

+A Paradox

- +One of things we have done well as a nation is
 - +to build a system of research universities
 - +envied by the rest of the world.
- +Our universities educate more students and conduct
 - +more research better than any other national
 - +system of higher education in the world.
- +Countries as diverse as Japan and the USSR look to
 - +our universities as models for reforming their own.
- +The American research university is under serious stress
 - +...demographic changes will affect the number and
 - +profile of students
 - +...a generation of faculty will retire in the '90s, and the
 - +replacement pool is too small in many fields.
 - +...they are criticized by governors for financial profligacy
 - +...attacked by parents and students for uncontrolled
 - +escalation of tuition
 - +...investigated by the Department of Justice for
 - +collusion in tuition and financial aid fixing
 - +...criticized by both Washington and their own faculties
 - +for rising indirect costs
 - +...attacked by Congress for alleged conflicts of
 - +interest or providing easy access of foreign firms
 - +to government-supported research
 - +...attacked by legislatures for the tenure system,
 - +...and attack by the left and the right for the quality
 - +of undergraduate education.
- +Much of this criticism is simplistic and overstated, and it
 - +ignores the extraordinary contribution of universities
 - +to American intellectual and cultural life and to our
 - +economic strength and national security.

+Introduction

- +Across the nation, colleges and universities are once again
 - +focusing their attention on the nature and the quality of
 - +undergraduate education.
- +Perhaps goaded on by criticisms from the right--
 - +Allan Bloom and William Bennett,
 - +or the criticisms from the left for new styles of learning
 - +based on nonwestern cultures and new forms of thought
 - +such as feminism, liberation theology, and so on.
- +Or because of the recognition that the spectre of
 - +an abrupt decline in the number of high school graduates
 - +as our nation slides down the backside of the post-war
 - +baby boom which threatens our supply of outstanding students.
- +Or, perhaps simply because of the cyclic nature of these
 - +concerns, which seem to rise once again to the top of

- +our agenda every decade or so.
- +The Standard Concerns
 - +Observers condemn:
 - +Formless nature of UG curriculum
 - +Lack of personal attention from senior professors
 - +Huge classes broken into sections taught by
 - +inexperienced graduate students
 - +Low or nonexistent faculty teaching loads
 - +(6 hours per week!!!)
 - +Flight from classrooms to research
 - +High priced consulting, businesses, etc.
 - +Costs of education
 - +Gross materialism on part of universities
 - +(fund-raising, lobbying, etc.)
 - +Some common quotes:
 - +“Undergraduate education is winding down toward
 - +medocrity”
 - +“Underaccountable and underproductive”
 - +“Sickening tailspin” and a “national disgrace”
 - +“The professors--working steadily and systematically--
 - +have destroyed the university as a center of
 - +learning and have desolated higher education,
 - +which no longer is higher or much of an education.”
 - +Particular Concern: Teaching vs. Research
 - +Next to college curriculum, no aspect of university
 - +education has provoked more complaints that the
 - +faculty’s preoccupation with research at the
 - +expense of teaching.
 - +It is widely believed that institutions slight their
 - +students when they emphasize research in
 - +making appointments and refuse to promote
 - +unproductive professors even though they
 - +are highly successful classroom teachers.
 - +Critics condemn the bulk of scholarly
 - +activity either as a sterile product of requirements
 - +imposed by philistine administrators or as a
 - +form of private pleasure that selfish professions
 - +enjoy at the expense of their students.
 - +The Standard Responses
 - +Those who speak up for teaching tend to dismiss research
 - +with hardly a word about the reasons that have led
 - +society to devote so many billions of dollars to
 - +its pursuit.
 - +Taxonomy of higher education: 3,500 institutions
 - +• 4-year colleges
 - +• comprehensive universities

- +• research universities
- +• AAU universities
- +• university college:
 - +That part of a UNIVERSITY that offers
 - +undergraduate instruction and grants
 - +a bachelors degree.
- +Unique role of research university in America
 - +Core of basic research (Frank Press)
- +Examples of Impact: UM
 - +Education:
 - +Degree Production...
 - +7,000 baccalaureate degrees per year...
 - +But, beyond that, the bulk of the
 - +...doctors, dentists, nurses
 - +...engineers, lawyers, business executives
 - +...PhDs, MBAs, MPHs, MFAs...
 - +So necessary for our state...
 - +Economic Impact:
 - +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
 - +ii) Further, the students attracted to our
 - +programs contributed roughly \$300 M
 - +additional dollars to tuition and fees...
 - +research contracts and student financial
 - +aid.
 - +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
 - +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
 - +iv) Each year the UM attracts to Michigan new

- +companies...
- +...as evidenced by the announcement in
 - +Ann Arbor that Philips Electronics has
 - +just agreed to site a major \$200 M
 - +factory in the Ann Arbor area
- +v) Or exciting new ventures such as
 - +...the National Research and Education Network
 - +...CEISIN
- +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.
- +vii) Recent studies have indicated the rate of return
 - +on basic research is 28%!
- +Health Care
 - +But of course there are so very many more payoffs
 - +from this investment.
 - +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.
 - +Further, the through its activities in medical
 - +research continues to have great impact
 - +on the people of this state...
 - +...whether it was conducting the clinical
 - +trials for the vaccine developed by
 - +one of our faculty members, Dr.
 - +Jonas Salk...
 - +...or the recent announcement last fall
 - +that a UM team of scientists had
 - +identified and cloned the gene
 - +responsible for cystic fibrosis
 - +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!
- +Social Change
 - +But there is so very much more...
 - +The University continues to serve as one of

- +the great engines of social change in our state...
- +Whether it is the Michigan of the Big Chill...
 - +...the long tradition of student activism
 - +awakening the conscience of our society
 - +The Teachins of the 1960s against the war in Vietnam
 - +EarthDay in the 1970s to raise concerns about the environment
 - +Our celebration of Martin Luther King Day last month
 - +with an educational experience involving thousands
 - +to highlight the importance of tolerance and mutual understanding
- +Or the extraordinary impact of our regional campuses as they educate first generation college graduates
- +Or the leadership we are providing in addressing the needs of our minority communities...as evidenced by the Michigan Mandate (hand out)--widely regarded as one of the nation's most visionary approaches to affirmative action.
- +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.
- +Even without undergraduates, these institutions would be essential both for our state and our nation...
- +But what about the nature of undergraduate education in the university college?
- +The Myth and the Reality
 - +In November, 1986 I had the pleasure of attending the Conference at Harvard when Ernie Boyer introduced the Carnegie Foundation report on the undergraduate experience in America.
 - +Interestingly enough, only a very small handful of the invited participynts,were from public research universities such as ours. On several occasions I was cornered in the halls and asked by my colleagues: "Why is Michigan here? You people aren't concerned with undergraduate education, are you?"
- +We all know the popular myths.

- +When one thinks of distinguished private institutions
 - +such as Harvard and Yale, one thinks first of
 - +Harvard College and Yale College, their superb
 - +undergraduate colleges, since these are perceived
 - +as both the focus and intellectual soul of private
 - +higher education.
 - +But what do you think of first when someone mentions
 - +Michigan or Michigan State, or Minnesota or Ohio State.
 - +Football, perhaps? Fraternity and sorority life?
 - +Actually, I suspect that one first tends to think
 - +of the commitments that these great public universities
 - +have made to the professions, to their schools of
 - +law and medicine, engineering, and agriculture.
 - +We also might recognize the responsibilities of these
 - +institutions to serve the public and about their(
 - +grec rdecch programs.
 - +But, few of us would think first about their comotment
 - +to undergraduate!ducation.
- +Rmther, the image of undergraduade education in
 - +large|public univU”OCN[AMiæ~=ê4πê7Σ2ê≥
 - +47|π∞Σ9êof students w
 - +narge lecture courses in m random fashhon, of courses
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 - +in these iNsthtutions as identifed only!y their A.D. number 9until the thme of
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 - thousands of other fellow graduates.CLet us look beyond#the myth at the
 - reality for a moment, however: 3(1) Well over half of the students on the
 - campuses 2of major public universities are undergraduates. :Indeed, at
 - Michigan we enroll over 18,000 undergraduates 8in our liberal arts college--
 - which makes it the largest Gcommitment to liberal arts education in any
 - university in the nation. C(2) By essentially any measure, the undergraduates
 - on our campuses 6today are our strongest students--just as they are at
 - 3graduated in the top 1% of high school graduates. /“Undergraduate
 - education is winding down toward&“Underaccountable and
 - underproductive”.“Sickening tailspin” and a “national disgrace”6“The
 - professors--working steadily and systematically--have destroyed the
 - university as a center of-learning and have desolated higher education,3which
 - no longer is higher or much of an education.”Economic Developmenth3Next to
 - college curriculum, no aspect of university/education has provoked more
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+Indeed, at Michigan we enroll over 18,000 undergraduates

+in our liberal arts college--which makes it the largest

+commitment to liberal arts education in any university in the nation.

+ (2) By essentially any measure, the undergraduates on our campuses

+today are our strongest students--just as they are at

+other highly selective institutions such as Harvard,

+Yale, and Stanford. For example, this fall our average entering

+freshmen will rank among the top 3% of high school graduates.

+Indeed, over 1,000 of our entering freshmen will have

+graduated in the top 1% of high school graduates.

+Hence, whether measured by quantity or quality,

+the significant fraction of our efforts are--or at least should be--

+focused on undergraduate education.

+ (3) The intense competition for admission to our undergraduate

+programs and the attractive marketplace for our graduates

+suggest that we must be doing something right.

+For example, at Michigan applications for admission

+to our freshman class have been increasing at a rate

+of about 10% per year for several years, despite the

+well-known demographic decline in the number of

+high school graduates. This year we received over

+19,000 applications for the roughly 4,500 positions

+in our freshman class. Furthermore, the demand

+for our graduates continues to increase, whether

+from employers, professional schools, or graduate schools.

+ (4) Although we have all seen studies such as the one

+released by the Oberlin group suggesting that small

+liberal arts colleges are the key sources of students

+for our graduate and professional schools, the facts

+suggest otherwise. Recent studies by the

+National Science Foundation have confirmed that

+the largest source of professionals, of scholars,

+of leaders of our society, are our large, comprehensive,

+public research universities. Indeed, at Michigan we

+have led the nation for many years in the number of

+our undergraduates who go on to professional careers

+such as law, engineering, and medicine.

+But this should not be too surprising, since the impact

+of our programs is generally dependent on both the

+quality and number of our graduates.

+Therefore, let us set aside both the myths and the realities

+for the moment and address the most critical questions of all:

- + (1) What is the role of the comprehensive
 - + research university in undergraduate education?
- + (2) How effective are our research universities--in particular, our
 - + great public research universities
 - + such as the University of Michigan--in responding
 - + to the challenge of undergraduate education
- + Some Quantitative Data
 - + Peter House, Division of Policy Research and Analysis (STIA)
 - + Study
 - + Sample: Over 50,000 students majoring in S&E whose
 - + 1987 GRE score (quantitative and verbal) could be
 - + matched by ETS with SAT score
 - + Variables: GRE, SAT, gender, race, UG major, UG school
 - + Value Added: Average addition to a student's total
 - + GRE score associated with going to a particular
 - + school, irrespective of SAT, gender, minority,
 - + or UG major.
 - + Taxonomy of Academic Institutions:
 - + Doctoral 1: 20 largest R&D Performers
 - + Doctoral 2: next 40 R&D performers
 - + Doctoral 3: 125 remaining doctoral institutions
 - + Education 1: 24 highly rated liberal arts colleges
 - + Education 2: 80 largest feeders into NS&E PhD pipeline
 - + Education 3: 1112 remaining 4-year colleges
 - + Raw Results of Value Added
 - + Doc 1: 43
 - + Doc 2: 37
 - + Doc 3: 19
 - + Edu 1: 37
 - + Edu 2: 12
 - + Edu 3: 0
 - + Results:
 - + 1. The most prominent research institutions have the highest
 - + average scholarly quality rating.
 - + 2. Doc 1 had the highest value-added, followed by Doc 2
 - + (Note that even Doc 2 were higher than Edu 1)
 - + 3. Average education index is positively related to
 - + average number of S&E bachelors degrees awarded,
 - + except for institutions granting more than 3,000
 - + degrees annually (note that UM awards about 2,500,
 - + so it peaks for UM and UCB)
 - + 4. Average education index is positively related to R&D
 - + intensity as measured by R&D spending per undergraduate
 - + 5. Average education index is positively related to
 - + scholarly quality of faculty
 - + Other points:

- +1. Doctoral institutions are only 13% of all institutions, but
 - +account for:
 - +...45% of total enrollment
 - +...nearly 50% of total degrees
 - +...over 90% of academic R&D
- +2. There does not appear to be much different in undergraduate
 - +enrollment-to-bachelors degree conversion ratios among
 - +most institutional types (although a very modest advantage
 - +to Edu 1 institutions...but very modest)...
 - +E.g:
 - +Cornell: 90%
 - +UM: 80%
 - +Reed: 80%
 - +T A&M: 80%
- +3. Within each institution type, per student spending declines
 - +from type 1 through type 3 (although Edu 1 is slightly
 - +higher than Doc 1).
- +What Is Going On Here?
 - +Fundamental Premise of University College:
 - +Top university colleges share the strong and
 - +sometimes controversial belief that
 - +research and teaching are complementary
 - +activities;
 - +Combination of teaching and research is part of the
 - +university faculty identify.
 - +The university professor is not a teacher who is
 - +expected to confine himself to the transmission
 - +of received knowledge to generations of students.
 - +He is assumed to be a PRODUCER of new
 - +knowledge, frequently with the assistance of
 - +apprentice graduate students, who transmits
 - +state-of-the-art knowledge to students at all
 - +levels.
- +Lib Arts Colleges
 - +Faculty does less research.
 - +Elementary presentations of an academic
 - +subject change slowly, and the pressure
 - +to remain up to date and to understand
 - +the frontiers of a subject is weaker
 - +In colleges, the setting in which instruction
 - +takes place is intimate: small faculty,
 - +small classes, small student body.
 - +Concerns about personality are magnified.
 - +This yields teaching faculties of great
 - +competence, strongly motivated to help
 - +and support the undergraduate.

- +However there is little opportunity for
 - +instruction in lib arts colleges to rise
 - +above the elementary or intermediate
 - +level
- +University College
 - +University colleges are the most exciting
 - +of all alternatives for those students
 - +able to handle the challenge.
 - +University professor is a different breed of cat.
 - +He teaches UGs and graduates...
 - +Universities are large, busy places.
 - +Faculty range is very wide...clinicians,
 - +layers, architects mingle with
 - +scientists, economics, and philosophers
 - +What matters greatly is the need or opportunity
 - +to coexist with a graduate school, the
 - +training ground of future generations of
 - +scholars.
- +What we are...and what we are not!
 - +UM is not a small liberal arts college...
 - +It is a great research university.**
 - +It is a very large, complex, and exciting place.
 - +To give you a sense of this, consider the following...
 - +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....
 - +Mission:
 - +i) Provides instruction, research, service

- +ii) Spans all intellectual disciplines and
 - +professional areas
- +iii) Attempts to sustain programs that rank
 - +among the nation's best in all areas
 - +(and succeeds...)
- +On this campus, we provide one of the most
 - +incredible intellectual smorgasbords in
 - +the world--a fascinating cornucopia of
 - +ideas supported by some of the finest
 - +facilities in the world -- one of the nation's
 - +great libraries, museums, laboratories,
 - +computers, concert halls,
 - +athletic facilities -- and most
 - +important, one of the world's great
 - +faculties.
- +What is unique about our universities?
 - +What is our "market niche"?
 - +Well, we are all large, comprehensive,
 - +public, research universities.
 - +We all share a serious commitment to scholarship
 - +as well as a commitment to unusual breadth
 - +across a rich diversity of academic disciplines,
 - +professional schools, and social and cultural activities.
 - +We have all achieved an unusual degree of pluralism
 - +in our students, faculty, and staff.
 - +Our campuses demonstrate an unusual degree
 - +of participation of faculty and students in the
 - +university decision process.
 - +And we all share in an unusually strong commitment
 - +to the quality of our students, our faculty, and our programs.
- +In a sense, the strength of our institutions depends
 - +upon our efforts to achieve an optimum blend of
 - +quality, breadth, and scale.
 - +We attempt to do a great many things, to involve
 - +and benefit a great many people, and
 - +we attempt to do everything very well.
- +Furthermore, we attempt to achieve a balance
 - +among teaching, research, and service, as well as
 - +undergraduate education, graduate education,
 - +professional education, and faculty scholarship and development.
 - +It is important to note that we do not view achieving
 - +this balance as a conflict between competing goals.
 - +Rather we view it as an opportunity to exploit
 - +an important creative tension.
- +It is this blend of missions which provides our research universities
 - +with such a unique environment for undergraduate education.

- +We are not--nor should we try to imitate--a small liberal arts college,
 - +with a faculty chosen primarily for their teaching skills, and
 - +with a curriculum limited both by design and resources.
- +Rather, we are a large, comprehensive university,
 - +spanning almost every intellectual discipline and profession.
- +We have the capacity to attract and sustain many of
 - +the world's leading scholars.
- +We provide intellectual resources unmatched elsewhere
 - +in our society, whether in the extent of our library
 - +and museum collections, or in the laboratory facilities
 - +we provide, or in the exotic new tools of our intellectual trades
 - +ranging from supercomputers, to the sophisticated equipment
 - +required for solid state electronics and recombinant DNA research,
 - +to the expensive instrumentation used for positron emission tomography
 - +in our medical centers.
- +Our philosophy is to use these extraordinary
 - +resources not simply to teach facts...indeed,
 - +students in your ability can learn facts, content,
 - +pretty much on your own.
- +Furthermore, In many fields, the knowledge base is doubling
 - +every five years...hence an undergraduate education only
 - +serves as the stepping stone to a process of lifelong
 - +education
- +Moreover, save for the most basic information, it is no longer
 - +necessary at the college level to commit vast amounts
 - +of knowledge to memory. Indeed, we now live in a
 - +world where knowledge and information can literally
 - +be plucked out of the air...or off your computer terminal.
- +Hence, of more lasting value are the broadly applicable
 - +skills and wide-ranging perspective that is
 - +characteristic of a liberal education .
- +Thus our goal is to expose our students to the world's
 - +leading scholars, people who are struggling every day
 - +with creating new knowledge and interpreting and
 - +transmitted the accumulated knowledge of the
 - +past
- +Our goal is to teach methods of inquiry...methods of
 - +critical analysis and thought...and beyond that,
 - +to expose you to the most fundamental of human
 - +values which are essential to our civilization.
- +This style of education can be frustrating at times,
 - +but we are convinced
 - +as are the other great research universities of this
 - +nation...that our students will be far better prepared to assume
 - +the role of leadership in society with this type of
 - +an education.

- +Why would an UG want a research-oriented teacher?
 - +i) Research is an expression of faith in the possibility of
 - +progress...a form of optimism about the human condition
 - +Persons who have faith in progress and therefore
 - +possess an intellectually optimistic disposition are
 - +probably more interesting and better professors.
 - +They are less likely to present their subjects in
 - +excessively cynical or reactionary terms.
 - +ii) By far the healthiest and most efficient methods of
 - +fighting burnout is research. A research-oriented
 - +faculty is less likely to be the home of intellectual
 - +deadwood. Active, lively, thoroughly current minds
 - +that enjoy debate and controversy make better
 - +teachers.
 - +iii) It is difficult to evaluate the quality of teaching.
 - +it is far easier to evaluate the quality of research,
 - +and to base faculty selection primarily on research
 - +performance to lead to fewer mistakes. Both
 - +teaching and research should be taken into account,
 - +but research ability is a better long-term indicator.
 - +iv) Besides teaching, the university professor does much
 - +else, writing, consulting, testifying, etc....but this
 - +can enliven teaching
- +Environment
 - +At their best, university colleges are among the most
 - +exciting places on earth. Their professors have
 - +written the books that people talk about; they have
 - +engaged in public controversies and have held vital
 - +public post.
 - +They are at the center of the action.
 - +Further, in leading university colleges, student bodies
 - +are national and international in scope. They
 - +are also contentious and accomplished, mirroring
 - +the faculty in the diversity of its interests and the
 - +range of political and social views. This
 - +This is important since students learn a great deal from
 - +each other.
 - +A distinguishing feature of university life is the presence
 - +of graduate students. Sometimes you hear the
 - +familiar refrain that while big names and famous
 - +professors are at top universities, most UG contact
 - +will be with graduate teaching assistants;
 - +callow and inexperienced youths, not infrequently
 - +foreigners who can barely speak English.
 - +Rosovsky notes three of his TAs were Henry Kissinger,
 - +Zygmunt Brzezinski, and James Schlesinger.

- +Praduate sudents are more thoroughly familiar
 - +with their subject. They are more likel to
 - +know the latest techniques and current
 - +controversies than ueir counterparts in the
- +But rather, a college education is a time of challenge
 - +and discovery, of curiosity and intellectual growth,
 - +of learning about yourself.
- +It is a time to learn the art of life...
- +From this perspective, it is critical that to realize that
 - +our students probably learn more**
 - +OUTSIDE of the classroom than in it!**
- +This University is designed to provide a rich environment
 - +of intellectual experiences...
- +Whether it be through the wealth of formal instruction we
 - +provide, or through the array of cultural, social,
 - +athletic activities.
- +In fact, I suspect that most of you will end up learning more
 - +from your interaction with other students than you
 - +will from faculty!
- +A Michigan education is not designed to be a passive process.
 - +While our students probably have more opportunities to learn
 - +on this campus than any other university in the nation,
 - +it is also true that these opportunities are not presented
 - +to them on a silver platter.
 - +We expect them to play an active role in their education!
 - +To explore, to discover, even to challenge themselves.
 - +After all, life is one of those do-it-yourself
 - +experiences...
- +As the saying goes...
 - + "At Michigan you will be given unusual freedom and
 - +responsibility...
 - +The freedom to do what you want...
 - +And the responsibility to choose the right things..."
- +Can We Do Even Better?
 - +This suggests that research universities can and
 - +should play a very unique role in undergraduate education:
 - + (1) We should provide our undergraduates with an experience
 - +which draws on the vast intellectual resources of
 - +the modern research university: its scholars,
 - +its libraries and museums, its laboratories,
 - +its professional schools, its remarkable diversity
 - +of people, ideas, and endeavors.
 - + (2) We should expose our students to the excitement
 - +of great minds struggling to extend the bounds of knowledge.
 - +Of course we recognize that the scholars we place
 - +in the classroom may not always be the best teachers

- +of knowledge in the traditional sense.
- +But research universities benefit from the presence
- +of a cadre of excellent, stimulating teachers, and we are
- +convinced that only by drawing into the classrooms faculty
- +with strong commitments to scholarship can we stimulate
- +our students to develop the skill at inquiry across
- +the broad range of scholarly disciplines that is
- +so essential to life in an age of rapidly expanding knowledge.
- + (3) We should develop in our students both the ability
- +and will to strive for knowledge.
- +We believe that a critical component of
- +an undergraduate education in a research university
- +is the development of the will to seek and the skill to find.
- + (4) We should expose our students to the diversity,
- +the complexity, the pluralism of peoples, cultures,
- +races, and ideas that can only be found in the
- +intellectual melting pot of the modern research university.
- + (5) And we must also accept our mission to educate
- +the leaders of American society.
- +Indeed, if past experience is any guide most
- +of the leaders of this nation will continue
- +to be produced by our great research universities.
- +Improvement of the Undergraduate Experience
- +Of course, for several years, long before
- +the Carnegie Foundation Report, there has been
- +a resurgence of efforts to re-examine and improve
- +undergraduate education in our public research universities.
- +Indeed, every major university with which I am familiar
- +has had some level of activity aimed at examining
- +and enhancing the quality of undergraduate education
- +underway for some time.
- +Why the recent focus in our institutions on undergraduate education?
- +Well, I suppose one might explain this by saying that
- +curriculum reform is cyclic, and the pendulum is
- +now swinging back after the permissiveness of the 1960's.
- +One might also suspect that market forces are at work.
- +We are all too aware that the population of high school graduates
- +will drop in this part of the United States by 25-30%
- +by the early 1990's. There is nothing like a demographic crunch
- +to stimulate educational institutions to improve their product.
- +However, perhaps there is a higher motive to these actions.
- +I noted earlier the remarkable quality of students
- +now entering our institutions. Perhaps our renewed focus
- +on undergraduate education is evidence of our efforts
- +to be a more responsible steward of these
- +extraordinary human resources. Then, too,

- +it might be in part our efforts to respond to the
- +complexity of the problems of modern society.
- +It is also true that the focus on undergraduate education
- +may be part of a long needed rebalancing of the
- +priorities of our institutions. For several decades,
- +indeed since World War II, most of our large
- +public research universities have focused their attention
- +on building strong programs in the professions,
- +n law, medicine, business, engineering, and agriculture.
- +Perhaps this was due to a sense of public responsibility.
- +Or maybe it was due to the demand from students
- +for these programs, or the demand from employers
- +for our graduates. But, whatever the reason,
- +it is probably true that most of us have invested
- +the lion's share of our resources for many years
- +in the professions at the expense of the quality of
- +our undergraduate programs.
- +Yet, as our colleagues in the private institutions have
- +known for so long, the cornerstone of any
- +distinguished academic institution is its undergraduate college.
- +This college, and those intellectual disciplines that derive
- +from these programs, form the academic soul,
- +the intellectual core of our institutions, and over
- +a period of time will determine both the distinction of
- +the institution as well as the strength of its other endeavors
- +in the professions, in research, and in service.
- +Therefore, it is important that we realize that what is
- +happening is not a revolution. Indeed, we do not need
- +a revolution in undergraduate education, because
- +by and large, our universities are already doing a very good job.
- +Rather what we need is a renewal, a renewal in our
- +commitments to quality in our undergraduate education,
- +stimulated by our sense of responsibilities to our
- +students and society, and by our aspirations for excellence.
- +The Michigan Initiatives
- +At Michigan for the last several years the larger
- +undergraduate programs in our liberal arts college, engineering,
- +and business administration have completed major
- +blue ribbon studies re-examining the undergraduate curriculum.
- +These have resulted in a great many suggestions
- +about both academic and extra-curricular actions
- +to improve the undergraduate experience.
- +However, we also recognized that an institution-wide effort was necessary.
- +Therefore, we set off on a course over a period of several years
- +to launch a series of initiatives aimed at sustaining
- +and enhancing the vitality of our undergraduate programs.

- +To fund these, we have set aside over \$1 million per year
- +to fund a series of initiatives aimed at improving
- +the quality of our educational programs. Many of these
- +initiatives will be determined through an open competition
- +in which students, faculty, and staff compete for funds.
- +We are interested in stimulating a wide range of experiments
- +designed to improve the quality of undergraduate education.
- +We are looking for good ideas, but we are also prepared
- +to make the base commitments to support successful ventures.
- +The common thread throughout these initiatives is grass roots involvement.
- +We seek proposals, ideas, and participation in defining programs,
- +from our faculty, students, and staff that will address excellence
- +in undergraduate education. We seek to invest resources
- +in a way that will motivate our most creative people to
- +become involved and to become committed.
- +We have completed the first series of awards in these programs.
- +They will result in an interesting portfolio of new initiatives.
- +We will be developing a new series of core curriculum courses
- +in the liberal arts. Our instruction in science and mathematics in the
- +freshman and sophomore years will undergo major revision.
- +We are implementing new initiatives aimed at better
- +integrating the arts such as theater, dance, and music into
- +the undergraduate curriculum. We are taking major action
- +to improve both counseling and the importance and
- +sensitivity to pluralism in the University. And we have
- +funded a number of student proposals, ranging from
- +undergraduate colloquia to faculty fellow programs
- +in the residence halls, to online counseling and
- +information services on our campus computer network,
- +to an alternative career center. And of course we are
- +addressing major pedagogical needs such as
- +teaching assistant training.
- +The major areas of attention during the first round of awards included
 - +i) promoting critical thinking and writing skills
 - +ii) Creating a new spirit of liberal learning
 - +iii) Promoting acceptance of pluralism and diversity
 - +iv) Promoting improved faculty-student interactions
- +As we now move to the second phase of our effort, we are
 - +moving away from open solicitation of proposals to working
 - +instead directly with the schools and colleges.
 - +Among the areas of particular interest are:
 - +i) The unique nature of undergraduate education in the research university
 - +ii) Linkages to the graduate disciplines and professions
 - +iii) Enriching the intellectual life of undergraduate students
 - +iv) The role of the sciences in a liberal education.
- +We have taken many other steps to raise undergraduate education

- +to a higher priority within the University.
- +For example, we established a series of named professorships,
- +the Thurnau Professors , to honor faculty with
- +extraordinary achievements in undergraduate education.
- +We have launched a series of renovation and
- +new construction projects to improve the quality of
- +instructional space on campus, including renovation
- +of the Undergraduate Library, all Central Campus
- +classroom space, a spectacular central faculty
- +for computer access (including over 400 workstations).
- +We have launched a commission to study ways of
- +better integrating academic programming into the
- +residence hall environment. And we are restructuring
- +our full range of student services to integrate them
- +more effectively into the academic life of the university.
- +Of course, we realize in an institution of such size, complexity,
- +and tradition, those of us over in the blockhouse will have
- +little capacity to define, redirect, or reorder the
- +priorities of the University. The articulation and achievement
- +of any mission must be a communal effort.
- +It will rest with faculty groups in and across schools and colleges;
- +with students inside and outside their formal organizations;
- +with professional and other staff throughout the University.
- +Hence, the role of the leadership of the University is simply
- +to generate the debate and then to provide resources
- +for continuous experimentation.
- +Research Culture
 - +Increasing concern about the distortion of the culture by
 - +sponsored research policies.
 - +We hear time and time again that there is a strong and
 - +possibly accelerating change in the culture of the
 - +professoriate that has led to an increasing withdrawal
 - +from undergraduate and often also formal graduate
 - +teaching by beginning as well as fully established
 - +researchers.
 - +Important that NSF research policies actively encourage
 - +rather than passively discourage attention to
 - +teaching by the researchers NSF supports
 - +Examples of interventions:
 - +i) Require each PYI to teach a one semester UG
 - +course each year, a one semester grad course,
 - +and serve as the reserach advisor for 2
 - +graduate students as a minimum on average
 - +over 3 to 5 years.
 - +ii) Could also have a minimum educational commitment
 - +to instruction and the guidance of graduate

- +students of PIs.
- +iii) Might also encourage increased instructional
 - +participation by giving preference to instructional
 - +proposals by highly qualified research, in an
 - +effort to send the strongest possible signal that
 - +research and education are an integrated whole in
 - +the view of NSF.
- +
- +Rhodes Suggestions
 - +Require all students to take science & mathematics
 - +Renew a commitment to introductory instruction
 - +Link UG to K-12 and graduate education
- +Bok Suggestions
 - +Emphasize teaching in appointments
 - +Create a climate that favors teaching...
 - +Intervene when poor teaching is spotted
 - +Require all junior faculty to have training in
 - +teaching skills
 - +Require all graduate students to have evidence
 - +of teaching included in dossiers
 - +Ask faculty to develop norms on faculty
 - +teaching behavior--office hours, homework, etc.
 - +AAU should agree that recruiting faculty by
 - +promising reduced teaching loads is bad practice
 - +Should make more effort in controlling excessive
 - +absence from campus
 - +Foster a more systematic effort to evaluate
 - +teaching and how to improve it.
- +Real key:
 - +How do we take advantage of extraordinary
 - +learning environment offered by the
 - +research university?
- +A Final Comment
 - +Contrast:
 - +A paradox: How can our system of higher education
 - +be regarded so highly abroad and still encounter
 - +such biting criticism at home.
 - +Even in the most advanced countries, universities
 - +are typically overcrowded, overregulated,
 - +undercompetitive, and underfunded.
 - +Hence it's possible for American higher
 - +education to be preeminent in the
 - +world and still be open to serious criticism.
 - +Hear repeatedly from foreign sources that American-system of higher education
 - +is the best in the world in the quality of its research, the inventiveness of its
 - +educational progress, its accessibility to all segments of society, and its

flexibility in adapting to the differing needs of a vast student population. At a time when America's ability to compete is being challenged in many spheres, these achievements should be a cause for celebration. Yet, surprisingly, critics in this country have attacked our universities more savagely during the last decade than at any time in history. A Paradox to build a system of research universities is to build a system of research universities envied by the rest of the world. Our universities educate more students and conduct more research better than any other national system of higher education in the world. We should be able to agree on fundamental objectives in different ways. Research. One of things we have done well as a nation is The American research university is under serious stress. The replacement pool is too small in many fields. We want universities to produce research of a quality second to none so that we can enlarge our knowledge, renew our culture, and produce new insights to help us conquer disease, promote technical progress, and overcome our social problems. Give young people an education that will prepare them to live productive lives; to be knowledgeable, critical members of our democratic society; and to appreciate the human experience and the world around them. Want our colleges accessible enough so that all who seek education can find opportunities. Since universities are our principal source of expert knowledge and highly trained people, we need them to offer the kinds of education, advice, and critical analysis that society needs in order to prosper and move forward. Different segments of higher education pursue these ends in different ways. Research universities contribute to all of the ends above. It is clear that America's highly decentralized system of 3,500 institutions accomplishes these goals far better than the government-controlled systems that predominate in the rest of the world. Unless we are prepared to recommend another system, it makes little sense to condemn the one we have for shortcomings intrinsic to its very nature. In all advanced societies, our future depends to an ever-increasing extent on new discoveries, expert knowledge, and highly trained people. Like it or not, universities are our principal source of all three ingredients. Perhaps we need a better term... Not "research universities"...!...but "learning universities"...doctors, dentists, nurses...engineers, lawyers, business executives...=Therefore, let us set aside both the myths and the realities for the moment and address the most critical questions of all: (1) What is the role of the comprehensive research university in undergraduate education? (2) such as the University of Michigan--in responding to the challenge of undergraduate education? What is unique about our universities? Well, we are all large, comprehensive, public, research universities. We all share a serious commitment to scholarship as well as a commitment to unusual breadth across a rich diversity of academic disciplines, professional schools, and social and cultural activities. We have all achieved an unusual degree of pluralism in our students, faculty, and staff. Our campuses demonstrate an unusual degree of participation of faculty and students in the university decision process. And we all share in an

unusually strong commitment to the quality of our students, our faculty, and our programs. Countries as diverse as Japan and the USSR look to our universities as models for reforming their own. Yet, the American research university is under serious stress... demographic changes will affect the number and;... a generation of faculty will retire in the '90s, and the enrollment: 35,000 (Ann Arbor) (47,000 total) Faculty: 2,600 (14,000 employees) Budget: \$1.5 billion (17 Schools and Colleges) Hundreds of research centers, institutes, and other types of interdisciplinary-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... i) Provides instruction, research, service ii) Spans all intellectual disciplines and professional areas, iii) Attempts to sustain programs that rank among the nation's best in all areas (and succeeds...)* On this campus, we provide one of the most incredible intellectual smorgasbords in the world--a fascinating cornucopia of ideas supported by some of the finest facilities in the world -- one of the nation's great libraries, museums, laboratories, computers, concert halls, athletic facilities -- and most important, one of the world's great centers. This suggests that research universities can and should play a very unique role in undergraduate education: (1) We should provide our undergraduates with an experience which draws on the vast intellectual resources of the modern research university: its scholars, its libraries and museums, its laboratories, its professional schools, its remarkable diversity of people, ideas, and endeavors. (2) We should expose our students to the excitement of great minds struggling to extend the bounds of knowledge. Of course we recognize that the scholars we place in the classroom may not always be the best teachers (of knowledge in the traditional sense. But research universities benefit from the presence of a cadre of excellent, stimulating teachers, and we are convinced that only by drawing into the classrooms faculty with strong commitments to scholarship can we stimulate our students to develop the skill at inquiry across the broad range of scholarly disciplines that is so essential to life in an age of rapidly expanding knowledge. (3) We should develop in our students both the ability and will to strive for knowledge. (We believe that a critical component of an undergraduate education in a research university is the development of the will to seek and the skill to find. (4) We should expose our students to the diversity, the complexity, the pluralism of peoples, cultures, races, and ideas that can only be found in the intellectual melting pot of the modern research university. (5) And we must also accept our mission to educate the leaders of American society. -Indeed, if past experience is any guide most of the leaders of this nation will continue to be produced by our great research

universities.*Of course, for several years, long before /the Carnegie Foundation Report, there has been 2a resurgence of efforts to re-examine and improve >undergraduate education in our public research universities. 8Indeed, every major university with which I am familiar 2has had some level of activity aimed at examining 5and enhancing the quality of undergraduate education unde

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 - +culture, and produce new insights
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 - +social problems.
 - +ii) Give young people an education that will
 - +prepare them to live productive lives;
 - +to be knowledgeable, critical members
 - +of our democractic society; and to
 - +appreciate the human experience and
 - +the world around them.
 - +iii) Want our colleges accessible enough so
 - +that all who seek education can find
 - +opportunities
 - +iv) Since universities are our principal source
 - +of expert knowledge and highly trained
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 - +of education, advice, and critical analysis
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- +Different segments of higher education pursue these
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