

Michigan at Crossroads

My Message

My message today will expose both of
my character flaws as a scientist/engineer...
...it will be a vision of the future...
...and it will be unusually candid.

Few seem to realize the enormous
changes our society is undergoing as it
approaches the 21st Century.

We are becoming more diverse, more pluralistic
as a people. Indeed, almost 90% of the new
entrants into our workforce during the 1990s
will be people of color, women, or immigrants.

Our economy and commerce are becoming every day
more interdependent with other nations as
the United States becomes a world nation,
a member of the global community --
as this past year's events in China, Russia,
and Eastern Europe make all too apparent.

And we are rapidly evolving into a new post-industrial
society, in which the key strategic resource
necessary for prosperity and social well-being
has become knowledge itself, that is,
educated people and their ideas.

Indeed, knowledge will play the same role that
in the past were played by natural resources
or geographical location or labor pools...

In the pluralistic, knowledge-intensive, global
future that is our destiny, it is clear that the
quality of and access to
...education in general
...higher education in particular
...and great research universities
such as the University of Michigan
and its sister institutions
most specifically of all...
are rapidly becoming the key factors in
determining the strength and prosperity
of our state.

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!

Further, Michigan is especially strong
from this perspective, since our state has
built over the years not only one of the
best systems of public higher education in
the nation, but possesses several of the world's
leading research universities.

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 system of
public education--from K through 12 through 16

through lifetime education--
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 deprive our children and grandchildren
of the same opportunities for a quality
education that you and I enjoyed--
because of the sacrifices of our ancestors.

Leading to the frightening prospect that we will
manage to destroy our international competitiveness
of 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.

Now that I have your attention,
let me explain more clearly what is at stake here...

Themes of Pluralism, Globalization, and Knowledge

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

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

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.

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...
In an age of intercontinental missiles, threats to the global
environment, instantaneous worldwide communications,
a world economy, and an international marketplace of
ideas and arts and political trends,
it is clear that we are becoming increasingly
interdependent with 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.

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:

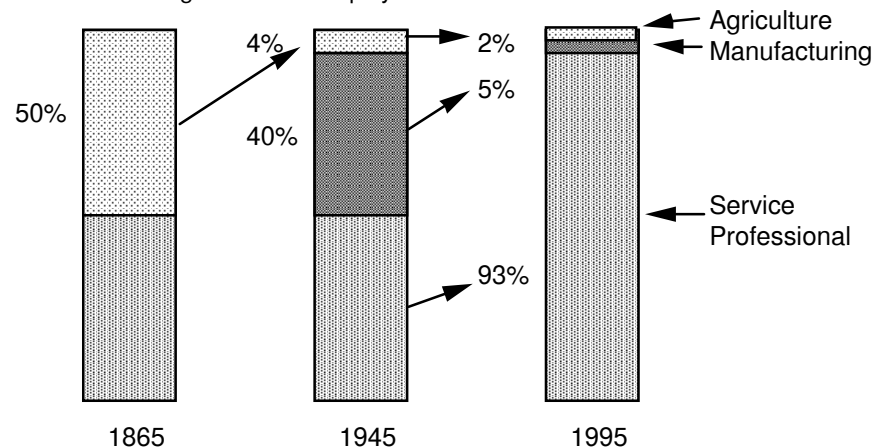
As Peter Drucker notes:

In a car, 40% materials, 25% labor...

In a chip, 1% materials, 10% labor, 70% knowledge!!!

(In fact, the material for computer chips is the world's most common substance...sand!!!)

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. (Indeed, if you want to know the real reason for the recent events in Eastern Europe, China, and the Soviet Union--the collapse of communism--it was the silicon chip which created a truly international exchange of ideas and perspectives that could not be constrained by any government!)

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.

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.

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.

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

Concerns...

Needless to say, these same challenges of pluralism,
of globalization, and of this age of knowledge
that is our future will pose great challenges and
demand similar changes in our state and our nation.
The America of the 20th Century that we have known...
was a nation characterized by a rather homogeneous,
domestic, industrialized society...
But that is an America of the past.
Our students will inherit a far different nation...
a highly pluralistic, knowledge-intensive, world nation
that will be the America of the 21st century
Of course, these themes of the future,
the changing nature of the American population...
our increasing interdependence with other nations
and other peoples... and the shift to a knowledge-intensive,
post-industrial society.
Are actually not themes of the future
...but rather themes of today...
...in a sense, I have simply been reading the handwriting on the wall...
Yet I also fear that few have realized the enormous
changes that our society is going through as it
approaches the 21st Century.
Even though the impact of these changes are already painfully apparent
to Michigan's workers and industries.
In fact, it is here in Michigan...in the heart of the "Rust Belt"
that the impact of these extraordinary changes are
most clearly seen...
We all know that past decade was a period of
great difficulty for our state...
Industries of great economic importance to our
nation such as steel and automobiles have
fallen victim to intense competition from abroad...
Plants have closed...we still have many people chronically
unemployed...or under employed
Indeed, Michigan's per capita income has now dropped below
the national average...
Michigan has dropped to 20th in per
capita income (and at \$15,393 is now
slightly behind the national average
of \$15,481)
We have slipped to the bottom in
...in our public support of higher education
...in the fraction of tax dollars we get back from Washington
...in the burdensome nature of our tax system
...in the climate we provide for small business development
We are still number one...or close to it...but in other areas
...but in unemployment
...in mortality
...in high school dropouts
...in the fraction of our citizens we lock up in jail
It is clear that our state is in the midst of a profound transition...
...from an industrial economy based upon the abundance
of natural resources, unskilled labor, and, to some degree,
constrained, slowly moving domestic markets...
To a knowledge-based economy, characterized by intensely
competitive world markets, rapid change, and--most
important of all--educated people and their ideas.
This has not been...and will not be...an easy transition to make.

The truth is that the outcome is still very much in doubt!
 Whether we will emerge from this transition as a world economic leader once again...with a strong, prosperous--albeit new--economy producing jobs and improving our quality of life.
 Or whether we will fail to heed the warnings...
 ...to make the necessary investments and sacrifices today necessary for strength and prosperity tomorrow...
 And become an economic backwater in the century ahead.
 It is clear that we have arrived at a fork in the road ahead.
 My central theme is that education, broadly defined, will be the pivotal issue in determining which of these two alternative futures will be Michigan's...and America's.
 Indeed, I am absolutely convinced that the dominant issue of the 1990s will be the development of our human resources.
 Previous economic transformations were closely associated with major public investment in infrastructure such as railroads, canals, electric networks, and highways.
 In the coming economic transition, an equivalent infrastructure will be an educated population.
 The actions we must take today...
 ...and the investments we must make...
 ...will clearly determine our capacity to respond to this future...

The Good News and the Bad News

1. America's Strength...and Weakness
 In December I attended a conference of the top scientists, government officials, and CEOs from a number of nations throughout the world. The CEO of Nissan pointed out that following an extended visit by a number of senior Japanese officials, they asked the group what they felt the greatest strength and weakness of the US were:
 They were unanimous in their conclusions:
 America's greatest strength was our research universities.
 Our greatest weakness was public education at the primary and secondary level.
 Quite a paradox, isn't it?
 Quite a challenge!!!
2. BHEF
 Last winter I attended the annual meeting of the Business-Higher Education Forum in Tucson, an organization comprised of 40 of the nation's top CEOs and 40 university presidents.
 During this meeting the CEOs stated their belief that the quality of public education in America was the most serious crisis this nation had faced since WWII!
 And yet this is a crisis about which there is little public concern and even less public consensus.
3. Growing Pessimism
 In my frequent interactions with the leaders of the public and private sectors throughout this nation I detect an increasing sense of pessimism about America's will and capacity to take the actions necessary for our future.
 Indeed, many now believe that our nation is well down the road toward "outsourcing" its knowledge resources--just as we have been

our labor, our manufacturing, our products--
since American industry can not only depend
on domestic knowledge resources--that is,
a well-educated labor force or an adequate
supply of scientists, engineers, and other professionals.

- i) There is increasing pessimism that the
staggering problems facing K-12
education can be overcome on the
time necessary to preserve our
economic strength.
- ii) Further, despite the fact that most
other nations regard higher education
as our greatest strength, there is little
sign that this view is shared either by
our elected political leaders or the public
at large. Indeed, it has become fashionable
to attack our universities, even as we
continue to seriously underfund them.
- iii) The rapid growth of "transnational" companies
which seek resources, whether they be
labor, processes, or knowledge--wherever
they can get them at highest quality and
lowest price--suggests that outsourcing of
knowledge from other parts of the world will
become increasingly common as the quality of
American education deteriorates.

This is truly a frightening prospect. Industry has
already outsourced labor and manufacturing.

Can we afford to lose its competitive capacity to
produce knowledge as well?

Let's face the facts, folks...

We're not going to be rich and prosperous if all
we do is mow one another's lawns.

Or, more to the point, engaging in financial
gymnastics such as leveraged buyouts
financed by junk bonds...

We have to bring something to the table of the
international marketplace.

We have to generate our wealth...through our
people...their knowledge and their skills.

The Dangers of Underinvestment

But here there are dark clouds on the horizon...
increasing evidence that we as a people
have not yet recognized either the nature
or the magnitude of the investments
we must make to achieve prosperity
in an age of knowledge.

1. Over the past several years, numerous studies have
suggested that Michigan is seriously underinvesting
in its "knowledge infrastructure"...by as much as
30% to 40% relative to other states.
2. The challenges faced by K-12 education are apparent.
By any measure, K-12 is in serious trouble.

We are "A Nation At Risk"...

Note: it is bad enough that...

10% of Americans are illiterate

25% now fail to complete high school

But in recent years we have learned that in international
comparisons of achievement in science and mathematics,
our grade school and high school students score at
the very bottom of industrialized nations.

We are a sports-oriented society,
and we like to frame issues in the language of the playing field
like "being Number one".

But folks, this isn't a game we are talking about today,
this is a deadly serious matter of raising
a generation of American who will be able to
hold their own in an increasingly competitive,
increasingly complex, increasingly science-oriented world.

The coins of the realm in the age of knowledge will be
science, mathematics, and technology...

But most American students are simply not developing
these skills.

They aren't even learning the basics...
reading, writing, critical thinking, languages
geography, history, literature, the arts

We hear along about the 21st century, but this sounds remote.

These kids that test at the bottom of the heap
in world terms will be the backbone of our labor force
at the turn of the century...

...and will be running our country in 2025!

In fact, you will be entirely dependent upon the
productivity of this undereducated generation
to support your social security programs and
your government during your retirement years.

Unfortunately, what is also apparent is our inability
to agree on actions aimed at improving the
quality of our schools--or equity in their financing.

3. The situation is somewhat different yet no less acute for
higher education in our state.

While the quality of Michigan higher education today is
still high, the long term prognosis is poor
if we continue as we have been in recent years.

Over the past two decades, the State of Michigan
has dropped from the position of a national
leader (ranked 6th in 1965) in its public support
of higher education to among the lowest in the
nation.

Let's look at the comparisons for a moment:

Among the states, Michigan currently ranks

- i) 38th in appropriations per student
- ii) 37th in appropriations as a percent of personal income
- iii) 26th in appropriations per capita

Further, we not only fall significantly below the national
average in our support, but it is clear that we are
slipping even farther behind with each passing year:

In fact, the increases we have provided in
our support to higher education now rank
iv) 42nd over the past two years
v) 45th over the past ten years
nearly dead-last among the states.

Hence, no matter how you slice it, our state now
ranks among the lowest in the nation in its
support of higher education.

As a highly industrialized state undergoing a
dramatic change to a knowledge-intensive
economy, Michigan is critically dependent upon
quality higher education for well educated citizens
and creative ideas. Yet Michigan has
now fallen into the bottom ranks of industrialized
states in its support of these critical resources.

We are being outspent by 30 - 40%

in state support per student...
Not simply by prosperous states like
California...but by neighbors such as
Indiana and Ohio!

They understand what we have yet to grasp.

The world is changing rapidly, and we have
to prepare ourselves for tough competition.

Until now we have been able to sustain the quality of public
higher education in this state in the face
of a catastrophic loss of state support
because of our traditional autonomy, so wisely
granted almost 150 years ago by the authors
of our state constitution.

This autonomy allowed Michigan's universities to
take strong internal actions, reallocating resources,
redefining priorities, and increasing tuition levels
to partly compensate for reduced public support.

But in recent years, even this autonomy has been
threatened...through efforts from Lansing

i) to constrain tuition levels to artificially low
levels even as state appropriations eroded
still further

ii) to dictate who we must admit

iii) even to dictate what we must teach...

Whether measured in terms of

state appropriation per student or fraction of our
tax dollars directed toward higher ed,
it is clear that in comparison with other states,
our present level of public support is simply inadequate
to maintain over the long run a system of higher
education that is competitive on a national basis.

Our autonomy has allowed us to continue to move forward
...even though the gas tank is running on empty...

...but now state government threatens to challenge
even about ability to manage our institutions during
a period of great financial difficulty...

And threatens to slam the brakes on quality education in
Michigan.

What has happened to our priorities?

What is wrong here???

Why is public education in Michigan and across America
at such a great risk today--even as our need for
an educated population intensifies?

Who is to blame???

Our schools and colleges???

Certainly our schools must take strong actions to
improve quality and strive harder to operate
in a more cost-effective manner.

They must be far more willing to embrace rather than resist change,
leaving behind the smokestack, industrial approach to
education, and the blue-collar approach to their
employees, their teachers.

Certainly too our teachers and administrators must set
higher standards and focus their efforts on education.

But it is clear that we must not lay the primary blame for
the crisis in public education on the schools themselves.
In a sense, they have fallen victim both to our changing
priorities as a society and the crushing bureaucracy
we have forced upon our schools.

What about our elected public officials???

Are they to blame?

Once again, it seems clear that many of those in elected public positions have given only lip service to the need of education, responding with mere rhetoric or gimmicks...or even worse, playing with education as a political football.

Yet, here too, we must not assign primary blame for the crisis in public education to those holding elected office.

Indeed, it seems clear that the message is finally beginning to get through to those in a position to act.

Our elected leaders--whether in Washington, or in Lansing, or in our local communities-- would like nothing better than to be identified with positive support of education...

...to be known as the education president

...or the education governor or the education party

Many of them understand the importance of investing in our human resources and are searching for creative ways to improve public support for education.

But they also face formidable constraints, since in the end they must be responsive to the wishes of the electorate...and face it, gang...the electorate today says:

i) no more taxes...

ii) no more crime...

iii) no more cuts in social services or national defense...

and our public officials have no choice but to respond.

No, the real finger of blame for the crisis we face in education should be pointed, as Michael Jackson would say, at "The Man in the Mirror"... ..at you and at me...

We are the ones who fail to demand the highest quality in our educational institutions in Michigan...

We are the ones who steadfastly resist a tax base adequate to support both our needs and desires...and provide an adequate level of support for quality education in this state.

We are the ones who block any effective efforts to achieve equitable financing of education in Michigan.

We are the ones who often are too busy to help our own children in their studies or participate in their activities.

And we are the ones who insist on building more and more prisons, even when we know that this investment comes out of the hide of education and social services-- which are, of course, the only true long term solutions to crime!

Something has changed in Michigan and in America...

I was brought up in a long tradition in which one's first responsibility was to one's children.

My parents took great interest in my studies...they scrimped and saved for my college education.

My wife and I have done the same--as I expect have many of you in this room.

But what about our fellow citizens?

What has happened to us as a nation?

Today's generation seems different.

Perhaps it is the "me" generation of the 1960s, now grown into comfortable yuppiehood...

...a generation that has vigorously defended its rights, but all too frequently failed to step up to its responsibilities.

Of perhaps it is due to an aging America, willing to place highest priorities on the needs of a retired generation--while leaving little left for the young.

Whatever the reason, it is clear that we may well become the first generation in the history of America that will go down in history as unable...or unwilling...to provide for a better future for the next generation...our children and grandchildren.

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

The Challenges

To Us...

In a very real sense, our state has entrusted to us its most valuable resources...its youth...and its future.

To be responsible stewards of the public trust, it is clear that we must strive to achieve greater cost-effectiveness in our use of public funds...and I can assure you that we intend to do just that.

But even beyond this, we must become staunch guardians for the quality of our institutions...

For in education, as in every other aspect of American life, quality will be the key to our future.

We need to give our children the best education and chance for the future that we can. We should be willing to pass on to them what we ourselves have received...opportunity for a better life.

Hence, to us falls the responsibility of taking the forceful and courageous actions necessary to sustain and enhance this quality...in the long run the people of this state both demand and deserve nothing less!

To You...

Education represents one of the most important investments a society can make in its future...since it is an investment in its people...

It is indeed the case that our state and our nation have developed the finest systems of public education in the world...

But we must also remember this 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 those of us in this gathering today with unsurpassed educational opportunities.

We have inherited these marvelous institutions because of the commitments and the sacrifices of previous generations...and it is our obligation as responsible stewards--not to mention as responsible parents--to sustain them to serve our own children and 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 hence in the future of our state and our nation.

To our elected leaders...and those aspiring to public office

1. Our public leaders must develop and implement a strategy to restore an adequate level of public support for public education to raise Michigan --that raises us from among the very bottom among the states to a position of national leadership

- once again.
2. They must bring to an end the present freeze on capital outlay appropriations for higher education (now entering its fourth year) and begin to deal with the seriously deteriorating facilities on our campuses.
 3. They must respect our constitutional autonomy and preserve it for generations to follow as the best safeguard for maintaining quality public higher education accessible to all.
 4. And most of all, our public leaders must come to understand that they are stewards for the moment of an extraordinary resource for our state--one of the world's finest systems of public education--a system that has resulted from the commitment and sacrifices of eight generations of Michigan citizens. They will be judged by future historians by how wisely and effectively they protect and sustain this great resource, so critical to our future.

The Challenge to Us All...

Michigan Challenges

Today the State of Michigan faces serious challenges that will clearly determinine its future prosperity and well being...

the challenge of pluralism...

the challenge of participation in a global community...

the challenge of the Age of Knowledge

the challenge of change itself...

As we approach a new century, our state--just as our nation--is undergoing a profound and difficult transition to a new economic order...

Our fabuously prosperous industrial economy...

an economy that allowed us to build some of the world's great institutions---including some of its finest universities--

But that economy is rapidly disappearing...

...and our challenge for the next decade is to take the steps necessary to build a new knowledge-based economy which will be competitive in a world marketplace.

Let there be no mistake about it...this will not be an easy transition...and the outcome is still very much in doubt.

I believe that we can meet the challenge of the knowledge-based, global society that is our future.

But it is also clear that to do so will require sacrifices on all of our parts...

It will take renewed commitment to that most fundamental of all characteristics in the new economic order: quality

And it will take renewed investment in that most critical resource for our future--our system of public education.

The Role of Alumni

While it is clear that we are entering a very critical period in our state's history when higher education will increasingly be a key factor in our prosperity and social well-being,

It is also clear that both the quality of and

access to higher education in Michigan is a subject of great concern.

Without your direct intervention...as alumni, a taxpayers and voters, and as citizens with a stake in Michigan's future

Further, your university, the University of Michigan, could sustain serious and permanent damage in the years ahead if we do not reorder the priorities of this state...

A specific request...

In the months ahead, you will have many opportunities to interact with candidates for public office in this State.

Many of you will attend fund-raisers, others will become directly involved with the political process.

As you do so, let me suggest that ask each of these candidates what they intend to do to address the crisis facing public higher education in Michigan.

And let me also suggest that you take their answer into careful consideration as you determine where to direct your support.

Final Comments

We recognize that the choices before Michigan are not easy.

We must address pressing social issues of employment, health, social welfare, we must meet the important needs of our citizens today.

But also we must balance these immediate needs with investment in our future.

We cannot continue to address symptoms of our problems without addressing their causes.

We cannot bring back the past even if we wanted to

For generations, the people of Michigan sacrificed so that their children could have a better life.

They had faith in education.

Today we must rekindle that faith and that commitment to the future.

It is now our generation's turn to demonstrate the same responsible stewardship and concern.

We must care for our children's future, for our common good, as much as we care for our present and individual interests.

Michigan has everything it needs to succeed...

... to once again become the economic leader of our nation and the world...

IF we can summon the will and the discipline to pull together and build a brighter future.