among elected political leaders of the unique position the modern, complex university holds between government and the citizens who support it."

One of the great challenges to public higher education today is assuring lay boards of the experience, quality, and distinction necessary to govern these complex and important institutions. As the AGB Report noted, the fragmentation and contentiousness of modern politics undermines both board selection and conduct. The use of partisan political elections long ago ceased to make sense. But even the alternative process of gubernatorial appointment is not yielding the quality of trustees necessary to govern the contemporary university.

To address these concerns, the Association of Governing Boards has made a number of important recommendations. First, it strongly recommends that the states reform trustee selection practices and board performance by explicitly incorporating merit criteria into trustee selection and developing a process to ensure that this occurs. The AGB urges states to enlarge public boards to accommodate a broader range of citizen views and experience and mitigate the impact of aberrant personalities. It

believes that trustees should be selected for terms of limited duration, overlapping to assure board continuity. It is particularly critical of those few remaining states that use popular election to determine university governing boards (i.e., Michigan, Colorado, Nebraska, and Nevada), since this encourages trustees to conduct themselves as political rather than deliberative bodies.

One compromise between popular selection and expertise would be to use a variety of mechanisms to determine the composition of each board. For example, an ideal board for the University of Michigan might contain eight members nominated by the governor and approved by the legislature, eight members elected at large on a nonpartisan basis, and eight representing certain constituencies such as alumni, students, business, and labor. With overlapping terms, such a board would be highly representative and yet stable enough to resist being dominated by any political or special interest group.

Alternatively, the University could adopt a holding company structure, in which a popularly determined board responsible for the public aspects and policies of the university would be assisted by a number of interlocking boards that would handle various specialized functions of the university, such as fund-raising and educational issues. Individuals on these specialized boards could bring both experience and expertise to these areas, while the public board could be more responsive to the body politic. Note that in this model, the formal governing board and the leadership of the institution would become a fairly small organization, responsible for broad policy development and kept far from management details.

Finally, while public university governing boards have become increasingly political and hence sensitive to special interests, they have also become increasingly isolated from accountability with respect to their quality and effectiveness. Not only should all boards be subject to regular and public review, but the quality and effectiveness of governing boards should be an important aspect of institutional accreditation.

In conclusion, it is simply unrealistic to expect that the governance mechanisms developed decades or even centuries ago can serve well either the contemporary public university or the society it serves. To assign the fate of these important institutions to politically determined lay governing boards isolated from accountability is simply not in the public interest. Furthermore, during such times of dramatic change, we simply must find ways to break through the Gordian knot of shared governance, of indecision and inaction, to allow our public universities to better serve our society. To blind ourselves to these realities is to perpetuate a disservice to those whom we serve, both present and future generations.

Faculty Governance

The heart of the governance of the academic mission of the university is actually not at the level of the governing board or the president but rather at the level of the academic unit, typically at the department or school level. There has long been an acceptance of the premise that faculty members should govern themselves in academic matters, making key decisions about what should be taught, who should be hired, and other key academic issues. Beyond this, faculty have long cherished and defended the tradition of being consulted in other institutional matters, of "sharing governance" with the governing board and university officers.

Yet the history of higher education in America might suggest otherwise. In reality, the faculty has had relatively little influence over the evolution of the university in America. Indeed, one might well make the case that higher education has been more influenced and transformed by the pressures from the society it serves, by government policy, and by market forces than by any actions taken on our campuses. Furthermore, the contemporary university has many activities, many responsibilities, many constituencies, and many overlapping lines of authority. To some degree, shared governance is in a reality an ever-changing balance of forces involving faculty, trustees, staff, and administration.

There are actually two levels of faculty governance in the contemporary university. At the level of the individual academic unit, a department or school, the faculty generally has a very significant role in most of the key decisions concerning who gets hired, who gets promoted, what gets taught, how funds are allocated and spent, and so on. The mechanism for faculty governance at this level usually involves committee structures, e.g., promotion committees, curriculum committees, executive committees, and such. Although the administrative leader, a department chair or dean, may have considerable authority, it is generally tolerated and sustained only with the support of the faculty leaders within the unit.

The second level of faculty governance occurs at the university level and usually involves an elected body of faculty representatives, such as an academic senate, that serves to debate institution-wide issues and advise the university administration. In sharp contrast to faculty governance at the unit level that has considerable power and influence, the university-wide faculty governance bodies are generally advisory on most issues, without true power. Although they may be consulted on important university matters, they rarely have any executive role. Most key decisions are made by the university administration or governing board.

There are several reasons for this. While faculties have been quite influential and effective within the narrow domain of their academic programs, the very complexity of their institutions has made substantive involvement in the broader governance of the university problematic. The current disciplinary-driven governance structure makes it very difficult to deal with broader, strategic issues.[5] Since universities are highly fragmented and decentralized, one frequently finds a chimney organization structure, with little coordination or even concern about university-wide needs or priorities. The broader concerns of the university are always someone else's problem.

Beyond the fact that it is frequently difficult to get faculty commitment to—or even interest in—broad institutional goals that are not necessarily congruent with personal goals, there is an even more important characteristic that prevents true faculty governance at the institution level. Authority is always accompanied by responsibility and accountability. Deans and presidents can be fired. Trustees can be sued or forced off governing boards. Yet the faculty, through important academic traditions such as academic freedom and tenure, are largely insulated from the consequences of their debates and recommendations. It would be difficult if not impossible, either legally or operationally, to ascribe to faculty bodies the necessary level of accountability that would have to accompany executive authority.

Many universities follow the spirit of shared governance by selecting their senior leadership, their deans, directors, and executive officers, from the faculty ranks. These academic administrators can be held accountable for their decisions and their actions, although, of course, even if they should be removed from their administrative assignments their positions on the faculty are still protected. However, even for the most distinguished faculty members, the moment they are selected for administrative roles, they immediately become suspect to their faculty colleagues, contaminated by these new assignments.

There is yet another factor that mitigates against faculty governance. As we have seen, the fragmentation of the faculty into academic disciplines and professional schools, coupled with the strong market pressures on faculty in many areas, has created an academic culture in which faculty loyalties are generally first to their scholarly discipline, then to their academic unit, and only last to their institution. Many faculty move from institution to institution, swept along by market pressures and opportunities. In sharp contrast, most nonacademic staff remain with a single university throughout their careers, developing not only a strong institutional loyalty but in many cases a somewhat broader view and understanding of the nature of the institution. Although faculty decry the increased influence of administrative staff, it is their own academic culture, their abdication of institution loyalty, coupled with the complexity of the contemporary university, that has led to this situation.

There are other forces undermining the effectiveness of shared governance. As broader society and its representatives in government challenge all social institutions to accept greater accountability for both quality and productivity, the faculty culture which prizes individual freedom and consensual decision making becomes more suspect. Furthermore, as the time scale for decisions and actions compress, during an era of ever more rapid change, authority tends to concentrate so that the institution can become more flexible and responsive. Perhaps because of the critical nature of academic disciplines, universities suffer from an inability to allocate decisions to the most appropriate level of the organization and then to lodge trust in the individuals with this responsibility. If higher education is to keep pace with the extraordinary changes and challenges in our society, someone in academe must eventually be given the authority to make certain that the good ideas that rise up from the faculty and staff are actually put into practice. We need to devise a system that releases the creativity of individual members while strengthening the authority of responsible leaders.

The academic tradition of extensive consultation, debate, and consensus building before any substantive decision is made or action taken will be one of our greatest challenges, since this process is simply incapable of keeping pace with the profound changes swirling about higher education. A quick look at the remarkable pace of change required in the private sector—usually measured in months, not years—suggests that universities must develop more capacity to move rapidly. This will require a willingness by leaders throughout the university to occasionally make difficult decisions and take strong action without the traditional consensus-building process.

Structural Issues

The modern university functions as a loosely coupled adaptive system, evolving in a highly reactive fashion to its changing environment through the individual or small group efforts of faculty entrepreneurs. While this has allowed the university to adapt quite successfully to its changing environment, it has also created an institution of growing size and complexity. The ever growing, myriad activities of the University can sometimes distract from or even conflict with its core mission of learning.

Hence the question arises as to how to deal with the growing size and complexity of the university. First, and perhaps of most immediate importance, is to acknowledge that the University of Michigan today is a vast enterprise, touching the lives of

millions of people, with broad responsibilities and accountability to many constituencies. To continue to pretend otherwise not only puts the University at great risk, but it also disregards the interests of those many thousands of people and institutions which depend upon us.

While it is certainly impolitic to be so blunt, the simple fact of life is that the University of Michigan today, like most major research universities, is a *public corporation* that must be governed, led, and managed like other corporations. The interests of its many stakeholders can only be served by a governing board that is comprised and functions as a true board of directors. Like all corporate boards, the University's board should consist of members selected for their expertise and experience. They should govern the University in a way that serves the interests of all of its constituencies. This, of course, means that the Board should function with a structure and a process that reflect the best practices of corporate boards.

Again, although it may be politically incorrect within the academy to say so, the leadership of the University of Michigan must be provided with the authority commensurate with its responsibilities. The president and other executive officers should have the same degree of authority to take actions, to select leadership, to take risks and move with deliberate speed, that their counterparts in the corporate world enjoy. The challenges and pace of change faced by the modern university no longer allow the luxury of "consensus" leadership, at least to the degree that "building consensus" means seeking the approval of all concerned communities. Nor do our times allow the reactive nature of special interest politics to rigidly moor the university to an obsolete status quo, thwarting efforts to provide strategic leadership and direction.

Yet a third controversial observation: While academic administrations generally can be drawn as conventional hierarchical trees, in reality the connecting lines of authority are extremely weak. In fact, one of the reasons for cost escalation is the presence of a deeply ingrained academic culture in which leaders are expected to "purchase the cooperation" of subordinates, to provide them with positive incentives to carry out decisions. For example, deans expect the provost to offer additional resources in order to gain their cooperation on various institution-wide efforts. Needless to say, this "bribery culture" is quite incompatible with the trend toward increasing decentralization of resources. As the central administration relinquishes greater control of resource and cost accountability to the units, it will lose the pool of resources that in the past was used to provide incentives to deans, directors, and other leaders to cooperate and support university-wide goals.

Hence, it is logical to expect that both the leadership and management of universities will need increasingly to rely on lines of real authority just as their corporate counterparts. That is, presidents, executive officers, and deans will almost certainly have to become comfortable with issuing clear orders or directives, from time to time. So, too, throughout the organization, subordinates will need to recognize that failure to execute these directives will likely have significant consequences, including possible removal from their positions. While collegiality will continue to be valued and honored, the modern university simply must accept a more realistic balance between responsibility and authority.

Needless to say, such accountability starts at the top, at the level of the university's governing board. So, too, the authority that each level of the administration requires if it is to carry out its responsibilities must also be derived from the governing board. Until the University's Board of Regents shifts from its current manifestation as a elected–and hence political–legislative body to that of a true board of directors, it is unlikely that a new culture of responsiveness and accountability can take hold within the University.

Concluding Remarks

Through the efforts of countless members of the Michigan community throughout the 1980s and early 1990s, we were able to meet the majority of the challenges facing the University. Its financial resources were diversified and its management structure reshaped to compensate for the erosion of state support and to sustain its aspirations for excellence. The University became far more diverse, more faithfully mirroring the rich diversity of our society. We managed to replace or renovate the majority of the facilities on our campuses, thereby providing an environment for learning unmatched in higher education. We were also able to attract and retain faculty, students, and staff of great ability and experience. Finally, we saw the establishment of a culture of excitement and adventure, in which change was increasingly viewed as an opportunity rather than a threat.

Yet one formidable task remained: reshaping the governance of the University to make it more compatible with the realities and complexities of the contemporary university. Without a more experienced and capable governance structure, one more representative of the many stakeholders of the University, and more willing to buffer the institution from political storms swirling about it, the University's capacity to cope with a future of change will remain seriously threatened.

[1] *Renewing the Academic Presidency: Stronger Leadership for Tougher Times*, Report of the Commission on the Academic Presidency (Washington D.C.: Association of Governing Boards of Universities and Colleges, 1996).

[2] Martin Trow, "The Chiefs of Public Universities Should be Civil Servants, Not Political Actors," *Chronicle of Higher Education*, (May 16, 1997).

[3] Richard T. Ingram, *Transforming Public Trusteeship*, Public Policy Paper Series, (Washington, D.C.: Association of Governing Boards, 1998).

[4] *Renewing the Academic Presidency: Stronger Leadership for Tougher Times*, Report of the Commission on the Academic Presidency (Washington D.C.: Association of Governing Boards of Universities and Colleges, 1996).

[5] Donald Kennedy, "Making Choices in the Research University," The American Research University, Daedelus, Vol. 122, No. 4, (Fall, 1993).

Chapter 27 *Facing the Challenges of the Future*

As we look to the profound changes ahead of us, it is important to keep in mind that throughout their history, universities have evolved as integral parts of their societies to meet the challenges of their changing environments. They continue to evolve today. This disposition to change is a basic characteristic and strength of university life, the result of our constant generation of new knowledge through scholarship that, in turn, changes the education we provide and influences the societies that surround us.

At the same time, this propensity of universities to change is balanced by vital continuities, especially those arising from our fundamental scholarly commitments and values and from our roots in a democratic society. While the emphasis, structure, or organization of university activity may change over time to respond to new challenges, it is these scholarly principles, values, and traditions that animate the academic enterprise and give it continuity and meaning.

Thus, an integral part of the life of the university has always been to continuously evaluate the world around us, in order to adjust our teaching, research, and service missions to serve the changing needs of our constituents while preserving basic values and commitments. Today we must once again try to anticipate the future direction of our society in order to prepare students for the world they will inherit. Our universities are at important turning points. The students we are educating today will spend most of their lives in the 21st century: Theirs will be a very different world from the one we have known.

We are all familiar with the recent criticism of universities coming from many ideological directions and from both within and outside our walls. For the most part this criticism has been scattered and sporadic, but it is gaining force and direction. The values of the academy are challenged, from scholarly ethics to affirmative action to political correctness. Our commitment to teaching is questioned and so is our ability to teach well. Faculty tenure is under serious attack. The quality and relevance of scholarly research are questioned. Political forces encroach on governance. Tuition is protested. I don't need to go on.

The University of Michigan has worked hard to address many of the issues being raised. As a result, undergraduate education is greatly improved. We have increased our share of student financial aid. University hiring at all levels is more open, rigorous, and fair. We have succeeded in raising billions of dollars in private support to compensate for the losses of public funding. We have invested in state-of-the-art information technology to support teaching, research, and service as well as to improve overall productivity. Costs have been cut and administration streamlined to free dollars for our core mission. The physical plants on our campuses have been renewed. We are communicating more effectively with key publics to build support and understanding for higher education.

The University has ventured further and set goals for more far reaching change to meet the challenge of the 21st Century. We show significant progress in increasing the representation of people of color among students, faculty, and staff. Women are advancing in the academy. Our campuses are internationalizing at every level. Our technological infrastructure is revolutionizing the way we preserve, discover, transmit, and transfer knowledge. Researchers are able to take on ever larger and more fundamental issues: global warming and population, the human genome, the origin of the universe.

We will need this foundation of strength and stability in the years ahead as academia faces more fundamental questioning. Politicians, pundits, and the public increasingly challenge us at the same time that technology increasingly drives us. No question is out of bounds: What is our purpose? What are we to teach and how are we to teach it? Who teaches under what terms? Who measures quality and which measures apply? Who pays for education and research? Who benefits? Who governs and how? What and how much public service is part of our mission? What are appropriate alliances, partnerships, sponsorships?

For better and for worse, universities face significant short-term pressure to limit educational costs even at the expense of quality. They are challenged to make education more widely available, even as our society pulls back from its commitments to those underserved elements of our society. The national research agenda is shifting away from national security as its driving agenda to instead issues such as economic competitiveness and health care. As we are challenged to do more with less, to adopt the lessons learned in the business sector to restructure our operations and contain our costs.

To mention only a few of the troublesome trends affecting our immediate future, there is declining public funding for student aid in a climate where education is

increasingly seen as a personal economic benefit rather than as a public good in and of itself. The allocation of research funding is increasingly driven by those who mobilize the most voters, politicians, or celebrities, thus distorting the research and graduate teaching agenda. At the same time, the overhead which sustains our research infrastructure is dwindling. Our curriculum is deformed by the competitiveness and vocational demands of students whose debt load impels them toward excessive careerism.

Of all the negative trends, most alarming is the undermining of autonomy of the public university. We see the intrusion of political forces in nearly every aspect of university governance and mission. State and federal government seek to regulate admissions decisions or financial aid. There are egregious examples of political or judicial intrusion in the research process itself, exemplified by congressional star-chamber hearings inappropriately investigating scholarly research integrity. We are only beginning to feel the crippling effects of open-meetings requirements on the conduct of business and on hiring. We are over-regulated, and the costs of accountability are excessive both in dollars and in the administrative burden. Governance of public institutions is too often in the hands of people selected for partisan political reasons rather than their understanding and support for higher education. These trends, symptomatic of the erosion of public confidence in universities, parallel the loss of trust in our institutions across the board.

Not that we in universities are blameless. We too often have been reactive rather than proactive in responding to demands from supporters, students, faculty, government, and politicians, in ways that distort or undermine our fundamental values and purposes. Academic structures are too rigid to accommodate the realities of our rapidly expanding and interconnected base of knowledge and practice. Higher education as a whole has been divided and competitive at times when we need to speak with a single unequivocal voice. Entrenched interests block the path to innovation and creativity. Perhaps most dismaying, we have yet to come forth with a convincing case for ourselves and an effective strategy for making it.

For a thousand years and more, change in universities has proceeded in slow, linear, incremental steps—improving, expanding, contracting, and reforming without altering our fundamental institutional mission, approach, or structure. We do not have the luxury of continuing at this same pace nor can we confine the scope of changes underway. On the contrary, I believe we are seeing the beginning of a paradigm shift of the kind Thomas Kuhn so brilliantly described.

This impending revolution in the structure and function of higher education is generated by the world-wide shift to a knowledge-based society that is transforming all of our institutions. Educated people and the knowledge they produce will increasingly become the source of wealth for nations. Higher education is both driving and being driven by technological, social, and political forces at work throughout the world.

A Glimpse of the Future

Clearly, as knowledge and educated people become key to prosperity, security, and social well-being, the university, in all its myriad and rapidly changing forms, has become one of the most important social institutions of our times.
Yet many questions remain unanswered. Who will be the learners served by these institutions? Who will teach them? Who will administer and govern these institutions? Who will pay for them? What will be the character of our universities? How will they function? When will they appear? The list goes on.

It is difficult to suggest a particular form for the university of the 21st Century. The ever-increasing diversity of American higher education makes it clear that many types of institutions will serve our society. Nonetheless, a number of themes will almost certainly characterize at least some part of the higher education enterprise:

- Universities will shift from faculty-centered to *learner-centered* institutions, joining other social institutions in the public and private sectors in the recognition that we must become more focused on those we serve.

- They will be more *affordable*, within the resources of all citizens, whether through low cost or societal subsidy.

- They will provide *lifelong learning*, requiring both a willingness to continue to learn on the part of our citizens and a commitment to provide opportunities for this lifelong learning by our institutions.

- All levels of education will be a part of a *seamless web*, as they become both interrelated and blended together.

- Universities will sponsor *asynchronous learning*, breaking the constraints of time and space to make learning opportunities more compatible with lifestyles and needs, anyplace, anytime.

- We will continue to develop and practice *interactive and collaborative learning*, appropriate for the digital age, the "plug and play" generation.

- Universities will commit to *diversity* sufficient to serve an increasingly diverse population with diverse needs and goals.

- Universities will need to build learning environments that are both *adaptive and intelligent*, molding to the learning styles and needs of the students they serve.

There is one further modifier that may characterize the university of the future: *ubiquitous*. Let me explain:

Today, knowledge has become the coin of the realm. It determines the wealth of nations. It has also become the key to one's personal standard of living, the quality of one's life. We might well make the case that today it has become the responsibility of democratic societies to provide their citizens with the education and training they need throughout their lives, whenever, wherever, and however they desire it, at high quality, and at a cost they can afford.

Of course, this has been one of the great themes of higher education in America. Each evolutionary wave of higher education has aimed at educating a broader segment of society—the public universities, the land-grant universities, the normal and technical colleges, the community colleges. But today we must do even more to serve an even broader segment of our society.

For the past half a century, national security was America's most compelling priority, driving major public investments in social institutions such as the research university. Today, however, in the wake of the Cold War and on the brink of the age of knowledge, one could well make the argument that education will replace national defense as the priority of the 21st Century. Perhaps this will become the new social contract that will determine the character of our educational institutions, just as the government-university research partnership did in the latter half of the 20th Century. We might even conjecture that a social contract, based on developing the abilities and talents of our people to their fullest extent, could well transform our schools, colleges, and universities, enabling them to rival the research university in importance.

Once again we need a new paradigm for delivering the opportunity for learning to even broader segments of our society. Fortunately, today's technology is rapidly breaking the constraints of space and time: most people, in most areas, can learn and learn well using asynchronous learning, "anytime, anyplace, anyone" education. Modern information technology has largely set us free from historical constraints and has freed our educational system from these constraints as well. Only perception and habit continue to act as barriers against these practices; cost and technology no longer stand in our way. Lifetime education is rapidly becoming a reality, making learning available for anyone who wants to learn, at the time and place of their choice, without great personal effort or cost.

But this may not be enough. Instead of asynchronous learning, perhaps we should instead consider a future of "ubiquitous learning": learning for everyone, every place, all the time. Indeed, in a world driven by an ever-expanding knowledge base, continuous learning, like continuous improvement, has become a necessity. Rather than "an age of knowledge," we instead should and can aspire to a "culture of learning," in which people are continually surrounded by, immersed in, and absorbed in learning experiences. Perhaps this is the true future of the public university.

American higher education has a responsibility to help show the way to change, not to react to and follow it. Our voice must be loud, clear, and unified in the public forum. At the same time we must engage in vigorous debate and experimentation within academia, put aside our narrow self-interest, and accept without fear the challenges posed by this extraordinary time in our history.

We must work hard to develop a community where uncertainty is not seen as a threat but rather as an exhilarating opportunity for learning. The future belongs to those who face it squarely, to those who have the courage to transform themselves to serve a new society. That future is not yet written, but we shouldn't wish it any other way. The excitement that comes with uncertainty and discovery draws us inexorably into tomorrow.

Appendix A *The Challenge of Change*

The Presidential Inauguration Address of
James Johnson Duderstadt

Distinguished guests, members of the Board of Regents, faculty, students, and staff, alumni and friends. It is a great honor and privilege to be able to serve my university and my state in this new role. In a sense this marvelous institution embodies the hopes and dreams, the commitment and stewardship of eight generations of Michigan citizens. To be chosen as its eleventh president is a formidable responsibility to the people of this state and, indeed, to the nation and the world.

Actually, I should correct myself here, for I am really only the "approximately eleventh" president of the University. Let me explain. In that hectic period following the announcement of my appointment as president-designate, I received the following electronic mail message from two distinguished historians, who teach a course on the history of this University:

> *"Congratulations! Did you know that you are not the eleventh president of the University? For some reason, the Regents did not re-number the presidents in 1929 when they changed the date for the founding of the University from 1837 to 1817. There is no doubt, if the University of Michigan began in 1817, that our first president was John Monteith, who was so appointed and so signed his letters. You are the twelfth president, not the eleventh.*
>
> *"As eleventh or twelfth president, you have our support. Best wishes."*
>
> Peg and Nick Steneck

Maybe I should be regarded as the "11.4th president," since there were no students during the time of President Monteith.

The Michigan Presidents

Whether the eleventh or twelfth, the fact remains that in the 170 year history of the University, it has had remarkably few presidents compared to most institutions. Hence, it is both a manageable and a mandatory task for any new president to read carefully the inauguration addresses of his predecessors.

I was impressed by how each responded to the times and set the theme for the subsequent administration. I was particularly struck by the eloquent address of Marion LeRoy Burton who assumed the presidency of the University in 1920, shortly after the end of the First World War. Perhaps it was natural I would be attracted to Burton because I share some rather uncanny similarities to him:

l. He was a tall, redheaded man

2. He was forty-five when he assumed the presidency of Michigan

3. He was a graduate of Yale University in divinity—which is quite close to engineering (at least alphabetically)

Actually, I was particularly struck by Burton's very simple and direct statement of the role of the public university. He stated, "The function of the state university is to serve the state and through the state to serve the nation and the world."

The Historical Role of the Public University

To serve—perhaps the most unique theme of higher education in America. For the bonds between a university and society are particularly strong in this country. Historically our institutions have been responsible to and shaped by the communities that founded them. They draw their agenda from these communities.

Perhaps this is nowhere more apparent than in our State of Michigan and in its institutions. For example, the founding principle of this institution can be found in those familiar words from the Northwest Ordinance chiseled on Angell Hall, "Religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged."

And perhaps it was appropriate that Michigan, a state with seemingly infinite resources of fur, timber, iron, and copper—a state with boundless confidence in the future—should play such a leadership role in developing the models of higher education which would later serve all of America. For while the University of Michigan was not the first of the state universities, it nevertheless is commonly regarded as the model of the true 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.

So too, our sister institution to the west, Michigan State University, is commonly regarded as the driving force behind the Morrill Act. It has become the prototype of the great land grant university that has served America so well. And our sister institution to the east, Wayne State University, has provided an important model of the urban university, seeking to serve the needs of one of our nation's great cities.

The State of Michigan, through these institutions and others which have arisen since, has provided a model of how higher education serves society through the triad mission of teaching, research, and public service. These institutions grew up with our state, responding to the changing needs and aspirations of its people, first, as Michigan expanded to the frontier, then as it evolved through the industrial revolution to become the manufacturing capital of the world. Michigan adapted, too, as the population of our state surged following the war years, and most recently, it has sought to strengthen and diversify its economic base.

Yet the strength of our state, its capacity to build and sustain such extraordinary institutions, lies not in looking to the past. Rather it lies in our state's ability to look to the future, in its willingness to take the actions and make the investments in the present that would yield prosperity and well-being for its people in the future.

Hence, as I assume the responsibilities of leading the University of Michigan, it seems appropriate that I look ahead. Let me outline some of the themes of our future and suggest how our academic institutions must respond.

Challenges for Today; Opportunities for Tomorrow

Think about it for a moment. The students we are educating today will spend most of their lives in the next century. They will be citizens of the 21st century. Yet we, their educators, are very much products of the 20th century. And our institutions, the universities of today, are in reality a product of the 19th century!

It is therefore important to ask whether the university as we know it today is really prepared to educate the citizens and serve the society of the 21st century.

While it is always dangerous to attempt to predict the future, three themes of 21st century America seem clear: first, the changing nature of the population of our nation; second, our growing dependence on the global community; and third, our shift from a resource-intensive to a knowledge-intensive society. Let me consider each of these themes for a moment.

1. Demographic Change: Diversity and Pluralism

America is changing rapidly today. Our population is aging as the baby boomers enter middle age, and the number of young adults declines. There are already more people over the age of sixty-five than teenagers in this nation, and this situation will continue for decades to come. The United States will simply not be a nation of youth again in our lifetimes. This fact poses a serious challenge to institutions such as universities, which have traditionally served the young.

But there is a far more profound change occurring in the population of our nation. The United States is rapidly becoming one of the most pluralistic, multicultural nations on earth. Those groups we refer to today as "minorities" will become the majority population of our nation in the century ahead, just as they are today throughout the world. In this future, the full participation of currently underrepresented minorities will be of increasing concern as we strive to realize our commitment to equity and social justice. The achievement of this objective also will be the key to the future strength and prosperity of America, since our nation cannot afford to waste the human talent presented by its minority populations—this human potential, cultural richness, and social leadership.

If we do not create a nation that mobilizes the talents of all of our citizens, we are destined for a diminished role in the global community, increased social turbulence, and—most tragically—we will have failed to fulfill the promise of democracy upon which this nation was founded. This is perhaps the most serious challenge facing

American society today. While it is true that universities cannot solve this problem alone, we must not use this fact as an excuse for doing nothing. Rather, we must intensify our efforts to seek full participation of underrepresented minorities among our students, faculty, staff, and leadership. As both a reflection and leader of society at large, we have a special challenge and responsibility to develop effective models of multicultural, pluralistic communities for our nation. We must strive to achieve new levels of understanding, tolerance, and mutual fulfillment for peoples of diverse racial and cultural backgrounds.

2. The Internationalization of America

We face a future in which America will become "internationalized," in which every aspect of American life must be viewed from the broader context of participation in the global community. Whether through travel and communication; through the arts and culture; and through the internationalization of commerce, capital, and labor, we will become increasingly dependent on other nations and other peoples.

Further, as the destination of roughly one-half the world's immigrants, the United States is rapidly becoming a world nation with strong ethnic ties to every part of the globe. Understanding cultures other than our own has become necessary not only for personal enrichment and good citizenship, but necessary for our very survival as a nation. If our institutions are to serve America in its role as a member of the global community, we must think and act more imaginatively, more aggressively, and more strategically to strengthen our role as truly international centers of learning.

3. The Age of Knowledge

Looking back over history, one can identify certain abrupt changes, discontinuities, in the nature, the very fabric of our civilization. There are many who contend that our society is once again undergoing such a dramatic shift in fundamental perspective and structure as we enter a new age, an age of knowledge.

The signs are all about us. Today we are evolving rapidly to a post-industrial, knowledge-based society, just as a century ago our agrarian society evolved through the Industrial Revolution. New ideas and concepts are exploding forth at ever-increasing rates. We are increasingly surrounded by radical critiques of fundamental premises and scholarship. In many fields, the knowledge base is doubling every few years. Indeed, in some fields the knowledge taught undergraduates becomes obsolete even before they graduate!

The typical college graduate of today will be likely to change careers several times during a lifetime. A college education will serve only as a stepping stone to a process of lifelong education. The ability to adapt—indeed, to manage—change will become the most valuable skill of all.

Our society is becoming ever more knowledge-intensive and hence ever more dependent upon educated people and their ideas. Hence it is also becoming ever more dependent upon our research universities as primary sources of new knowledge and those capable of applying it.

The Need for a New Paradigm

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 also evolve rapidly if we are to serve the highly pluralistic, knowledge-intensive world-nation that will be America of the 21st century?

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?

The Challenge of Change

While it is always hazardous to speculate about the future, there is yet another theme I can predict with some certainty. That is the challenge of change itself. We face a future in which permanence and stability become less important than flexibility and creativity, in which the only certainty will be the presence of continual change. Here we face a particular challenge, since most of us have been trained to think in terms of change as a linear, causal, and rational process. We have been taught that by looking at the past we can extrapolate to understand the future. Yet, perhaps because of my background as a physicist, I have become increasingly convinced that change in most

complex systems, fields of knowledge, or complex institutions such as universities is highly non-linear, frequently discontinuous, and usually stochastic or random in nature.

Just as with other institutions in our society, those universities that will thrive will be those capable not only of responding to this future of change, but those 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!

The Foundation for Change

To prepare us for such a future of change I believe our institutions should keep in mind several essential themes:

1. The Commitment to Quality

Of course, one of the canonical invariants that will allow us to respond to a future of change is an unrelenting commitment to academic excellence and scholarly values. This will require that we also commit ourselves to focusing resources to achieve excellence since in a future of limited resources quality must inevitably dominate the breadth and capacity of our programs.

2. A Return to Fundamental Values

Furthermore, the change and renewal that will be important themes of the future can only occur upon a foundation of fundamental institutional values. Of course, academic institutions usually focus first on intellectual values, values of the mind: the seeking of wisdom, freedom of inquiry, intellectual integrity, discipline of the mind, and the respect for reasoned conclusions.

While these are, of course, essential in any university, there are other sets of values which we must not ignore: values of moral character such as honesty, integrity, courage, tolerance, and mutual respect. So, too, we must bear in mind those all-important values which characterize civilized societies: caring and concern and compassion, cooperation and communication and civility. These are the values that pull us together as a community.

3. The Importance of Community

In a future characterized by rapid and unpredictable change, a future dominated by the themes of pluralism, internationalization, and knowledge, it seems clear that our universities will increasingly become the crucibles in which the new ideas and social structures needed to respond to this future are created. Here we must take care that the ferment and controversy surrounding the birth of new ideas does not tear apart our communities. We must recognize that in this future of change, these values of comity will provide the bonds that allow us to function as a community of scholars dedicated to serving the society that supports us.

The Challenges Before Us

A future of change, a time of challenge, challenges to our institutions, and challenges to each and every one of us. Let me then take this opportunity to challenge each of the various constituencies involved with this university:

To the administration of the university—its Regents, Executive Officers, and Deans: The stewardship of this marvelous institution is a heavy responsibility. It requires total dedication and commitment on our part. Yet it is also the case that universities are very fragile institutions. They are highly volatile in nature. Indeed, they might be described as creative anarchies. We must never forget that while the primary responsibility for the distinction of the University rests on our shoulders, quality is determined at the grassroots level, through our teaching and our research. Hence, the momentum and quality of this university, of any great university, must flow up from the faculty and the students and energize those of us in administration.

To the faculty: It is sometimes said that great universities are run by their faculties, for their faculties. I must hasten to add here that they are also run for their students and their society as well! The quality of our institutions is determined by the quality of our faculty—by your talents, your commitments, your actions. However, while your commitment to quality in your teaching and scholarship will determine the quality of this institution, let me suggest that something more is needed. Let me urge a greater sense of daring and adventure in your intellectual activities. For it is the excitement of attempting to push beyond the limits of our present knowledge that enlivens our teaching, our students, and our institution while best serving the society that depends upon us.

To our students: If our faculty is the key to our distinction, then it must also be acknowledged that our students are the reason for our being. Then, let me challenge our students to seek wisdom from the knowledge that you will learn in your studies. And seek to learn responsibility from the very considerable freedoms you will be granted on our campuses.

To our staff: While the primary functions of the university, teaching and research, appear at first glance to involve primarily faculty and students, we all know that these complex and remarkable institutions depend just as heavily on the talents and dedication of our staff. I challenge you to serve with imagination, pride, and competence. I encourage you to be always alert to better ways for the institution to accomplish its goals. And I convey to you my personal conviction that the fundamental values of an academic community simply cannot be sustained without your valued and frequently valiant efforts.

To our alumni and friends: Become involved with your institution. Learn about us. Tell us when we are wrong. Take pride in our accomplishments. Challenge us to rise to new levels of excellence. And help us to serve our state and our nation.

To our sister institutions: One of the great strengths of higher education in America is the remarkable diversity among our institutions, a diversity that is all the more necessary to respond to the pluralistic nature of American society. Yet, despite this diversity, we have far more in common than in contrast. It seems clear that we can only face the challenges of the future if we come together in a new spirit of cooperation, setting aside meaningless competition (this Saturday afternoon's game between Michigan and Michigan State excepted, of course), and instead working together to address the serious needs of our state, our nation, and the world.

To state and federal government: As we prepare to enter the age of knowledge, our ability to sustain the strength of our state and our nation, to achieve the quality of life for our citizens will be determined, more than any other factor, by how we develop, nurture, and educate that most precious of resources, our people. It is true that our state and our nation have developed the finest system of higher education in the world. But we must also remember this resulted from the willingness of past generations to look beyond the needs of the present and to invest in the future by building and sustaining educational institutions of exceptional quality, institutions that have provided those of us in this auditorium today with unsurpassed educational opportunities. Today's public leaders have inherited these marvelous institutions that represent the commitments and sacrifices of previous generations. They face

the challenge of being responsible stewards to preserve and enhance these precious resources to serve generations of the future.

To the public at large: It is important to recognize that your public universities are deeply committed to serving the society that built and sustains them. They are not working on their own agenda but rather on an agenda to respond to your needs. It is always tempting to ask, "What have you done for me lately?" But it is also important to imbed this challenge to higher education in the dual context of the history of past service and the challenges that will face our society in the future. Higher education represents one of the most important investments a society can make in its future, since it is an investment in its human resources. Our generation has always believed deeply in providing each generation with the means for a better life. Our parents sacrificed for us, and we must be prepared to sacrifice for our children. We simply must re-establish the priority of both our personal and our public investments in education, in the future of our children, and hence in our own future.

A personal challenge: And, finally, it seems appropriate to challenge myself to listen, to learn, and to understand the nature of this remarkable institution, the sacrifices people have made to build and sustain it, and the manner in which this state, the nation, and the world have come to depend upon it. It is my challenge to demonstrate the patience, the courage, the dedication, and the wisdom to assist our university in continuing to serve the state and the nation that gave rise to its birth.

Concluding Remarks

In conclusion, I would like to direct my final remarks to the people of the State of Michigan. For over one hundred and seventy years there has been an unusually strong bond between the people of this state and your university, the University of Michigan. Generation after generation of Michigan citizens have reaffirmed the commitment to building and sustaining an institution capable of providing to their sons and daughters an education equal to the best in the nation.

Your ancestors sought an institution capable of attracting to their state the most outstanding scholars, scientists, engineers, doctors, lawyers, teachers, and other professionals so essential to prosperity and well-being. They recognized the need for an institution capable of creating—through its teaching, research, and scholarship—the new knowledge and human capacities necessary to economic growth and development and to the fuller realization of the human potential. And they sought

an institution that could address, through a myriad of public service activities, the many challenges facing our state and our nation.

This sustained public investment and confidence in the University over the decades, has enabled it to serve the state in all of these ways and more. Through this unique partnership, the University in its activities and education, research, and public service has served Michigan and its citizens well.

Today our state faces serious challenges that will call once again on the vast resources of this institution: the challenge of pluralism, the challenge of participation in a global community, the challenge of the Age of Knowledge that is our future, and, of course, the challenge of change itself. Indeed, at perhaps no previous time in our state's history has there been a greater dependence upon this University, for the people it educates, the knowledge it produces, and the services it provides.

It is true, indeed, that the University of Michigan belongs to the people of Michigan. It is your university. But it is also a university built and sustained through the commitments and sacrifices of your ancestors. And it is a university that must be preserved and strengthened through your commitments today if it is to serve your descendants tomorrow.

Through this unique partnership, between a people and their University, we face together a future of challenge and responsibility, a future of opportunity and excitement, a future in which the University of Michigan is deeply committed to serving the State of Michigan, and by serving our state, serving our nation and the world.

Appendix B *Goals and Progress Toward Vision 2000*

Goal	Strategic Plan/Actions	Five-Year Progress	Status
1. To improve the quality of all academic programs	• Comparison with highest standards • Continuous improvement	National Surveys • Most programs and schools in to 10; many in top 5 • Highest rankings in 25 years	Good progress
2. To sustain tradition of high quality and broad access ("an uncommon education for the common man")	• Restructure tuition/financial aid • Private gifts for financial aid • UM role in direct loan program	Instate access sustained by strong financial aid Outstate access jeopardize in state support	Maintained commitments
3. To build spires of excellence, to attract, nurture, and achieve the extraordinary	• Focus resources • Attract and sustain faculty and students of true genius	• Many programs ranked 1st in nation • Faculty awards continue to accelerate • Encourage programs to strive to be the very best • #1 in MacCarthur Prizes	Good progress More cultural change needed
4. To achieve more "firsts" for the University.	• Create risk-taking culture • Focus resources	Examples: • Human gene therapy • Leadership strategy • Most powerful laser • NSFnet, NREN, IPS • The Michigan Mandate • University Hospitals • Intercollegiate Athletics	Significant progress (very close to the top)
5. To become the leading research university in America	• Research incentives & support • Washington office • JJD leadership (NSB) • Investments in Eng, Med, Sciences	UM moved from 7th to 1st in nation in sponsored research activity	Goal achieved!
6. To build a multicultural university community	The Michigan Mandate	Student Representation • Total Min: 12% —> 30% • Black: 4.1% —> 9% Student Success • Grad Rates: 68% Bl, 64% His Faculty Representation • Tot Min: 9% —> 16% • Black: 2.6% —> 4.5%	Great progress but still far to go

Goal	Strategic Plan/Actions	Five-Year Progress	Status
7. To make UM the university of choice for women students	• Michigan Agenda for Women • Women faculty initatives • Improving campus environment	Target of opportunity program Sexual harassment policies Dependent leave policies	Just beginning strategic effort
8. To develop a new paradigm for undergraduate education in a major research university	• UG Initiative Fund • LS&A, Engineering UG Initiatives • Gateway Campus	• New Freshman Courses • Chemistry, Math sequences • UROP	Still at an early stage
9. To restore the UM to a position of leadership in the quality of the living and learning environment provided for its students	• Bring UM in line with best practices at other universities • Attract outstanding people to student affairs activities • Develop a greater sense of mutual trust and respect with students	• Recruiting of Maureen Hartford!!! • Re-establishing Dean of Students • Campus safety efforts • Campus police • Michigan Mandate actions • Substance abuse policies • Sexual harassment/assault polices • Reform of Greek behavior • Student Rights & Respon Code	Now back in line with other colleges ...positioned for leadership
10. Build strong teams to lead University	• Strengthen Executive Officers • Recruit outstanding Deans • Stress teamwork and strategic approach	• Exceptionally strong EO team • Strong deans	Strong progress
11. Acquire resources necessary to sustain UM quality in face of loss of state support	• Strategic business plan • Restructure tuition/financial aid • Ramp up private support • New investment strategies • Resource management strategies • UM credit rating raised to AA1 (highest in nation for publics)	• State support has declined 15% over past 10 years . . . now less than 12% of total UM budget • UM has managed to absorb these cuts while preserving quality (at least for short term)	Strong progress, but most difficult phase lies ahead
12. To restructure University to better utilize resources to achieve and sustain quality	• Better resource allocation • Total Quality Management efforts • Reorganization of key units • Global restructuring strategy • Metrics Project	• M-Quality in place • PACE, ACUP • Responsibility Center budgeting underway	Good progress,
13. To build strong relationships with UM's key external constituences: • State Relations • Federal Relations • Community Relations • Alumni Relations • Public Relations	• State Relations Strategy • Federal Relations Strategy • Media Relations Plan • Public Opinion Polling • National Marketing Campaign	• Relationships with Governor, Legislature very positive • White House, Congress relationships quite strong • Public relations campaign • Media relations progress	Strong progress on political front, longer term public relations effort
14. To set new standards of quality for facilities and events aimed at institutional advancement	• Upgrade all key facilities • Reorganize event teams • Set high standards and encourage staff to exceed them	• Renovation Pres and Inglis House • Stadium pressbox areas • Major events (e.g., Commencement) • Campaign events strategy	Strong progress, but sustained effort essential

Goal	Strategic Plan/Actions	Five-Year Progress	Status
15. To build private support of UM to a level comparable to state appropriation • Restructure Development • Campaign for Michigan	• Goals by year 2000: • annual gifts: $200 M/y • endowment: $2 B $300 M —> $950 M • Launch Campaign • President's Advisory Council	• Annual gifts & pledges: $62 M/y —> $160M/y • Endowment —> $2B $550 M + $80 M to date	Strong progress,
16. To increase endowment to $2 B by the year 2000	• Restructure Investment Strategies • Investment Advisory Committee	• Endowment growth $300 M —> $950 M	Great progress!
17. To dramatically improve quality of UM facilities	• Medical Campus Plan • Central Campus (LS&A) Plan • North Campus Plan • South Campus (Athletic) Plan	• Great progress on UMMC • LS&A Plan moving rapidly ahead • North Campus almost complete • South Campus almost complete	Great progress, key focus during 1990s will be LS&A
18. To restructure University to better respond to intellectual change	• Interdisciplinary activites • More risk-taking • Structures appropriate for change	• JJD Interdisciplinary Plan • Entreprenurial culture	First stage of implementation
19. To explore new models for the University of the 21st Century	• Futures Group • Strategic Focus Groups • Presidential Communications Plan	• Early articulation of concepts • "New U" plan • National efforts	Some progress, but still early
20. To reposition UM as a "world university"	• Launch debate • Assoc VP for International Affairs • New International Structure • Establish new linkages	• International linkages greatly expanded • Davidson Institute • MUCIA	Some progress, but still searching for right model
21. To position UM as a model of the "electronic university" of the 21st Century	• Info Tech Plan • National networking leadership • Key linkages • Decentralize management	• ITD environment • NSFnet —> NREN —> NII • IBM (IFS), Apple, Apollo • CAEN, CITI	Strong progress
22. To make UM a leader in knowledge transfer	• Restructure intellectual properties activities and policies • Decentralized management (e.g., Medicine, Engineering) • Advisory Board	• Realigned IPO • Developed new IP policies • Medicine, Engineering • Activity increasing	Some progress, but still not where we need to be

Goal	Strategic Plan/Actions	Five-Year Progress	Status
23. To make Ann Arbor area economic engine of Midwest	• Develop plan • AA leadership group	• Very early in strategy • University Enterprise Zone	Some progress
24. To develop and implement state restructuring plan	• Launch IPPS group • Education of Lansing	• Very early in strategy	Little progress
25. To have leading intercollegiate in terms of integrity, impact on student-athletes, success, leadership	• Build strong links between • Develop "Michigan Model" • Seek outstanding coaches • Big Ten/NCAA negotiations • Improve Women's Athletics • Tiering	• Managed transition • Restructured management • Success (5 Big Ten FB champ, 2 NCAA Final Fours, Heisman, Swimming, hockey, CC, • #1 in Mens' Sports (#17 inWomen's)	Great progress, but many challenges ahead
26. To build more of a sense of pride in respect for excitement about and loyalty to the UM	• C-word efforts: community, cooperation, collaboration, concern, caring • Internal Communications Plan	• Early efforts to articulate community themes • Efforts to work with SACUA, MSA, Deans	Some progress

Appendix C *Examples of Educational Innovations & Initiatives*

Innovations

1989 ART: Began offering a series of seminar courses, called **Perception and Notation**, that integrate the study of art with inquiry in the sciences and the humanities

1989 **Science Learning Center**: Interactive, collaborative work space equipped with tutorial programs and staffed by TAs

1989 LSA: The **Language Resource Media Center** provides audio and video support to accompany language course lectures and exercises

1989 LSA: **Women in Science Internships** provide an opportunity for first- and second-year undergraduate women in LSA to conduct research projects in the laboratory of professional women scientists (20-22 students per year)

1989 NATURAL RESOURCES and the ENVIRONMENT: UM undergraduates have been involved in many aspects of the **Global Rivers Environmental Education Network** (GREEN), a world-wide water quality monitoring network of public school students who study their local rivers and share information. (60 students from Natural Resources, LSA, Education, and Engineering)

1991 MUSIC: Offer an interdisciplinary program called **Music and Technology,** which combines traditional training in music history, theory, and performance with specialized training in computer technology (30-40 students enrolled)

1991 MUSIC: **West Africa Exchange Program** allows UM students to study the performing arts for six months or more at the University of Ghana in Legon. (4 students in inaugural group)

1994 LSA: **UM-University of Ghana Study Abroad Program** expands the Music School's **West Africa Exchange Program** to include LSA students from all disciplines

1996 **Media Union:** Merges the creative aspects of disciplines across campus, providing powerful technological resources for inventive scholars

Initiatives

1989 LSA: **Collegiate Seminars** are small classes offered to first- and second-year undergraduates that focus on issues central to a particular discipline. The seminars are taught by tenured and tenure-track faculty, and they emphasize critical thinking and proficiency in writing

1991 LSA: Adoption of the **Race or Ethnicity Requirement** means every student takes at least one course that focuses on the meaning of race, ethnicity, and racism. Students may choose from over 70 courses

1992 LSA: **Theme Semesters** (e.g. Comedy, Beyond 1492, Work, Evil) Students take a number of courses, offered by different departments, that are organized around a unifying theme. The purpose is to develop courses that each provide a different perspective on one theme and that also meet the general distribution requirement

1992 ENGINEERING: LeaderShape

1993 LSA: **CUE Courses** These new distribution courses for first- and second-year students are designed intentionally around a topic that emphasizes linkages between disciplines

1994 LSA: Writing portfolios required of all students for placement in English courses

1994 LSA: New First-year Seminars are small enrollment courses taught largely by regular and emeritus faculty

1994 LSA: **Quantitative Reasoning Requirement** that requires students to take one course that exposes them to the process of examining quantitative evidence and of drawing conclusions based on that evidence. These courses are offered by departments such as Chemistry, Communications, Economics, Mathematics, Philosophy, Physics, Political Science, Sociology, and Statistics

Curriculum Reforms

1989 LSA: Reform of **Chemistry 210-211**, the introductory chemistry sequence for students with good high school preparation, to emphasize the process of doing chemistry, rather than solving mathematical problems and memorizing formulas or definitions (2000 students per year)

1992 LSA: Reform of **Math 115-116,** which is the introductory calculus sequence, so that it emphasizes mathematical reasoning rather than computational maniupulation, and it uses imaginative new teaching materials and methods (4000 students per year)

1992 LSA: Revision of teaching assignments and curriculum in **Geology**, resulting in the development of a large number of seminar courses, taught by tenure-track faculty, for first- and second-year students, especially those who do not plan to major in the sciences

1993 LSA: Offering new B.A. degree in **General Biology.** It is intended for students with interests in the sciences, but who do not intend to become practicing biologists

1993 LSA: Reform of **Chemistry 125-130**, the standard introductory sequence for students whose high school backgrounds do not qualify them for enrollment in Chemistry 210-211. The course sequence emphasizes learning through collaborative discovery (4000 students per year)

1993 LSA: Offering new B.A. or B.S. degree in **General Physics** for students who want a strong background in science but want to pursue a broader general education or pursue a double major

1993 Reorganization of the **Inteflex Program**, a program run jointly by LSA and the Medical School since 1972, to identify and prepare minority students and to provide a vehicle for curricular innovation in premedical education

1994 ENGINEERING: Interative computer modeling to teach thermodynamics

1994 LSA: Reform of **Physics 127-128 and 141-241**, the lab courses that accompany the two introductory sequences in physics (4000 students per year)

1994 LSA: New B.S. degree offered in **Biochemistry**, which was developed cooperatively by the Departments of Biology, Chemistry, and Biological Chemistry to respond to undergraduate interest in this field

1994 LSA: Offering new B.A. degree in **Classical Civilization** for students with an interest in ancient civilizations, but who are not trained in Latin and Greek

1990 Language requirement strengthened from simply completing four semesters of course work to demonstrating a level of proficiency

1992 Reformulation of a set of middle- and upper-level language courses to focus on substantive topics learned through a second language, rather than on second-language learning per se

1993 Participation of and cooperation between LSA and Engineering in the new Engineering Global Leadership Honors Program (LSA provides the “Cultural Core”)

1993 Approval of tenure-track positions that would be evaluated on the basis of pedagogy and pedagogical research rather than more traditional literary research

1993 Change in the Directorship of the Office of International Programs (OIP) from a half-time to a full-time position and incorporation of the OIP into the new International Institute in an effort to forge stronger links between area study research and student study abroad

1994 Creation of special section in large lecture courses, taught by non-language departments, in which teaching materials and discussion will be in a foreign language

Pedagogy

1987 **Thurnau Professorships** recognize tenured faculty whose contributions to undergraduate education have had demonstrable impact on the intellectual development and, indeed, the very lives of our students.

1988 LSA: **Collegiate Fellows Program,** which brings senior faculty together to talk about teaching and to work on revising courses so they emphasize critical thinking

1988 LSA: Implementation of the **TA Training Program**, which provides an intensive orientation followed by six weekly sessions to prepare graduate students for their role as a teaching assistant. The program includes practical information on instructional methods, and increases sensitivity to discrimination in the classroom and the development of a more multicultural approach to teaching

1989 ENGINEERING: **TA Training**

1990 LSA: Revision of teaching assignments in **English**, resulting in a doubling of the number of 100- and 200-level courses taught by tenure-track faculty

1991 ENGINEERING: **Teaching Awards**

1991 ENGINEERING: **Faculty Fellows Program** (teaching methods)

1991 LSA: **Excellence in Education Awards** provide financial rewards to faculty to recognize the importance of their contributions to teaching and related activities

1992 **Orientation Program for New Faculty,** which emphasizes the value placed on effective teaching

1993 LSA: More rigorous testing and training programs for International TAs

1993 Program of mid-term visitations and evaluations of classes initiated with the assistance of the Center for Research on Learning and Teaching (CRLT)

1993 LSA: Appointment of a tenure-track faculty member interested in mathematical pedagogy to direct the **Math Lab**, a facility to provide out-of-class assistance for students in introductory math courses

1993 LSA: **Master Teaching Program in Physics,** which brings in an outstanding teacher for two terms to review the undergraduate curriculum and suggest improvements

1988 **Intergroup Relations and Conflict** is a multifaceted approach to increasing multicultural understanding among students of different groups through courses and dialogue groups (250 take introductory course; 550 participated in dialogue groups)

1988 LSA: **Undergraduate Research Opportunity Program** (UROP) allows first- and second-year students to conduct research in collaboration with a member of the University faculty (supported 7 students)

1988 Placement of academic advisors in residence halls

1989 NATURAL RESOURCES and the ENVIRONMENT: **Natural Resources Mentoring Program**. Graduate students meet regularly with first- and second-year undergraduates to discuss issues of mutual concern and participate in a weekly seminar introducing students to the broad field of natural resources (30 students)

1989 LSA: **Science Learning Center** provides support for science education at introductory and advanced levels through forums for discussion, a library of instructional materials, and assistance for pedagogical innovation

1991 NURSING: The **Nursing Health Information Center** provides nursing students with valuable clinical experience while helping the multicultural community of UM's North Campus (30 students per year)

1991 NURSING: **Nursing Research Experience** provides undergraduate nursing students with opportunities to collaborate on research projects with nursing faculty (70 students-required of juniors)

1991 LSA: Major expansion of **UROP** to support over 500 students

1991 **Mentoring Program** to help build a sense of belonging to the UM community, to help first-year students with their transition to adulthood, and to assist first-year students in understanding and achieving their educational goals

1991 Implementation of the **21st Century Program,** which is a living-learning experiment combining seminars on college issues and "subject mastery workshops" held within the supportive community of the residence hall (267 students in first year of program)

1991 ENGINEERING: Solar Car Team

1991 ENGINEERING: **Advisory Office for Women in Engineering**

1991 ENGINEERING: **Pipeline Program** (Parker Scholars Program) provides support services and research opportunities to third-year undergraduate women in engineering (60 students)

1993 Creation of **Women in Science and Engineering (WISE) Residence Hall** for first-year women interested in science or engineering

1993 Creation of **Pilot Program Interest Corridors** in residence halls (e.g. Films, Filmmaking and Drama/Creative Writing; Foreign Languages/International Politics)

1988 **Undergraduate Initiatives Fund**

1988 ENGINEERING: **Engineering Commission on Undergraduate Education**: An Agenda for Innovative Engineering

1990 LSA: Formation of the **Planning Committee on Undergraduate Education** (PCUE)

1990 LSA: Appointment of Assistant Dean for Undergraduate Curriculum

1991 ENGINEERING: Appointment of Associate Dean for Undergraduate Affairs

1991 LSA: Publication of “A Michigan Education,” the report of PCUE, which informed many of the recent changes

1992 ENGINEERING: Student Surveys on Undergraduate Educational Experience

1994 **Task Force on the First Year Experience**, which served as a catalyst for programmatic innovation

1994 Revitalization of the Center for Research on Learning and Teaching (CRLT)

Appendix D *Consequences of the Campaign for Michigan*

The University's permanent endowment crosses the $1 billion mark for the first time in the University's history.

The University's number of fully endowed professorships increases from 125 to 226.

The School of Education gains its first endowed chair, to advance understandings in reading and literacy.

New research funds in the Medical School make it possible to advance our understanding of cancer, diseases of aging, ophthalmic genetics, otosclerosis, metabolic bone disease, osteoporosis, lupus, eye diseases, familial spastic paraparesis, sudden deafness and auto-immune disorders in children, DuChenne muscular dystrophy and many other diseases.

For the first time in the University's history, members of the faculty endow professorships.

In the College of Architecture and Urban Planning, 12 new scholarships are endowed.

The School of Information creates an entirely new school with new curriculum and new degrees to meet the emerging needs of the Information Age.

Dozens of students with outstanding leadership potential, many with limited family resources, receive full support for their undergraduate and graduate education by means of Colton Leadership Scholarships.

Faculty and staff in the School of Art and Design recruit top art students by visiting high schools in Michigan and elsewhere.

The Michigan Journalism Fellows move into new quarters in the Mike and Mary Wallace House.

The Huetwell bequest establishes five new professorships and one major research fund in the Medical School.

One of the School of Art and Design's most popular exhibitions ever is staged: Mondrian's last New York City studio is reconstructed in the Slusser Gallery and furnished with his work, tools, furniture and music.

The College of LS&A gains 15 new faculty awards.

A student exchange program is established between the School of Art and Design and Kyoto-Seika University in Kyoto, Japan.

Prestigious awards for faculty achievement in the Graduate School are endowed: the John D'Arms Awards in the Humanities and the Margaret and Herman Sokol Faculty Award in the Sciences.

The project fund for industrial designers in the School of Art and Design grows substantially.

Guided by a vision of architectural excellence, the College of Engineering constructs the Lurie Center and Tower, transforming the North Campus into an identifiable community.

Graduate students in the School of Art and Design have new space for collaborative work and gallery showings.

The Business School gains 20 new endowed professorships.

Famed artist Frank Stella visits the School of Art and Design for three days during the 1996-97 school year.

Construction begins on Sam Wyly Hall, creating a home in the Business School for the William Davidson Institute, and classrooms for undergraduate, graduate, and executive education.

The Center for the Education of Women gains $1.3 million for endowed scholarships and fellowships, enabling the Center to support 32 women students every year.

The College of LS&A has a new dissertation prize in astronomy.

The Department of Biomedical Engineering is created as the result of a $3 million commitment from The Whitaker Foundation. After 32 years as a program, the formation of the department capitalizes on the existing strengths of the College of Engineering and the School of Medicine and provides enhanced educational and research opportunities in this most promising discipline.

The Business School gains 95 new scholarships and fellowships.

The School of Information's endowment to support scholarships, fellowships and programs increases by nearly 600%.

The School of Music has three new endowed chairs: one in conducting, to be held by the director of the Marching Band; one in music history and musicology; and one in piano.

LS&A students have access to specialized instruction in writing via the Gayle Morris Sweetland Writing Center.

The College of LS&A has a new professorship in Korean Studies.

The Center for the Education of Women supports a major invitational conference for national policy-makers working toward gender equity in the sciences, math and engineering.

The School of Dentistry's ability to attract and retain a diverse and deserving student population is increased with nearly $2 million in newly endowed scholarships and fellowships.

The School of Social Work, ranked first in the nation in U.S. News and World Report and other publications, realizes its dream of a new building at the corner of South University and East University.

The number of fully endowed chairs in the College of Pharmacy triples from one to three, enhancing the College's ability to recruit and retain outstanding faculty for pharmacy education and research.

Creative new uses for technology in teaching are devised in the Prechter Laboratory in the School of Education.

The Jentes Merit Scholarships attract top law students to Michigan.

The University Musical Society provides more than 150 educational events for more than 80,000 students in 33 regional school systems in southeastern Michigan.

A sprinter on the women's varsity track team gains scholarship support.

Michigan has the first professorship at a major U.S. law school named in honor of an African American – Wade McCree, Jr.

Master classes, lectures, brown bag lunches and demonstrations supported by the University Musical Society allow U-M students to meet with top ranking international artists when they visit Ann Arbor during their more than 70 performances each year.

The University Library has more than $7.5 million in new funds for collections, technology, preservation, facility enhancements and staff development.

A network of scientists around the world dedicated to conservation of the environment and management of ecosystems on a sustainable basis is begun.

Groundbreaking genetics research takes place in the new W. M. Keck Foundation laboratories in the Medical School.

Studies in international law and Japanese law are advanced.

Through the GE Fund's Faculty for the Future Program, women and underrepresented minorities in engineering and the physical sciences gain encouragement for their studies.

Research in drug design, drug delivery, pharmacokinetics, biochemistry, microbiology, and the relation of molecular structure to therapeutic values is advanced with over $5 million in new expendable and endowed research funds in the College of Pharmacy.

The Dean's Discretionary Fund in the School of Education quadruples in size, permitting the dean to meet many more short-term demands for student aid, action research projects, public school partnerships and technology resources.

Faculty, students and programs are supported by $16 million in new funds in the Rackham Graduate School.

Over $50 million in new bequest intentions are documented in the Medical School.

Humanities students benefit from fellowships and curriculum innovations supported by the Andrew W. Mellon Foundation.

Researchers make world-changing discoveries in the new building for the Cancer Center and Geriatrics Center.

The Institute for the Humanities has an endowment larger than that of any similar institute in the country, having received $14 million in gifts from donors.

The School of Social Work gains two newly endowed chairs: the Harold R. Johnson Professorship in Gerontology and the Marion Elizabeth Blue Chair in Children and Families.

The Mardigian Foundation gift brings special attention to the Cancer Center and Geriatrics Center facility.

Graduate students travel where their research takes them: to Munich to study the formation of galaxy clusters, to the Nicar-aguan rainforests to study reforestation after hurricane and fire damage, to the Aspen Music Festival to perform a lead operatic role, to La Bibliotheque Nationale in Paris to research manuscripts.

The School of Information has almost $1 million in new Kellogg endowment funds to provide scholarship support to students, including four new endowed scholarships.

The Dean's Distinguished Chair is endowed in the Institute for the Humanities.

In the College of Architecture and Urban Planning, students' access to technology is greatly enhanced, helping them to prepare for the technologically sophisticated environment in which they will spend their careers.

Nearly half of all graduate students in the School of Information receive support during the 1996-97 school year thanks to over $1 million raised by the Alumni Society for endowed scholarship and fellowship support.

The directorship of the Department of Athletics is permanently endowed.

The U-M Golf Course is restored to its Alister MacKenzie-designed 1931 glory.

For the first time in many years, U-M's tennis teams have tournament-level facilities at the Preston Robert Tisch Tennis Building and the William Clay Ford Outdoor Tennis Courts that make it possible for NCAA and other tournaments to take place at Michigan.

The College of LS&A gains 22 new professorships.

Visitors to campus can now get general information, maps, and answers to questions at the new Huetwell Visitors Center.

The Yost Ice Arena, home to the Michigan hockey team for the past 22 years, and the first multipurpose field house in the U.S. when it was built in 1923, is restored and improved.

The Michigan Journalism Fellows raise $8.8 million, $5.5 million of it in permanent endowment for new fellowships in public policy, sports and transportation, and the nation's first fellowship for minority journalists.

The Division of Kinesiology nearly doubles its teaching and student work space with a new addition for classrooms, study space, counseling and a career resource center.

Law students gain fuller understandings of alternatives to litigation and trial via studies in alternative dispute resolution.

The School of Public Policy's award-winning summer program for minority students preparing to apply for graduate school admission is expanded.

The College of LS&A gains $71 million in gifts from 54,000 individuals.

Humanities faculty and students at Michigan gain new offices and classrooms in Tisch Hall.

Research in flat panel displays is greatly advanced with Lucent Technologies equipment for the Center for Display Technology and Manufacturing.

LS&A students have access to a leading scholar in Chinese arts and culture.

Star high school math students, attracted by scholarship support, bring intellectual enrichment to Michigan's math programs.

A distinguished legislator visits campus regularly to meet with students in political science.

The U-M Geology Camp in Wyoming expands programs and improves buildings, grounds and equipment.

Technology from Intel helps students in medicine, engineering and information studies.

The Ruthven Exhibit Museum purchases a Deinonychus (dinosaur) skeleton and a Dorudon (ancestor of the whale) skeleton.

The College of LS&A provides the opportunity for almost all first-year students to participate in at least one small-enrollment seminar.

The Kelsey Museum initiates a significant effort to preserve priceless artifacts is undertaken with the construction of acid vapor-free storage units that create a temperature- and humidity-controlled environment.

A Louise Nevelson sculpture joins the U-M Museum collection.

Premature babies get a better chance at life thanks to research conducted in the new Holden Neonatal Research Laboratories.

More than 350 students, one-third of the entire School of Music student body, receive scholarship support, greatly enhancing the School's ability to attract top students to programs that include jazz studies, theatre and drama, performing arts and technology and musical theatre.

Visitors to the U-M Museum of Art view newly acquired works by Picasso, Gris, Man Ray,

Visitors to campus can now get general information, maps,

Milton Avery, Keith Haring and other important contemporary artists.

An extraordinary collection of works of art of African and African American origin greatly enriches scholarship and aesthetic and cultural appreciation in the Museum of Art as well as at the School of Music and the Center for Afroamerican Studies.

The Center for the Education of Women gains nearly $600,000 for new leadership development programs for women.

An annual award allows a student in Art and Design to buy photographic equipment with which she takes a photo that appears in Life magazine and is nominated for a 1996 Pulitzer Prize in the spot news photography category.

The Jessye Norman Master Classes, named after the U-M School of Music graduate and world-class diva, allow students to study with outstanding vocal artists who come to campus from around the world.

The School of Art and Design's alumni/ae magazine, Visualize, is redesigned.

The Cancer Center's Fund for Discovery makes it possible for researchers to explore new ideas by providing seed money for early stages of innovative research.

The nation's first endowed chair in the management, conservation and restoration of ecosystems, the Theodore Roosevelt Professorship, is established.

The School of Music establishes two endowed funds to benefit non-music majors: one that supports the Campus Orchestra for non-majors and one that offers a prize for non-majors who excel in their music study.

The Medical School's endowment nearly triples with more than 100 new endowments for teaching and research, 32 endowed professorships, 25 scholarships and 49 endowments for research and special purposes.

The Erb Environmental Management Institute, a joint undertaking between the Business School and the School of Natural Resources and Environment, brings together leaders in business, government and the non-profit sectors to work on global environmental policy issues and prepare the next generation of leaders in issues related to sound business practices in the context of a healthy planet.

The French professorship is endowed to advance understandings in the area of nursing care for cancer patients.

In the Dentistry School, new lectureships, collegiate professorships and full professorships are endowed with more than $6 million.

The Joel D. Tauber Manufacturing Institute, a joint initiative between the College of Engineering and the Business School, enrolls more than 100 students in four degree programs; nearly 30 companies provide guidance to the Institute via the Industrial Advisory Board.

Students in Natural Resources and Environment are able to create their own internship experiences for degree-related research as well as professional practice.

A joint enterprise of the School of Nursing and the U-M Health System's Nursing Services, the U-M Community Family Health Center opens – dedicated to compassionate, comprehensive, primary health care responsive to the needs of individuals and their community and offering a multi-disciplinary educational opportunity for various health science departments.

The School of Music establishes an endowment to support one of the School's newest degree programs, the Program in Jazz and Improvisational Study.

Financial support for Doctor of Pharmacy (PharmD) students is greatly enhanced with the infusion of more than $1.5 million in new endowment funds and an almost equal amount of unrestricted annual gifts, enabling the

College to provide financial assistance to more than 80% of its third- and fourth-year professional degree students.

Health care professionals working with the elderly in Japan gain new understandings thanks to the US-Japan Institute in Geriatric Care.

Corporate partnerships are established in the School of Nursing to jointly seek solutions to important clinical problems, lessening human suffering and saving health care dollars.

A new research fund allows the Center for the Education of Women for the first time to regularly bring visiting scholars to campus.

The College of Pharmacy increases its endowment for graduate fellowships by $3.5 million, permanently providing full tuition and stipend support for the equivalent of six graduate students.

Officials of the Beijing Medical School Department of Nursing, Dean Jingpeng Yao and Associate Dean Xiuxia Zheng, visit Michigan's Nursing School as part of a new ongoing exchange of lectures, students and information about education and research between the two schools.

In the Business School, nine new programs, institutes, and centers are created, fostering teaching and research in areas such as emerging market economies, private equity finance, corporate environmental management, manufacturing competitiveness, global business education, and Asian finance and capital markets.

The School of Information's ability to provide practical professional engagement experiences for students, a key component of its new curriculum, is greatly enhanced.

A challenge grant encourages first-time donors to support the School of Art and Design.

The Center for the Education of Women gains substantial new resources for women's career development, for encouraging women interested in science and engineering, and support for students with children.

In the College of Architecture and Urban Planning, the Guido A. Binda Lecture for Visiting Professionals in Architecture is endowed.

The College of Pharmacy adds state-of-the-art pharmaceutics and medicinal chemistry laboratories, a drug design computer laboratory, biological chemistry preparation and cell culture laboratories, a class one thousand clean room, and a modern liquid scintillation suite.

The School of Education gains nine endowments that fund student scholarships and awards, allowing, for the first time, a monetary award to be attached to the School's long-established "Best Dissertation Award."

Campaign gifts assist the College of Pharmacy in offering new continuing education programs for alumni, increasing clerkship and clinical rotation sites for students, and forging new partnerships with alumni volunteers.

Nursing Dean Hinshaw and Drs. Oakley and Yu travel to China to meet Jungpeng Yao and other officials of the Beijing Medical School Department of Nursing to sign a partnership agreement with the Beijing Medical School Department of Nursing.

The School of Public Health gains three new endowed professorships, six endowed scholarships, an endowed lecture series, and renovation and dedication of the Jonas Salk Epidemiology Laboratory, where Professor Hunein F. Maassab has spent 30 years perfecting a new nasal spray influenza vaccine.

The Corporate Environmental Management Program is created: a joint 3-year, dual degree program between the Business School and the School of Natural Resources and Environment.

In the School of Public Policy, nine more students are now supported with summer internships.
Instructor Michael Kapetan from the School of Art and Design is supported as artist-in-residence at the National Cathedral in Washington, D.C. for six months.

The School of Education's first endowed student loan fund is established.

In the School of Public Policy, four new students receive fellowship support.

The Staebler Lectureship brings Public Policy alumni who have made significant contributions to government back to campus.

The School of Music adds $15 million to its permanent endowment.

The School of Social Work's permanent endowment increases more than ten-fold from $279,000 to $3.4 million.

The University Library has its first privately endowed position – the Irving M. Hermelin Judaica Curatorship.

The U-M Dearborn's School of Engineering completes construction of a new 53,000 square-foot Engineering Complex addition housing nine new laboratories.

The University Musical Society provides funds for commissioning and presenting new works.

Students in the School of Music have 104 new scholarships, including merit awards that allow faculty to recruit the brightest and most talented young artists to Michigan, and that allow graduates to begin their careers without heavy debt loads.

Seed money encourages gifts to build a Center for Persuasive Media in the School of Art and Design.

The U-M Flint campus has its first self-contained library in its 40-year history: the Frances Willson Thompson Library, offering information services to students, faculty, staff, and community, providing a locus for discussion, debate and access to the Genesee Historical Collection and Archives.

Students gain $1 million in new scholarship support at U-M Flint.

The Ford Estate at the U-M Dearborn gains $4 million for restoration, preservation and education.

The College of Pharmacy expands classroom space including computer and video network-equipped lecture rooms, and has new compounding and dispensing and drug assay teaching laboratories.

The National Pollution Prevention Center promotes the inclusion of materials related to environmental health in the design of curricula in higher education.

In the Dentistry School, more than $8 million makes possible the renovation and new construction of instructional, research and patient care facilities, including new patient care centers for orthodontics and pediatric dentistry, a new multi-purpose student commons area, a new state-of-the-art teaching facility and life-long learning complex, and an expanded dental museum.

A newly endowed fund for faculty at the U-M Flint provides support for professional training and continued scholarly and creative accomplishments.

Graduate students in LS&A have $9 million more in expendable and endowment funds to draw upon for support, including funds for travel abroad.