

Higher Education

Personal Introduction

As many of you know, I am a scientist by training and background...indeed, I am perhaps the worst of all types of scientists...a burned-out theoretical physicist.

Hence, I tend to be one of those folks who lives more in the future than in the present or the past...

My life as a scientist and engineer has been spent working on futuristic areas such as:

- i) Nuclear rocket propulsion
- ii) Laser-driven thermonuclear fusion
- iii) Supercomputers
- iv) robotics and artificial intelligence

So, perhaps it is natural that as we enter the 1990s, I should find myself looking once again to the future, facing the challenge of helping to build a University capable to serve our state and our nation in the 21st Century.

In fact, over the past several years, much of my time has been spent leading a process designed to look far into the future...10, 20, 30 years or more...to understand the changes occurring in America...and their implication for higher education in general and my institution in particular...to determine the possibilities for this University...what it is...what it could become...indeed, what it must become

My Message

In a nutshell, as I look to the future, I sense an ever-accelerating pace of change in our society, in our state, in our nation, in our world.

The themes of change,

- i) the growing pluralism of our society
- ii) our evolution into a world nation, ever more tightly coupled to the global community
- iii) and our rapid transition to a knowledge-based economy

are not themes of the future...

...they are themes of today...

...and they are already dominating every aspect of American life.

It is clear that the key strategic resource of our society has become knowledge itself... that is, educated people and their ideas.

Knowledge will play the same role for us now that in the past were played by natural resources, geography, or unskilled labor.

In the knowledge-intensive future that is our destiny it seems clear that education in general... higher education in particular...

...and the research university most specifically are rapidly becoming the key ingredients determining the strength, prosperity, and social-well being of our communities, states, and nations.

But here there is some good news...

America is particularly well positioned, since our research universities are clearly the envy of the world, as evidenced by the

extraordinary demand by graduates of every country to see advanced education and training in the United States.

Indeed, higher education is not only our nation's highest quality, but also probably also its most competitive industry as measured by the test of the marketplace!

But, now for the bad news...and the candor...

We--that is YOU AND ME--seem hell-bent, both as a nation and as a society, on destroying the extraordinary resources represented by our research universities, just as we are entering an age of knowledge in which they will become our most valuable resources.

Indeed, a tragic combination of public misunderstanding, short-sightedness, and downright selfishness, is now threatening to constrain and hamper our universities...

Leading to the frightening prospect that we will manage to destroy our international competitiveness of higher education just as we have many other American industries.

In my home state Missouri we have an old saying that the best way to get a mule to move is to first hit it over the head with a 2x4 to get its attention.

let me explain more clearly what is at stake here...

The Many Michigans...

Perhaps it is appropriate that I begin with a brief description of the beast...the comprehensive research university, since it really is more a product of the midwestern and western United States than the East, which has tended more toward elite private universities.

What images come to mind when you hear the words "The University of Michigan"

Of course there are also some very special images... we think of those traditional images of any college... Great faculty challenging and exciting students in the classroom..

- students studying in our many libraries

Scientists toiling away late in the evenings in our laboratories...
...stiving to understand the universe
Scholars pouring over ancient manuscripts in our collections of antiquity

Probably the Michigan of those marvelous Saturday afternoons in the fall as 105,000 fans cram into Michigan stadium to watch the Wolverines... or the pride you felt when Michigan won the NCAA championship in one of the greatest Cinderella moments in sports.

Perhaps you think of the Michigan of the Big Chill... The tradition of student involvement helping to awaken the conscience of a nation...

There is also the caring Michigan as seen by the over 750,000 patients each year who are treated by the UM Medical Center,

Or the Michigan as Silicon Valley East, working to build the high-tech infrastructure necessary to create new companies and new jobs...as evidenced by the \$5 B industry in industrial automation now building up in the Ann Arbor-Detroit-Warren crescent...

Or the Michigan which attracts to our state almost

a quarter of a billion dollars of federal R&D each year...not to mention many of the world's leading scientists and engineers

Or the Michigan of the "cutting edge", which conducts the research that changes our lives... as evidenced, for example, by announcement earlier this month that a Michigan team had identified and cloned the gene responsible for cystic fibrosis, thereby opening up the possibility of saving thousands of lives every year.

And, of course, there is the Michigan as the educator, attempting to provide, in the words of one of our first presidents "an uncommon education for the common man" an education as good as any available in the world for all citizens, regardless of race, creed, and socioeconomic background.

It is important to note these different perspectives of the University because all too often we tend to think of these marvelous and complex institutions in one-dimensional images that reflect only our particular interests or needs of the moment...
...when we read about student unrest on our campus...
...or open the tuition bill for our son or daughter...
...or see Michigan get two kickoffs run back on them by Notre Dame...

However, as my examples make clear, these remarkable institutions have been assigned a broad array of responsibilities by our society.

Indeed, my thesis today is that the American research university...of which the University of Michigan is not only the model, but one of the leaders... is rapidly becoming the key player in determining the strength and prosperity for the people of our state and our nation.

Some parameters of the University

The comprehensive research university is a very large, complex, and diverse beast...

University of Michigan = "mega-university"

- i) Spans all intellectual disciplines and professional areas
- ii) Provides instruction, research, service
- iii) Attempts to conduct programs that rank among the nation's best in all areas (and succeeds...)

Parameters:

Enrollment: 35,000 (Ann Arbor) (47,000 total)

Faculty: 2,600 (14,000 employees)

Budget: \$1.5 billion

Academic Units

17 Schools and Colleges

Hundreds of research centers, institutes, and other types of interdisciplinary programs

We also run the largest health care system in the Midwest, treating over 750,000 patients each year...

We conduct events in the performing arts which rival New York and London...

whether it be Leonard Bernstein performing his 70th birthday concert with the Vienna Philharmonic or, God-forbid, the Grateful Dead....

And, speaking of entertainment, we also have the

Bo and Steve show...the Michigan Wolverines...
playing in the fall to 105,000 every Saturday afternoon
Or, in the winter and spring, to every household in America...
...at least if we make the Final Four....

Themes of Pluralism, Globalization, and Knowledge

Our universities today are at a particularly important moment in history, since they are being called upon to educate students who will be spending most of their lives in another century...citizens of the 21st Century, if you will.

And while it is always risky to try to speculate about the future our students will find, three themes of 21st Century America seem clear...

i) It will be a future in which our nation becomes a truly multicultural society, with a cultural, racial, and ethnic diversity that will be extraordinary in our history

In which those groups we refer to today as minorities will become the majority population of our nation in the century ahead...

In which women take their rightful place as leaders of America...

It is clear that education must respond to this changing population by providing equal opportunity for all Americans.

ii) It will be a future in which America will become "internationalized"... in which every one of our activities must be viewed within the broader context of participation in the global community...

Whether through travel and communication, the arts and culture, the internationalization of commerce, capital, and labor, we will become increasingly interdependent on other nations and other peoples.

Further, as the destination of roughly half the world's immigrants, the United States is rapidly becoming a "world nation" with not simply economic and political but strong ethnic ties to all parts of the globe.

Education must respond by educating Americans about other languages, cultures, and nations, and we must prepare students to function effectively with people from around the world.

The 21st Century will be the first post-European century in American history.

An absolute majority of young people born in US in the 21st Century will be born of parents of other than European background...
Asian, African, Hispanic

And this will represent a major change in the character of our society.

iii) The Age of Knowledge

But there are even more profound changes underway...

Looking back over history, one can identify certain abrupt changes, discontinuities, in the nature, the very 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 shift in fundamental perspective and structure.

Today we are evolving rapidly to a new post-industrial, knowledge-based society, just as a century ago our agrarian society evolved through the Industrial Revolution.

Some examples:

1. Industrial production is steadily switching away from material and labor intensive products and processes to knowledge intensive processes:
2. Our nation's future has probably never been less constrained by the cost of natural resources.
3. Increasing manufacturing production has come to mean decreasing blue collar employment!
4. We are in the midst of an information revolution that is changing the basis of economic competitiveness and world power. Today information and data flow quickly across continents, oceans, and nation.s
What's more, these new technologies magnify the effects of change. "Today the velocity of change is so great... that the tectonic plates of national sovereignty and power have begun to shift" (Walter Wriston)

In a sense, we are entering a new age, an age of knowledge, in which the key strategic resource necessary for our prosperity, security, and social well-being has become knowledge--educated people and their ideas.

Key element in transformation, is the emergence of knowledge as the new critical commodity, as important as mineral ores, timber, and access to low skilled labor were at an earlier time.

This new critical commodity knows no boundaries.

It is generated and shared wherever educated, dedicated, and creative people come together...and, as we have learned, it spreads very quickly.

The knowledge revolution is happening worldwide and at a very rapid rate.

As our society becomes ever more knowledge-intensive and hence every more dependent upon educated people and their ideas...

It will become ever more dependent upon our research universities as primary sources of new knowledge and those capable of applying it.

Facing Up to the Constraints

But what about the capacity of our universities to play this critical role in the age of knowledge that now faces our nation and the world.

That capacity will depend, in part, on higher education's ability to face some serious challenges...

But here we face some major challenges:

Generally, any discussion of the challenges before higher education is peppered with an assortment of "isms"...elitism, professionalism, racism... radicalism, conservatism, populism...

Traditional patterns, the ways in which universities are comprehended and appreciated and understood, are being challenged, and they are changing.

Education and educators are under scrutiny and are subject to a kind of skepticism and criticism that was not the case over most of our experience.

How do we preserve strength, vitality, excellence, and independence in the face of this set of external forces, and the kinds of criticisms and skepticisms that come with it.

I prefer to classify the critical challenges which lie before higher education into several different and more useful categories

- i) the costs of excellence
- ii) our relationship with a myriad of constituencies
- iii) and those forces of darkness that

surround the University...namely politics!
iv) what might be termed the "corporate culture"
of the University

1. The Costs of Excellence

My predecessor, Harold Shapiro, used to propose two theorems about the costs of higher education:

HTS Theorem 1:

There has never been enough money to satisfy the legitimate aspirations of a truly enterprising faculty or administration.

HTS Theorem 2:

The cost of quality in teaching and research will rise faster than the total resource base of most institutions

We face the challenge of making the transition from the growth era of the 1950s, 1960s, 1970s, characterized by increasing populations, resources, and prestige, to a limited-growth era of the 1980s and beyond.

We know all too well the impact of demographics...

The decline in the number of high school graduates...

The aging of our faculty...and the challenge with educating and recruiting the next generation of the scholars and teachers.

The effort and ability of more and more institutions to compete for the same pool of resources...

State and federal support

Private support

Students

Faculty

Suspicion: The Big Shakeout...

The absence of adequate resources to build and sustain excellence in all institutions, means there will be an inevitable shakeout...

Most institutions may tend toward the mean-- a common level of quality...

However, those few institutions which have the critical mass of excellence...**and** which have the determination and capacity to sustain it, will be able to draw the best from the available resources of students, faculty, and funds and accelerate away from the pack... leaving the remainder of higher education to compete for a declining resource base.

Further, since these institutions will be competing in the same marketplace...for the best students, the best faculty, the same research contracts from Washington, the same grants from foundations and corporations...they will become increasingly similar,

Indeed, the distinctions between public and private education will blur even further.

Indeed there are already clear signs of this evolutionary trend...and they are clear in our own institution.

A Case Study: Brave, New World

Last month our Regents approved our budget for the year ahead. In that budget,

State appropriation = \$267 M

Tuition and fees = \$269 M

(a "privately supported public university")

Federal R&D Support = \$256 M

(a "federally supported state university")

And now if only our Development staff can increase private fund-raising to a similar

share of the total...roughly \$250 M per year,
we should be in pretty good shape...

DEVH Theorem:

Over a sufficiently long time span,
none of our constraints are rigid.
They can be managed or changed.

And I can assure you, this is exactly the approach
we are taking...

While this "well-balanced" portfolio has certain
advantages, such as resilience in the face of
political and economic vicissitudes, it also increases
dramatically the importance of our ability to
interact effectively with a remarkably broad
array of constituencies...and this, in itself,
is a very major challenge...

2. Relationship with Constituencies

The relationship between the modern university
and its many constituencies is a bit like
the parable of the elephant and the blind
men...

People perceive us in vastly different ways,
depending on their vantage point, their
needs, and their expectations...

Students and parents are concerned
both with the quality and the cost
of education

Business and industry seek high
quality products...graduates,
research, and service

Patients of our hospitals seek
quality and compassionate care

Federal, state, and local government
have complex and varied agendas
which can 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,
revel in our athletic accomplishments,
but they also harbor deep
suspicions about our costs, our
integrity, and, even our intellectual
aspirations and commitments.

As we become every more dependent on a broad
range of constituencies, we will 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...
Quite a feat!!!

Yet balancing act poses several serious problems:

- i) The diversity--indeed, incompatibility--of the
values, needs, and expectations of these
various constituencies who all view higher
education through quite different lenses
(Blind men feeling an elephant...)
- ii) The increasing narrowness of the public's support
for higher education..."What have you done for
me lately?"
- iii) The tension between such responsiveness

and the university's role as center of learning where all ideas can be freely questioned in the light of reason.

Public Skepticism

Skeptical about science and technology...

linking these with problems rather than solutions...

...waste disposal, global warming, arms race

Congressional attitudes are particularly alarming.

Congress seems unable to deal with the proposition that investment in higher education including research and student financial aid ought to be regarded differently from all those other things they are concerned about in trying to balance the budget.

3. Political Issues

External Politics:

Threats to autonomy by both state and federal government

Recent efforts by state government to interfere:

Tuition control

Nonresident tuition levels

Admission standards

Contact hours

Use of teaching assistants

Even curriculum, to some degree

Federal Government

Academic misconduct

Content of research and art

Loan defaults

Tuition and financial aid ("price fixing")

UBIT

Restrictions on publications

Even intercollegiate athletics

Erosion in public confidence in higher education ("Profscam")

Spiraling costs of education

Scandals in intercollegiate athletic

Academic misconduct

Balance between research and teaching

Elitism, racism, sexism, radicalism, conservatism...indeed, populism!

Unwillingness to invest in the future

Perhaps the most ominous dark cloud on the horizon of all is the increasing evidence that we as a people we have not yet faced up to either the nature or the magnitude of the investments we must make to achieve prosperity in an age of knowledge.

While we all give the "age of knowledge" lip service, the evidence suggests that in reality, as a society we long for the pieties and certitudes of the agricultural and manufacturing economies that once made us rich...

Our approach to education...like to so much else in life these days...can be summarized by that T-shirt slogan: "Eat dessert first, life is uncertain"

We have become consumers of education, not investors in the future.

We see ourselves caring about the future, but we are not preparing for it.

...the "me generation" of the 1960s has grown up into comfortable Yuppiehood...

4. Corporate Culture

Constants of the Motion

Of course, there are some fundamental aspects of the character of this University that we must preserve at all costs...physicists would

refer to these as “constants of the motion”
Our fundamental commitment to excellence in our
teaching and scholarship
Our respect for and defense of
fundamental academic values
Academic freedom
Freedom of expression
Disciplined reason
Academic integrity
Then, too, there are some uniquely
Michigan traditions
The liberal spirit and activism of
this University
Our unique blend of quality,
breadth, and capacity...
we thrive on a rich diversity
of truly outstanding programs
Our openness and candor

Changes:

But I am sure we can all point to other
aspects of our University culture
that could stand improvement.
My personal list includes the following...
Focusing resources to achieve excellence...
Should not try to be all things to all people...
The time of continual increases in public support
ended more than a decade ago.
Quality should dominate breadth and capacity...
Build "spires" of excellence

More of a “customer focus”

We must never forget that the primary
endeavor of a university is learning...
and that our principal customers are
our students.
It seems clear that we need to re-evaluate
and intensify our commitment to the
learning process on this campus...
...the way we teach...
...our total environment for learning
...the nurturing relationship that must
characterize interactions between
faculty and students
...and between staff and students

More respect for pluralism and diversity

While an increasing number on this campus
understand the importance of diversity
to our future,
It is also clear that we need to work and talk
together in the months ahead to more
clearly define our goals and values.
These are not easy matters we are dealing with.
We simply must find ways to engage in a open and
honest discourse about the meaning of diversity
for this University...and to American society...
and relate it to our everyday lives as
faculty, students, and staff.

More of a sense of community

While many of our achievements occur through
the efforts of individuals,
Our strength as an institution arises from
our ability to join together as a

true academic community, in
which the human mind is brought
boldly to bear on the most enduring questions
that confront us.

The politics of pluralism

It is clear that as we move closer to
our goal of reflecting the increasing
diversity of the American population
among our students, faculty, and staff

We run the risk of increasing pressures of
separatism and distrust that can arise
when people of vastly different backgrounds
and cultures come together for the first time
to live and work together.

Fragmentation and the rise of

special interest groups in the "multiversity"
...just as they have tended in recent years
to dominate American politics

We simply must look for experiences designed
to bring people together...to establish
new bonds of mutual trust and understanding.

More daring and venturesomeness

New ideas and concepts are exploding forth
at ever increasing rates in so many disciplines.

The capacity for intellectual change and renewal
has become increasingly important for the
continued vitality of academic institutions.

To this end, we must seek a culture in which
creativity, initiative, and innovation are valued.

We must stimulate more of a risk-taking
intellectual culture in which people are
encouraged to take bold initiatives.

In a sense, we must achieve more of a
fault-tolerant culture, in which failure
is not punished, but rather is viewed as a
natural part of the learning process
associated with aiming high!

More of a long term, strategic focus

All too often the University has tended to
respond to external pressures and
opportunities, rather than taking strong
actions to determine and pursue its own
objectives.

We must also counter the tendency to become
preoccupied with process rather than objectives...
with how rather than what...

In this sense, we must think and act more
strategically--to decide first what we
want to do...what we intend to become...
and then to move purposefully toward
these objectives.

The Fundamental Goal: Leadership

Let me summarize then...

In this increasingly pluralistic, knowledge-intensive
world nation that is America today
it seems clear that education in general...
...higher education in particular...
...and the research university most specifically
are rapidly becoming the key ingredients determining
the strength, prosperity, and social-well being
of our nation.

Just think of the challenges

which cry out for our attention

- the plight of our cities,
the development of an underclass
the polarization of American society
- greenhouse effect and global change
- international competition
Pacific Rim or Europe 1992
- health care: cancer, heart disease, AIDS
- new frontiers: outer space
or spaceship Earth

But the greatest need of all is for leadership
and this is the University of Michigan's
great contribution to America...

...through its teaching, research, and service

...through its graduates and their achievements

Indeed, leadership is both
our heritage
and our destiny!

Of course, we continually strive for leadership...

...in our teaching, our research, our service

...in the classroom, the laboratory, the
concert hall...and even on the football field...

But I believe we have an even more extraordinary
opportunity for leadership...

The winds of change are blowing...
and they will bring
changes in higher education.

It seems increasingly apparent that our present
concept of the research university
developed largely to serve a homogeneous,
domestic, industrial society of the 20th Century,
must also evolve rapidly if we are to serve...
indeed, even be relevant...to the highly heterogeneous,
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 American expanded to the frontier...
as it evolved through the industrial revolution...
as it absorbed wave after wave of immigrants
a paradigm that still dominates higher education today.
In a sense, we have been throughout our history the
flagship of public higher education in America.

In a very real sense, it was the University of Michigan
which invented the University of the 20th Century.

Perhaps it is time that we once again played that role...
re-inventing the nature of the university once again...
...a university capable of educating the citizens
and serving the society of not the 20th,
but rather the 21st Century.