

Introduction

I'm here today as a lame duck. At the end of June my wife, Anne, and I will return to normal life. I'll be passing on the reigns to my long valued colleague, Homer Neal, who will be interim president of the UM until the Regents appoint my successor.

The best thing about being a lame duck is that you can once more say what you really think. Not that I've pulled many punches over the years.

So today, I'd like to talk with you not about politics, or ideologies, or special interests. We're all hearing plenty of that these days.

Rather, I'd like to share what I've learned during the past decade of leading the University of Michigan

- Where we were when I set out in 1986
- Where we are now in 1996, and
- An optimistic view of where we are heading.

Such much has happened.. ..indeed, so much is happening.

As we approach a new century we are certainly in far better shape than in 1986... We are leaner, more disciplined, more realistic, more focused as a University...and as a state...

It's been tough. There are still many hard choices and difficult sacrifices ahead. But I believe we are on the right course.

At the Beginning

Today I would like to talk with you about our future...yours, mine, our childrens, our states... Since university presidents are rarely regarded as visionary, before I start the hazardous task of peering into the future, I am going to toss aside my hat as a university president and instead return to my roots as a scientist and engineer.

Throughout my scientific career I always seem to have been involved in activities somewhat ahead of their time.

- I have worked in areas such as nuclear energy, lasers, thermonuclear fusion, and supercomputers.
- Indeed, I even worked on the project to develop a nuclear rocket to power a manned mission to Mars in the 1960s.
- In the 1980s I served as Dean of the College of Engineering at Michigan and led an effort to modernize Michigan's industrial base.
- As President, I also led an effort to build and align the programs of the University to better respond to the needs of our state and nation.

- And for the past several years I have served as chair of the National Science Board, the key body charged with oversight of federal R&D.

I've also devoted much of my time to fostering Michigan's economic development. As a result, I tried to look beyond the immediate reality to consider the fundamental reasons for Michigan's continuing economic decline. I was motivated not only its obvious impact on the UM but also by what it meant for our future.

1988, when I became President of UM, seems a lifetime ago. Starting then, in my Inaugural address, I sounded the alarm for the University of Michigan and later I went on the circuit riding throughout the state with the same message.. I said we were in the midst of a revolution affecting every aspect of our lives. While we all certainly felt the symptoms of change – the pain – too few grasped the cause, its scope, its breathtaking pace.

As I moved about the University and the state in the beginning, described the revolution we were experiencing as the transition to a postindustrial society as fundamental as the transformation from a farming society to an industrial society. I felt there was a seismic shift underway in the very foundations of our economy, society, and, indeed, our culture.

I saw the key underlying forces driving this transformation as being:

- Emergence of an economy based on knowledge – educated people and their ideas powered – by breathtakingly rapid development of new technologies;
- Globalization of the world's economy and culture enabled by technologies of communication and travel; and
- Demographic changes in the American population bringing hitherto under represented groups into a majority of the workforce.

It seemed to me then that too many of our people and our institutional leaders were floundering, on the defensive, desperately clinging to the past....to the habits and expectations of an earlier era when we were a leading industrial power not just of America but of the entire world.

Many looked for scapegoats – foreign workers and industries, immigrants, business, labor, politicians, ...even universities.

Some took a “This too shall pass” attitude, almost as if we closed our eyes we could make change stop...

Others sought the protection of more and more public subsidies even as public expenditures climbed sky high and revenues plummeted.

Not that I want to cast blame. Economic and social upheaval of the magnitude we are living through. is unprecedented. It challenges our basic assumptions about how we live our lives, it changes the rules in mid-game. It displaces and hurts far too many..

But I feared that the certain consequence of this continuing widespread denial of , and resistance to, change would be to condemn Michigan –both the University and the state-- to a future of decline that would soon be irreversible.

Why? Because such denial violates a fundamental law of nature that all living systems must continually adapt to their changing environment or risk extinction.

To survive let alone prosper, Michigan had to summon the courage and strength to face up to reality , to see change not as a threat but to seize the opportunities it offered to make a better world for ourselves and our children..

Like our state, the UM then had its own set of challenges to overcome. Some were complacent with the status quo, when the world around us was changing dramatically. Others sought to continue expansion by trying to be all things to all people.... at a cost that became unsustainable when Michigan's hard times caught up with us.

We took our status as a world class research university for granted. Our administrative practices were inefficient and too costly. We were not as entrepreneurial as our private university competitors....Harvard, Stanford. Nor were we as responsive to the state's rapidly changing circumstances as we needed to be as a public institution.

Building on the efforts of my predecessors, Harlan Hatcher, Robben Fleming and Harold Shapiro, my colleagues and I set forth a strategic plan and set of objectives designed to address the challenge of change. We saw it as an opportunity to revitalize our teaching, research and service mission to better serve institution, our state and nation.

At the same time I began my evangelical travels across Michigan seeking out audiences in every part of the state and every walk of life. I tried to alert them to the profound nature of the revolution we were undergoing and the dangers of continuing to deny, resist, or evade it.. I challenged my audiences to invest in education as the only way to prepare for a future in which a highly educated workforce would be the key to prosperity.

At the beginning, my challenges to the people of this state...and to the people of the University..met with skepticism at best...and benign neglect more frequently.

That's because most grew up in a state where a few large companies –indeed, one mammoth industry, controlled Michigan's destiny, where economic growth and security were taken for granted. Where there was little call for entrepreneurship. Where the focus of government was on expanding services, regulation, entitlements..... and the taxation to pay for it all.

Turning the Corner

Michigan is 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 are experiencing a transition 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; from the Industrial Age to the Age of Knowledge.

We're learning the hard way that if we want to fully prosper in this new world, we must

- ◆ Take the long view
- ◆ Invest in people and learning institutions – in making available life-long education and training

- ◆ Invest in research and the technological innovation it produces.

As we stand at the brink of a new century and a new millennium Michigan is learning to live with change as a fact of life. It is woven into the fabric of our daily lives, in the way we work, relate to each other, and experience the world.

The best news is that we're breaking the stranglehold of the past.

I'm not saying all of us like it or that it's been easy. But most accept it and many already are taking advantage of its opportunities..

Michigan's major sectors – government, business, labor are on the way to being restructured to serve us better in the new century to come.

Let me give you some examples...

1. Government Restructuring

Until recently, Michigan was headed for fiscal collapse as we funded our current needs by shifting the cost to future generations.

State government became too large and bureaucratic. Responsive to citizens immediate desires but at the expense of longer term goals. Fortunately, while it has been painful, over the

last several years Michigan now has become a model-- unique among the states in eliminating an immense deficit while holding the line on taxes, downsizing unnecessary government, and protecting education as its highest priority

In this effort, Governor Engler and his colleagues cut away much of the undergrowth that was clogging government and the economy. While it has been painful, over the last several years Michigan has indeed been unique among the states in its capacity to eliminate a massive funding deficit while holding the line on taxes, downsizing unnecessary government, and protecting education as its highest priority. It wasn't easy, but the folks we sent to Lansing have done a darn good job of accomplishing the first step of our task.

2. Michigan's People:

In an age of knowledge, two key ingredients for new jobs and greater prosperity are

- ◆ Educated people,
- ◆ Our system of independent higher education that produces educated people and the ideas and technology that can be put to productive use.

Michigan is abundantly rich in both.

By far, our greatest wealth is the quality and diversity of our people. Why? From our forebearers, we inherit a priceless legacy of pioneering spirit, gritty courage, and self reliance. They made our farms and factories the best in the world in earlier times. If we believe in them and invest in their education and training, we can rely on them to once again put us at the forefront of innovation, productivity and trade. (Coming to us now from every part of the world they also give Michigan a link on which to build trade partnerships).

Today and in the future, it is people, their character, their knowledge skill, and ability to innovate that, when allied with developing technologies, gives us the competitive edge in the world economy.

3. Educational reform, investing in our people

One of the strongest beliefs I hold is that the key to economic growth is education, not economic development programs. Education is the only enterprise that will save us from becoming a backwater economy. It is a point of "lift off," from which we can create new markets, processes, and skills.

In an age of knowledge it has become the skills of a region's work force and the quality of its

infrastructure which give it the capacity to compete in the new world economy

We've given education the top priority, reformed the way we finance our schools. Corrected the policies holding them back from high achievement, and created remarkable opportunities for innovation and experimentation through the Charter Schools program.

Today, we are closer to designing a system in which students, teachers, and parents know what is expected of them. We are using international benchmarks to establish standards to measure results. However, we still focus more on finances than on a developing a shared vision based on excellence in public education. Too many parents and citizens are still willing to accept less than the best for our children. Michigan's students now may be able to compete with children from Ohio, but they are far behind children in Tokyo and Beijing. Fundamental reform of K-12 is imperative. We should all take that message out across the state.

But even if , I prefer to say when, we are successful in our reform of K-12 education, we also must make additional investments to create the new jobs to employ these better educated graduates. So far, too few jobs of this kind – dependent on skill and knowledge-- exist in our state.

4. Knowledge-Driven Economic Development

The old economy is gone, never to return. Furthermore, even if our traditional industries have made something of a comeback, they can never dominate our economy again.

However, the increased competitiveness of many of our industries, increased international trade, and management belt-tightening have bought us time. They have temporarily retained market share and sustained profits. Over the long term, though, they will not retain existing jobs let alone create new ones. This is because productivity gains are linked to downsizing through such efforts such as total quality management, shorter cycle times, just-in-time inventory. We see this daily as the media report on yet more lay-off .

At best management reform, can only preserve some existing jobs for a while longer giving us valuable time to position ourselves for the new economy..

Rather, in an Age of Knowledge, new knowledge itself is necessary to create new jobs.

It seems increasingly clear that new jobs in Michigan are not going to be spawned by existing industry but instead will be created by entirely new activities, e.g., genetic medicine,

biotechnology, information technology and computer networking, optics, lasers, ultra-high-speed technology, and automated manufacturing.

These new jobs clearly will be created by innovation based on a solid base of research and development, e.g., genetic medicine, biotechnology, information technology and computer networking, optics, lasers, ultra-high-speed technology, and automated manufacturing.

From this perspective it is clear that the most powerful economic engines in Michigan may well turn out to be our three great research universities: the University of Michigan Michigan State University, and Wayne State University.

Why?

The key ingredients in technology-based economic development are:

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" through massive federal

R&D support. Through their education programs they produce the scientists, engineers, and entrepreneurs to implement new knowledge. And they are also 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, strategic partnerships, and so on.

The University of Michigan

Let me focus a bit on my own institution, the University of Michigan, as an illustration of the incredible assets of this state.

Through the efforts of countless members of the University, most of the goals we set in the late 1980s have now been achieved. Today, in 1996, by any measure, the University is better, stronger, more diverse, and more exciting than at any time in its history due to your efforts.

Let me review some of the vital signs with you:

- National rankings of the quality of the University's academic programs are the highest since these evaluations began several decades ago. A close examination reveals that the academic reputations of our programs have increased more than any other university in America over the past decade. Further, when rankings across all

- Detailed surveys throughout the university indicate that Michigan has been able to hold its own in competing with the best universities throughout the world for top faculty. In support of this effort to attract and retain the best, the University has increased average faculty salaries over the past decade to the point where today they rank #1 among public universities and #5 to #8 among all universities, public and private.
- Through the remarkable efforts of our faculty, the University now ranks as the nation's leading research university, attracting more federal, state, and corporate support for our research efforts than any other university in America (last year exceeding \$400 million).
- Despite the precipitous drop in state support over the past two decades, the University has emerged financially as one of the strongest universities in America. It is the first and only public university in history to receive an Aa1 credit rating by Wall Street--just a shade under the top rating of Aaa. Our endowment has increased six-fold to over \$1.6 billion. And thanks to the generosity of our alumni and friends, with over a year left in the Campaign for Michigan, we have

already exceeded our \$1 billion goal, becoming the first public university in history to raise this amount.

- We are making 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. Our administrative costs rank second lowest in the nation.
- A walk around the University reveals the remarkable transformation in our environment as we approach the completion of our massive program to rebuild, renovate, and update all of the buildings on our campuses--a \$1.5 billion effort funded primarily from non-state sources.
- The University Medical Center has undergone a profound transformation, reducing costs, integrating services, and building alliances to place it in a clear leadership position in health care, research, and teaching.
- We have launched some exceptional initiatives destined to have great impact on the future of the University and higher education more generally, such as the Institute of Humanities, the Media Union, the Institute of Molecular Medicine, the Davidson Institute for Emerging Economies, and the Tauber Manufacturing Institute.

- And perhaps most important of all, through efforts such as the Michigan Mandate and the Michigan Agenda for Women, we now have the highest representation of people of color and women among our students, faculty, staff, and leadership in our history. Michigan has become known as a national leader in building the kind of diverse learning community necessary to serve an increasingly diverse society.

It is clear that as we approach the 21st Century, the University of Michigan has become not only the leading public university in America, but that it is challenged by only a handful of distinguished private universities in the quality, breadth, capacity, and impact of its many programs and activities. Throughout the higher education, people now look to us as truly “the leaders and best”.

What Next?

Still a distance to go – for state, universities, every one of us.

You are probably asking yourselves, “if we have so many strengths, so much reason for confidence in our ability to master change and come out on top, what still stands in our way?”

I think only one truly serious threat stands on the way of our continued progress.

As the cartoon character, Pogo, once said: "I have seen the enemy and he is us!"

Along with our strengths, have some serious weaknesses – some embedded in our history. Others new and potentially deadly.

Let me cite those that have had the greatest impact on my job as UM President:

1. Deteriorating social foundations: In a period of intense change, all of us, and especially our children. need the security of strong families and communities. Yet these foundations continue to erode and we see the effects in our classrooms and dorms as well as in all the youth who fall by the wayside, their mindpower gone to waste..

2. Social Divisions: Nothing is more corrosive of our way of life than the growing divisions in our society – race ethnicity, class, age, religion. These are taking an increasing toll on our ability to study, work and live together and to take part in productive civil discourse.

If we do not address continuing inequality, persistent poverty, mutual distrust, nothing else we do can possibly succeed.

Furthermore, at a time when we are engaged in an historic debate about America's and Michigan's future, our public discussion too often is distorted by noise, blame, paranoia, wishful thinking, stridency, unreasoning rage, and even, I'm sorry to say, pure hate. . . If we want to make sound and reasoned decisions, we have to lower our voices and restore mutual trust.

3. Populism: 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 (the Forrest Gump syndrome). Dr. William Hubbard, former 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, university administrators have made themselves easy targets by their arrogance and elitism.

4. Commitment to excellence: Americans are addicted to a pernicious vice. especially in hard times. Too often we are suspicious of, even hostile to, excellence/high achievement, particularly intellectual achievement. We settle for the lowest common denominator rather than honoring and supporting achievement

You would think that the one lesson we should have learned during the 1980s--in Michigan of all

places--is the importance of quality in everything we do, 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. Competition helps improve performance. But too often we spend our time trying to protect ourselves from accountability and competition.

We see these character flaws as well when it comes to key investments in our people, such as education and worker training. We seem hell-bent on insisting on bargain-basement prices, even if it means bargain-basement quality in the performance of our institutions or products and services. A few years back...in an earlier administration... I actually had a state official (in the previous administration) say to me 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 the guy who said this had gone to Harvard. I suppose this was his version of "let them eat cake."

This is a long way from the Jeffersonian ideals of our founders, who believed that only the best was good enough for their children whatever their background or social status so long as they had the ability and will to achieve.

We can no longer afford the luxury of mediocrity in anything we do. Our competitors in the world's economy –Germany, Japan, Singapore--- Soon China – will cut us no slack!

We've learned the lesson of quality in industrial production and service delivery. Isn't it time, as the Ford ad says, we make quality/, "number one" in other critical aspects of life such as in educating our children.

5. Strategic Investment in the Future : We also need to take a harder look at state spending policy generally, to ask the important question: What is the role of state government and how should resources be allocated? For decades Michigan was fabulously wealthy. We developed a culture of expensive practices and expectations: employee benefits, health care, social services, litigation. Yet today, as Michigan's economy attempts to adjust to the brave, new world of a knowledge-driven society, it still attempts to support a Cadillac appetite on a Ford income.

While we have improved significantly, we are still not investing our resources strategically. We are tending to deploy them to pay for past sins (corrections, social services, entitlements) or sustain and perpetuate the past (tax abatements) rather than investing in the future by creating new knowledge, new skills, and new jobs.

One deadly habit for which we can blame no one but ourselves. We have adopted an attitude that says "Eat dessert first, life is uncertain." We are consuming today, the resources of the future. We've made progress in that last few years in reducing state debt but too few are willing to make the sacrifices necessary to secure our future.

I cope with this every day, as I've watched state funding dwindle from 75% of UM's budget to some 10% today. Our sister universities have suffered equally.

Our state once ranked among the national leaders in its support of higher education. During the 1970s and 1980s, Michigan fell to the bottom third of the states. In the early 1990s we moved up slightly--rather other states such as California plummeted past us as they struggled with economic crises of their own. More recently, these other states are moving back up, restoring their support of their universities, while Michigan is once again falling.

More specifically, in each of the past five years, our major research universities have experienced either frozen or sub-inflationary state appropriations, losing roughly 15% of its purchasing power. For the University of Michigan, a loss of \$35 million in annual support.

Estimates of deferred maintenance on the 15 four-year campuses now exceed half a billion dollars.

Ironically, During that same period, state support of our prison system has exploded and will pass the total dollars invested in higher education in the next year or so. WSU President, David Adamany, notes that 10 years ago we had 15 public universities and 8 prisons. Today we still have 15 universities...but 35 prisons.

Put another way, this year the state will spend \$1.4 billion for the education of 250,000 college students, and essentially the same amount (\$1.4 billion) for the incarceration of 40,000 inmates.

Most states are struggling to build world-class research universities of the quality of MSU and UM. Yet, our state, for almost two decades let its investment in higher education languish.

We can still reverse this trend and be a leader among the states in support of higher education. It would require sacrifice on all parts. It might even mean the T-Word – . We ourselves won't reap all the benefits----but our children and their children will.

We also need to consider new social arrangements to encourage our institutions to work together.

6. Politics: Not only do our universities need the state's financial support. The quality and strength of Michigan's universities is built on the Constitutional foundation of independence from the pressures of the political realm. Our status as a separate branch of government is unique. I believe it is what has allowed our institutions to excel.

In recent months my colleagues in higher education and I have been dismayed by the intrusion of political considerations into the admissions policies of the University of California – our only equal among public institutions. This sets a frightening precedent.

Further, the special interest politics characterizing our times, with their slash and burn tactics, sometimes focus on higher education. In the past, these institutions so critical to our future 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...

Those state education systems where politics rule rapidly become mediocre systems. I trust Michigan citizens will be alert to and oppose any efforts to compromise the indispensable independence that protects education from the ebb and flow of political passion.

Conclusion

America---and Michigan---have called on some generations more than others for exceptional service and sacrifice---Frontier, Revolution, Civil War, Suffrage World Wars I and II, Civil Rights Movements. -to defend and preserve our way of life for future generations. And Americans have always answered the call. Now no less than in those earlier struggles, our generation must rise to the challenge to serve. This time there are no foreign enemies . Our battlefield is at home and with ourselves. I've no doubt that in the end we will prevail through our collective wisdom and resolve.

After all, as a colleague of mine says:
“Democracies always do the right thing.....after they've tried everything else.”

Closing

My time is more than up but I cannot leave without thanking you for your support of me and the UM over the years. The University could not achieved so much in such a short time without you and people like you throughout our state. No institution has more loyal alumni or citizen support. Your pride in us, commitment to our values and goals makes and keeps us strong.

You send us your children to educate. You come yourselves for continuing education, for cultural events, for help in starting new businesses and careers, the professional community relies on us to help them stay ahead of the curve of new knowledge and best practice; young and old alike reach out to us through the internet seeking information, counsel, access to resources such as our vast libraries and databases. You use our libraries on line, Your businesses rely on us for the research on which to found whole new industries. You come to our hospitals for the latest treatments. When our teams take to the field, I'm convinced it's your enthusiasm that gives them the competitive edge (You might have tried a bit harder this year).

As President, I have called for help from so many of you and you have never failed to come through.

It was almost 30 years ago when my wife, Anne, and I put our furniture and our VW on the moving van in Pasadena, California, packed up our kids---who had never seen snow, much less Michigan...and moved to Ann Arbor, arriving in a blizzard! It has seemed like every five years, just like clockwork, we get another call from California, inviting us to return. But, we long ago realized that we are now Michiganders. We have spent all of our careers...and most of our lives...working on behalf of your university, the

University of Michigan, and we are maize and blue to the level of our DNA.

During this past decade, Anne and I have tried to give something back to my adopted state and to the UM . We are stepping aside from the presidency of the University of Michigan, leaving you as citizens of the state with a University that is better, strong, more diverse, and more exciting than at any time in its history.

The extent to which I have succeeded is thanks to you, citizens and leaders, and to the University's extraordinary faculty and staff who carry on Michigan's historic commitment to excellence in public higher education.

Although I am leaving the Presidency, you can count on me to continue working to help our state and the UM prosper. I expect to be very active in coming years putting the UM's strengths to work for you to build a better future for Michigan.

Thank you.