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- +It is clear that the public research university...
  - +...an institution for which the University of Michigan
  - +is not only the prototype, but perhaps also the flagship...
  - +...touches the lives of a great many people in a
  - +great many different ways...
- +Through education, research, and service...
  - +through health care, economic development, and
  - +...yes...even through a sense of pride in their
  - +athletic accomplishments.
- +Yet as important as these institutions are today in
  - +our everyday lives, it is my belief that
  - +in the future they will play an even more critical role
  - +as they become the key player 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.
- +Even beyond that:
  - +“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” (Bloch)
- +Very important to recognize multidimensional nature of UM
  - +...not just teaching, research, and service...
  - +...but medical care, economic development, social change
  - +...even entertainment (Michigan football and basketball)
  - +...creating knowledge...and transmitting it to our graduates
- +UM Leadership
  - +• Prototype of comprehensive university
  - +• True realization of Jeffersonian model of public university
- +Particularly true in Michigan
  - +Buffeted by change:
    - +...demographics, internationalization, knowledge
  - +Impact: closed plants, unemployment
    - +Indicators: per capita income, quality of life, investments in education
    - +Budget difficulties
  - +Two paths: regain prosperity...or become economic backwater
  - +Key issue: development of our human resources
    - +Education: K-12 + higher education + lifetime learning
  - +Encouraged by:
    - +State government: Governor and legislature
    - +National Agenda: President Bush, Lamar Alexander, David Kearns
    - +Private Sector: BRT effort
- +Conclusions
  - +Choices before us are difficult--and sacrifices will be necessary
  - +Real choice: between meeting costs of our failures...
    - +...and investing in our future
  - +For 8 generations, Michigan citizens have placed their faith in education
  - +Our challenge is to rekindle this faith...
  - +It is our generation’s turn to accept the torch
    - +...and assume our responsibility, one generation to the next!
- +Tuition Myths and Realities
  - +Some points:
    - +I had an interesting experience last weekend
    - +at one of our local Ann Arbor bakeries
    - +A parent of a new Michigan student introduced himself

- +and noted with some pride that he daughter was
- +entering our aerospace engineering program this week.
- +(Incidentally, this is probably one of the top 2 or 3
- +aero programs in the nation.)
- +He went on to say that he felt like he had just won the
- +Michigan lottery, because he now realized that
- +the cost of her education was only a small fraction
- +of what he would have paid at any institution of
- +similar quality in the country.
- +Most folks agree...since nowhere else is a student
- +going to get an education in one of the leading
- +universities of the world...at such a rock-bottom price.
- +Notice I used the word "price" here...not "cost"...
- +It is important to separate cost from price in these discussions...
  - +...that is, what it actually costs the university to educate
  - +a student
  - +...and what the student pays in tuition...which, of course,
  - +is far below the actual cost of his or her education.
- +First, a couple of comments on cost...
  - +...essentially all of the academic programs at UM are
  - +ranked within the top ten in the nation...many
  - +are ranked among the very best in the world.
  - +...yet, Michigan ranks 30th among leading universities
  - +in its actual expenditures per student...
    - +...at roughly \$20,000 per student per year
    - +(other peer publics are at \$30,000...and peer
    - +privates are at \$40,000 to \$50,000)
  - +Hence Michigan is doing a marvelous job of
  - +offering one of the finest educations in the nation
  - +at only a fraction of the cost of most other institutions.
  - +In fact, I think one could make a strong case that we are probably
  - +the most cost-effective institution in the country...
    - +in providing a vast array of world-class programs at
    - +a modest cost.
- +Of course no student pays for the full cost...
  - +...in a public university, the state appropriation is used to
  - +discount the price far below actual cost...
    - +...for example, rather than paying \$20,000 per year
    - +(essentially private levels)
    - +Michigan students pay \$3,500 to \$4,000 because of
    - +state support
  - +Note here that, in effect, the state appropriation does not
  - +support the University, rather it subsidizes the
  - +educational costs of Michigan citizens attending the University.
- +But, of course, even this low cost--less than 20% of the true cost--
  - +is too much for some students, so the UM has put into place
  - +a policy by which it will meet the full financial need of any
  - +Michigan resident attending the University.
  - +...In reality, this reduces the average tuition cost seen by
  - +students still further...to \$1,500 or so.
- +In summary then,
  - +State support determines the "sticker price" ...
    - +...by allowing us to discount the tuition far below
    - +the actual cost to the instate tuition rate
  - +Note, then, from this explanation, that it is clear that
  - +when state support declines, we simply cannot offer
  - +the same discount...and the sticker price must rise.
  - +Financial aid then determines the discount price seen
  - +by those students needing financial aid...

- +...averaging less than \$1,500 per year.
- +Here, I would note that most of the funds for our
- +financial aid programs come from private support,
- +but some come from tuition itself...that is, from asking
- +those folks with the capacity to pay a little bit more of
- +their fair share so that those less fortunate have the
- +opportunity to attend UM.
- +From this perspective, it is clear that we really have only three
- +options each year:
  - +i) To provide state appropriations adequate to provide
  - +deeply discounted tuitions for Michigan residents
  - +ii) To reduce enrollments, since in the face of inadequate
  - +appropriations, we simply do not have the resources
  - +to subsidize as many students at the deeply discounted
  - +instate rates.
  - +iii) To reduce quality...that is to provide a second-rate
  - +education at lower cost
  - +iv) To increase tuitions a bit--by asking parents and students
  - +to pay a little bit more of their fair share--but still
  - +only at a tiny fraction of the real cost--and still at
  - +only a tiny fraction of what they would pay to attend
  - +academic programs of comparable quality any place
  - +else in the world.
- +Myth 1: Tuition levels at most universities...
  - +including the University of Michigan...are "out of control".
  - +Reality:
    - +Hence, in real terms, tuition levels at the University--
    - +and at most other public institutions--have been quite stable.
    - +This is a very important point, since while most attention has been
    - +generated by the very high tuition levels at a few highly selective
    - +private institutions, the tuition levels at major public universities
    - +such as the University of Michigan have remained both quite
    - +stable and quite low over the decades of the 1970s and 1980s.
    - +Over the past eight years, the tuition rates for resident undergraduates
    - +at the University of Michigan have increased by 47.5%.
    - +This is not only less than most other public and private institutions
    - +across the nation (which have seen increases in the 50% to 70% range),
    - +but it is less than the inflation rate of 52% for higher education
    - +during this period.
- +Myth 2: Tuition levels at the University of Michigan
  - +are quite high relative to other institutions.
  - +Reality
    - +Not only is this statement quite incorrect,
    - +but in reality tuition levels at Michigan's public universities are quite low
    - +and comparable to those of most other public universities throughout the nation.
    - +The roughly \$2,000 to \$3,500 per year of annual tuition and fees charged
    - +to undergraduates in Michigan's public universities represents
    - +an incredible bargain when compared to all other alternatives:
    - +public or private education in Michigan or across the nation.
    - +Indeed, it now costs more to attend the private secretarial school
    - +Cleary College (\$4,400 per year) than to attend the University
    - +of Michigan (\$3,200) per year.
    - +Further, Michigan students face far higher tuition levels at peer
    - +public institutions (UC Berkeley tuition runs \$9,000-\$10,000 per year),
    - +and at private institutions (Harvard, Stanford, and Cornell
    - +...or Kalamazoo, Albion, and Calvin... tuitions run
    - +\$14,000-\$16,000 per year).
  - +There are other interesting comparisons.
    - +It is now estimated that 60 percent to 70 percent of college-age students

- +own an automobile. Well, the cost of a degree at a public university
- +in this state is less than the cost of that car.
- +Furthermore, this investment in a college education will be paid off
- +in only a couple of years following graduation
- +because of the very high earning capacity of a college graduate
- +relative to those without college degrees.
- +Perhaps it is because the absolute tuition levels at public institutions
- +are so low, that it is easy to become confused in a comparison of costs
- +by simply noting percentage increases.
- +I don't need to remind you 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 public university education.
- +Myth 3: The increasing tuition levels at the University of
- +Michigan are pricing it out of reach of all but the very wealthy.
- +Again, this statement is not only incorrect,
- +but it is seriously misleading.
- +First, it should be noted that the costs of a UM education to a Michigan
- +resident have been rising far less rapidly than disposable income:
- +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, at the University of Michigan, we have a policy that
- +guarantees that all Michigan residents are provided with
- +adequate financial aid to meet their needs until graduation.
- +In fact, roughly 65 percent of our Michigan resident students
- +receive some form of financial aid, which amounted
- +to over \$140 million last year.
- +Perhaps a better way to look at this is to contrast
- +...the publicized or "sticker price" (\$3,488)
- +...average "net" tuition, accounting for financial aid (\$1,224)
- +Of course many pay all...but many others pay nothing!
- +Such an analysis indicates that the average "net" tuition seen
- +by Michigan undergraduates has actually dropped during
- +the decade of the 1990s.
- +Further, families with incomes of up to \$60,000
- +are generally eligible for some form of financial aid.
- +There is a certain irony, here, since as state and federal support
- +of financial aid has deteriorated over the 1980s, tuition revenue
- +itself has become one of the primary sources of funds necessary
- +to sustain these important programs.
- +In a sense, public universities in our state,
- +just as universities across the nation, have asked
- +those more affluent families that have the capacity
- +to pay a little bit more of the true cost of education
- +for their students in order to provide the capacity
- +for those less fortunate to attend.
- +UM remains committed to the broadest possible access,
- +to the basic philosophy of "providing an uncommon education
- +for the common man".
- +Myth 4: Surely the fact that tuition rates are increasing faster
- +than the CPI reveals that universities are not cost-effective
- +and are exploiting the marketplace.

- +One of the frustrating facts of life about modern economics
  - +is that the value of the dollar is not constant;
  - +it is continually eroding through the effects of inflation.
- +Hence the price of essentially everything in our society
  - +increases from year to year to reflect the fact that
  - +the dollar itself has somewhat less value.
- +Thus, it would be unrealistic to expect that tuition--
  - +or the price of a car, groceries, or anything else--
  - +would be held constant from year to year.
- +First, one should note that while tuition has been increasing somewhat
  - +faster than the CPI, it has NOT been increasing faster than
  - +either the per capita income or the inflation rate characterizing
  - +the costs of higher education (HEPI):
- +Myth 5: The price of a college education is no longer worth it.
  - +Nationwide, it is clear that the 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 3 times as much during
    - +their lifetimes as high school graduates.
  - +Across all fields, the net return of an
    - +undergraduate education is in excess of 10 percent.
    - +In knowledge-intensive professions, of course, it is far beyond that.
  - +Furthermore, the modest tuition levels charged by
    - +public institutions represent a particular bargain.
  - +At a leading university such as the University of Michigan
    - +we estimate that we invest roughly \$20,000 per year, per undergraduate student
    - +to create the learning environment necessary to prepare
    - +our graduates for the 21st century.
  - +Since our present instate tuition levels are \$3,500,
    - +we are asking parents to contribute less than
    - +20 cents on the dollar. Not a bad deal I'd say!
- +Myth 6: Hold on now! We pay taxes. Don't these pay for the
  - +cost of the college education of Michigan residents?
  - +Once again, a popular but quite false myth.
  - +Over the past two decades, the University of Michigan's
    - +share of tax revenue has dropped by 42 percent
    - +from 3.74 percent, to 2.15 percent.
  - +Hence, today, only about two cents of each tax dollar
    - +goes to the University.
  - +In other words, someone paying \$5,000 per year in state taxes
    - +will be paying only about \$100 of those taxes to support the University.
  - +More specifically, the typical parent
    - +over his or her entire earning career, will pay less than \$3,000 in taxes
    - +that are used for the support of the University of Michigan
    - +(assuming thirty years of earnings).
  - +By way of comparison, the tuition costs of
    - +a Michigan undergraduate education is currently about \$14,000.
  - +Hence, it seems clear that the Michigan taxpayer
    - +is not shouldering the real costs for a college education
    - +in a Michigan public university.
  - +Rather, it is being borne primarily by a combination
    - +of other sources, including tuition, federal support, and private support.
- +What do the Michigan taxpayers get from their money?
  - +This past year the taxpayers of this state contributed
    - +over \$270 million through state appropriations to
    - +the University of Michigan.
  - +What did they get in return?
- +Well, there are certain obvious payoffs...
  - +i) an outstanding education of roughly 50,000 students

- +Including 29,000 undergraduates)
- +(80% of them Michigan residents!!!
- +ii) the production of 12,000 graduates at
  - +all degree levels
  - +in all disciplines and professions
- +But they got far more for this investment
- +Dollars:
  - +i) In comparison to the \$270 M invested by the state, the UM attracted to Michigan over \$300 million in federal support--most of which came in the form of sponsored research contracts and student financial aid.
  - +ii) Further, the students attracted to our programs contributed roughly \$300 M additional dollars to tuition and fees...
  - +iii) In addition, the auxiliary activities of the University contributed another \$800 M to the state's economy...
  - +iv) Or \$1.7 billion, in all -- a multiplying factor of six-fold
- +Cost/Benefit Implications for Michigan Residents
  - +State spends: \$30 per year per citizen for UM
  - +UM pumps back: \$220 per year per citizen
  - +UM stimulates: \$2,000 per year per citizen
  - +Calc:
    - +1.8 B budget
    - +\$270,000,000 appropriation
    - +9 million citizens
    - +economic multiplier = 10
- +Job Creation
  - +UM generates 120,000 jobs each year through direct expenditures
  - +Calc:
    - +\$1.8 B budget
    - +\$20,000 per job ==> 90,000
    - +30,000 UM employees
- +Value of Education
  - +Students spend \$200 per day for UM education
  - +Students will earn \$2,000 per day as a result
  - +Calc:
    - +UM B.S. lifetime earnings: \$3,000,000
    - +HS graduate earnings: \$1,500,000
    - +720 days for B.S. degree
- +Economic Development
  - +i) But far beyond that, we estimate the true economic impact of the University multiplies its state appropriation by at least a factor of ten or more...
  - +ii) For example, the UM's engineering programs--supported in part by the Research Excellence Fund, are credited as a key to the recent growth of a \$5 billion industry in industrial automation in the southeastern Michigan area.
  - +iii) Each year the University spins off dozens of new companies, creating new jobs and attracting new dollars to our state
  - +vi) Each year the UM produces thousands of engineers, scientists, business executives,



- +lawyers, teachers,...and all of the other
- +professionals so necessary to compete in the
- +knowledge-based economy which
- +characterizes our world.
- +Health Care
  - +Last year, over 750,000 patients were treated in
  - +the UM Medical Center...regarded as one of
  - +the world's great centers of quality health
  - +care.
  - +Indeed, our recent market surveys have indicated
  - +that essentially every family in this state at
  - +one time or another has had one of their
  - +members referred to and treated by our
  - +doctors.
  - +I would suggest there is not a person in this
  - +room whose life has not been...or will
  - +not be touched at one time by our
  - +doctors and medical scientists!
- +It is clear that the public research university...
  - +...an institution for which the University of Michigan
  - +is not only the prototype, but perhaps also the flagship...
  - +...touches the lives of a great many people in a
  - +great many different ways...
- +Through education, research, and service...
  - +through health care, economic development, and
  - +...yes...even through a sense of pride in their
  - +athletic accomplishments.
- +Yet as important as these institutions are today in
  - +our everyday lives, it is my belief that
  - +in the future they will play an even more critical role
  - +as they become the key player 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.
- +“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” (Bloch)
- +Alumni Points
  - +This has been an incredible year...demonstrating once again
  - +that our “Go Blue” spirit is alive and well!
  - +1) Sunrunner: US Championships, 3rd in world
  - +2) Genetic Medicine: cystic fibrosis, neurofibromatosis, chlorestyrol
  - +diabetis, Jonas Salk...
  - +3) Child and Material Health Care Center (Tony Novello)
  - +4) NSFnet, NREN, ANS Inc
  - +5) NSF Laser Center
  - +6) International Impact: MBAs, ISR
  - +7) Operation Desert Storm: 50 served,...
    - +Project Michigan: Stealth technology, satellite sensing, smart bombs
  - +8) Sports: 3rd Big Ten Championship, Gator Bowl
    - +#1 recruiting classes in nation in both football and basketball
    - +Schembechler, Nederlander, Tisch
    - +Brigette Venturi
  - +9) Commencement: President and Mrs. Bush

- +Describe preparations, event
- +JJD and AMD: State Dinner...meeting the Queen
- +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 realize the the ever-accelerating
    - +pace of change in our world...our nation...
    - +...and, perhaps most of all, in our state.
  - +Who would have predicted several years ago
    - +...end of communism in Europe
    - +...destruction of Berlin Wall and
      - +reunification of Germany
    - +...that the Soviet Union, China, together with
      - +most other nation's of the world would act
      - +together to defeat the actions of an
      - +aggressive dictator in the Middle East
    - +...that the U.S. market share of foreign automobile
      - +manufacturers would rise above 50%...
    - +...or that Bo Schembechler would become
      - +president of the Detroit Tigers
  - +Yet these changes are just the tip of the iceberg
    - +...there are even more profound changes occurring
    - +in our state...
  - +We are becoming more diverse, more pluralistic
    - +as a people. Indeed, almost 85% 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 village --
  - +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...
- +The Signs of Change in Michigan
  - +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 children will inherit a far different nation...
  - +a highly pluralistic, knowledge-intensive, world nation
  - +that will be the America of the 21st century
- +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...
- +There are many indicators of the impact of this transition on our state...
- +Over the past decade, Michigan has slipped badly
  - +in several key indicators of quality of life:
    - +• 30th in per capita income
    - +• 41st in overall employment
    - +• 48th in business climate (perceived)
    - +• 48th in high school graduation rates
    - +• 50th in return on federal tax dollars
- +Oh, we still rank near the top in some things...
  - +For example, we rank...
    - +• 12th in property tax burden
    - +• 14th in teenage unemployment rate
    - +• 13th in incarceration rate (and rising rapidly)
    - +• 13th in percentage of children in poverty
    - +• 10th in infant mortality
    - +• 4th in public aid recipients
    - +• 1st in mortality from major disease
- +There is still one additional category of indicators of some concern, and these reflect our willingness to invest in the future. Michigan ranks
  - +• 37th in support of HE per student
  - +• 45th in support of HE during 1980s
  - +• 40th in support of K-12
- +In fact, numerous studies over the past several years have
  - +suggested that Michigan is seriously underinvesting
  - +in its "knowledge infrastructure"...by as much as
  - +30% to 40% relative to other states.
- +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) 33nd in appropriations per student
    - +ii) 37th in appropriations as a percent of personal income
    - +iii) 35th in appropriations as a percent of tax revenue
- +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.
- +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.

- +We have become consumers of education,
  - +not investors in the future.
- +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.
- +A Fork in the Road
- +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!
- +producing jobs and improving our quality of life.
- +Whether we will emerge from this transition as a
- +world economic leader once again...with a
- +strong, prosperous--albeit new--economy
- +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 face a watershed--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.
- +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 research universities
- +such as the University of Michigan
- +are rapidly becoming the key factors in
- +determining the strength and prosperity
- +of our state.
- +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.
- +From this perspective, it is important that we not
- +view the public support of higher education as
- +just another expenditure demand on an already
- +over-extended state budget, but rather as a
- +critical investment in our future.
- +Conclusion
- +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.
- +If we don't invest in cures, our symptoms will, in time,
- +become fatal...
- +For generations, the people of Michigan sacrificed

- +so that their children could have a better life.
- +They had faith in education.
- +Now it is our generation's turn.
- +We must rekindle that faith
  - +and that commitment to the future today.
- +We must care for our children's future as much
  - +as we attempt to our present needs and desires.
- +Education represents one of the most important
  - +investments a society can make in its future...since
  - +it is an investment in its people...