

Toward an Educational Transformation



**The University of Michigan
Office of the President**

Dear Colleagues and Friends:

In October, Anne and I announced that we would be stepping down from our leadership position with the University. We leave behind us an institution that is stronger, more vibrant, and more diverse than at almost any time in its history. Michigan is well placed to respond to the difficult challenges that will come in the next few years.

Yet a strong foundation is not enough. To respond to a changing society, our entire community must join together in a wide-ranging dialogue about the future of Michigan.

This monograph is another in a series meant to help begin such a conversation, a conversation that must continue beyond my tenure as president. This document does not prescribe solutions; instead, I have mapped out some of the terrain we will face as we grapple with the educational challenges of a rapidly changing world.

As I hope this document shows, one of the most fundamental characteristics of Michigan has been our ability to evolve while remaining true to our core values of learning, intellectual freedom, and social justice. Our challenge, as we stand at the edge of the twenty-first century, is to continue to find ways to adapt to the realities of tomorrow while retaining the educational spirit and commitment that has made us "The Leaders and Best."

Sincerely,

James J. Duderstadt
President

THE UNIVERSITY OF MICHIGAN: A LEADER IN EDUCATIONAL INNOVATION

[Professors should] create an atmosphere filled with inspirations to thought, research and culture. Young men . . . [will] resort to them to hear their lectures, to breathe their spirit, to copy their example, and to submit themselves to their guidance.

—Henry P. Tappan, President, [range]

In the latter half of the nineteenth century, the University of Michigan emerged as the premier model of public education in America. At our founding, in theory, Michigan seemed radically new: a university for the “common man” that would embrace the widest range of human knowledge. In practice, however, we operated much the same as other early colleges. It was the arrival of President Henry P. Tappan at a crucial historical moment who finally brought the revolutionary educational potential of Michigan to fruition.

The ways we teach today are so obvious and natural, it seems incredible that at one time the seminar, the teaching laboratory, and even the lecture were controversial innovations. Before the university, in America’s early colleges students memorized or translated the central works of the distant past, learning ancient languages, rhetoric, and simple mathematics by rote. Professors emphasized accuracy not comprehension. Conservative and conformist, early colleges had little interest either in expanding knowledge or in inciting critical thinking. Lessons were infused with a deeply religious vision of the world and of the duties of citizenship. The colleges saw themselves as bulwarks against change, training the pastors and lawyers of the next generation.

But change arrived regardless, driven by the needs of a growing society. The burgeoning Industrial Revolution and the new upper and middle class it created challenged the dominance of the old “elite” families and the old notion of “culture.” By the middle of the nineteenth century, the consensus around the “classical” approach to higher education had begun to fray. College enrollments remained flat as the population of the country soared, and the prestige of graduates declined. The new powers of empirical science, the draw of research, and the pressures on higher education to have, in Laurence Veysey’s terms, “utility” in the larger society began to isolate those institutions which refused to change.

During Tappan's contentious administration, the University of Michigan was one of the first to respond. We created the first teaching laboratory for chemistry, and after he had left we held what some consider to be the first seminar in the United States. Unlike other institutions, Michigan integrated new science students into the broader humanistic curriculum, creating a hybrid that drew on the best of both a "liberal" and a "utilitarian" education. And years before Harvard embarked on this dangerous course, Tappan actually allowed upper division students to choose some of their own courses.

At the same time he created a new "University Course," far ahead of its time and the precursor of later graduate schools. In Tappan's vision, students and professors would be "pursuing the latest knowledge, rather than imbibing traditional learning; concentrating on a few chosen fields, rather than following a standard and rigid curriculum." Although Tappan was more interested in advanced general education than true research, and although his most ambitious plans never reached complete fruition, his ideas nonetheless laid the foundations for "graduate" schools at Michigan and around the country.

Throughout our early years, Michigan was the site of many other "firsts" in higher education. We championed public access, charging low or no fees to our students and became the first university to remain free of sectarian religious control for our entire history. As our first professors, Michigan hired, not classicists, but a zoologist and a geologist. And we were the first university in the west to pioneer professional education, establishing the Medical School in 1850, the Law School in 1859, and engineering courses in 1854.

While pedagogical change has been less dramatic in the years since Tappan's Presidency, there have still been opportunities for creativity, and Michigan has responded vigorously to these opportunities. There have been many examples of innovation across campus, including the Residential College, the Teach-Ins of the Vietnam and Gulf wars, and the community service courses offered through a number of different departments and offices, to name only a few. We have made great strides in providing training for our graduate teaching assistants, and our Center for Research on Learning and Teaching is one of the oldest and most extensive in the nation. After World War II, immense infusions of resources allowed University research efforts and graduate education to expand almost exponentially. And throughout our entire history, our classrooms have often been battlegrounds over what we will teach—from challenges to the "canon," to more recent confrontations over political correctness.

Thus, while we have held fast to our common values as an educational community, the one true constant at Michigan has been that of change. If we hope to remain relevant to our society and to our state, this tradition of adaptation and evolution must continue.

TOWARD NEW PARADIGMS

Students have trouble seeing how new courses connect to a very narrow track that seems to lead only to graduate school or medical school or law school. It's hard to tell students that the real world is not just literature or history—to be a citizen of the twenty-first century you are going to have to become more flexible.

—George J. Sanchez, Associate Professor of American Culture and History, and Director of the Program in American Culture

It is becoming increasingly clear that we are entering a new era of fundamental change in higher education. Driven, as in the nineteenth century, by unprecedented social and technological change, our society increasingly demands a new vision of education. While we celebrate our recent accomplishments, especially in undergraduate education, we know that we have only “scraped the surface” of the advances the twenty-first century will require. It is time we thought more seriously about cracking open our entire pedagogical paradigm. Happily, many projects across campus are beginning to do just that.

The University of Michigan is well positioned to become America's flagship public university, shaping the paradigm of the learning institution of the twenty-first century. Though we can never actually predict the future, we are not relieved of the responsibility of *vision*. Society is changing. We can either respond to these changes as active participants, constructing our own future, or we will find ourselves driven into the future by social forces beyond our control. We do not wish to find ourselves in the position of the obsolete “classical” college, but neither do we wish to simply change uncritically in response to an evolving world. Universities have always found themselves in this difficult position of both servant and independent critic of our society. As former President Harold T. Shapiro points out, “this is always a risky and uncertain project, which continues to require both a closeness and sensitivity to society's needs and beliefs and an ability not to be captivated by society's current assumptions, social values, and priorities.”

Nearly two centuries ago, our nation began its shift from an agricultural to an industrial economy. From largely rural, we moved to an increasingly urban population. The needs of students and society shifted radically; and, as I noted above, the institutions that survived were the ones that responded to these new needs. In the post World War II era, higher education again faced a period of radical change as vast numbers of returning GIs filled our universities, and a college education became a common aspiration for all levels of our society. Today, we face a third era of change as we shift from a national to a global economic system and as the driving force of economic wealth increasingly becomes the production of knowledge itself instead of the production of things. The speed of change, for the first time, has become the defining theme of our age. At the same time, we have begun to awaken from an often cruel fantasy of homogeneity to face the real challenges that diversity in all its many facets brings to us. Over the past nearly two centuries, Michigan has remained vibrant and relevant to our state and our society only by adapting and changing radically.

What follows are some “possible futures,” educational visions of the University of Michigan beyond the year 2000. They suggest the extraordinary transformations that universities must undergo in the years ahead. While Michigan is unlikely to assume the form of any of these models alone, there is wide agreement that they represent paths that we must explore in our effort to remain “The Leaders and Best.”

BUILDING A BROAD BASE: THE UNIVERSITY COLLEGE

A technical education—whether in law, medicine, or business—has to do with “earning a living.” A liberal education gives meaning to life. It makes living a worthwhile thing to do.”

—Harold T. Shapiro, President, 1980

Undergraduates have to be involved in the fights we are having. They need to see that “thought” is never completely formed; it is happening all the time. Large research universities can enact these debates most engagingly.

—Robert R. Weisbuch, Professor of English and Interim Dean of the Horace H. Rackham School of Graduate Studies

Universities have always been good at teaching students the facts and methods of specific fields like biology, history, or psychology. We have been much less successful, however, at helping students decide who to “be” or how to make effective and ethical choices in a complex world. In an environment where specific details become quickly obsolete, however, our students increasingly need a facility for inquiry and an ability to adapt and respond to new situations. Instead of quickly channeling young students into very narrow disciplinary tracks, I am increasingly convinced that we should think of at least the first two years of an undergraduate degree as an opportunity to try on *different lives* as they explore the richness of our diverse cultural and academic heritage.

We have already come a great distance in improving our commitment to undergraduates. Five years ago the Planning Committee on the Undergraduate Experience presented the University with a painful report, noting that Michigan’s “eminence in scholarship [was] not at present equalled by its eminence in undergraduate education.” But the response to the Committee’s critique, led by LS&A’s Dean, Edie Goldenber, has been a credit to the commitment and strength of our community. We have encouraged innovative efforts and strategic actions across the entire campus. Today, our most novice students have the opportunity to choose from 170 to 180 first-year seminars taught by experts in their fields. Today, over 800 first- and second-year students have the opportunity to participate in actual research projects with university faculty through the Undergraduate Research Opportunity Program. We have completely re-structured, to national acclaim, a number of our large introductory science and mathematics classes. In an effort to improve student participation and commitment we have developed an extensive leadership

development program. We have extended our already considerable commitment to provide community service opportunities. And we have begun a major effort to align student experience in the residence halls more closely to the vibrant academic and extracurricular activity of the entire University.

Yet while our current efforts represent critical first steps, we must plan much more comprehensively. Many across campus have taken part in the development of something we might call the “University College,” drawing on the lessons we have learned through our current Undergraduate Initiative projects. As a focal point for a new academic community, the University College would expose our students to the excitement of great minds, build a supportive and dynamic learning environment, draw on the vast intellectual resources of the University, and provide facilities and resources for creative and collaborative efforts. Preferably housed in a single multi-purpose building, the College would immerse undergraduates in the diversity, complexity, and pluralism of people and ideas that can only be found in the intellectual milieu of the modern research university.

For its foundation, the University College would draw upon the broadly liberal spirit of the humanities, giving students a chance to explore the worldviews of scientists, philosophers, engineers, and others. When they leave us, our students will need not only technical knowledge, but deep connections to our increasingly complex and diverse cultural memory. They will need to make difficult decisions in the midst of terrible uncertainty, decisions that will collectively affect our entire society. We cannot show them what to decide, but we *can* teach them how others have struggled with dilemmas throughout our history, in the many different cultures that make up our society. This demands a truly critical examination of our traditions and institutions and the arrangements that often unequally distribute power and resources. We must prepare our students to be citizens, helping them achieve the capacity to make moral and political choices that are deeply conscious of the fundamental connectedness of things and people.

As learning becomes an increasingly lifetime responsibility, the residential component of an undergraduate degree will become even more crucial. The communities students build while they are here, the decisions they make, their activities outside of class—all build a foundation for future inquiry. As a part of our effort to enhance our educational relationship with our alumni, it will become even more important that we develop a strong intellectual bond in

the short time they live with us on campus. The University College would emphasize this sense of a learning community, bringing professors and students into close proximity, perhaps in a single multi-purpose building, blurring the boundaries between classroom academics, extracurricular activities, and social life. The University College would also emphasize a broad range of service activities, making the needs of our community an integral part of this rich intellectual environment.

This College would not be a new academic unit, rather it would be what we are calling a “New University” within the larger campus—fostering institutional innovation. The College would not have an extensive faculty of its own, but would encourage interdisciplinary work by attracting scholars from a wide diversity of disciplines. It would draw from our entire campus. To succeed, every unit of our campus, from areas already deeply involved in undergraduate education to professional schools like the Medical School must begin to take responsibility for our most novice students.

THE NEW STUDENT: THE UNI-DIVERSITY

We don't understand them anymore.
—Anonymous Faculty Member

The University must create an environment where students can affirm and celebrate their individual and cultural identities, while also recognizing the many ideas and values shared by all human communities.
—Lester P. Monts, Vice Provost for Academic
and Multicultural Affairs

Much of the coming paradigm shift may be forced upon our University by the changing nature of students themselves. In my many meetings with professors across campus, one of their most common themes has been their sense of increasing distance from their students. Some of this separation may arise from the usual generational “jitters.” We also see evidence of real change.

Many of today's students are members of the “electronic” generation. They often have much different expectations and learning styles than their instructors. At the same time, our students increasingly come from a wide range of experiences and cultures as Michigan reaches out to fulfill its egalitarian mission.

Our “media” generation students tend to approach learning as a “plug-and-play” experience—instead of reading the manual, they often plunge in and learn through participation and experimentation. Having spent their early lives surrounded by robust, visual, electronic media—Sesame Street, MTV, home computers, video games—they don’t know as much about taking notes, and they don’t focus in the same ways as previous generation of students. For many, there is little distinction between work, play, and learning. While this type of learning is far different from the sequential, pyramid approach of the traditional university curriculum (and alarming to some of their more traditional instructors), it may be far more effective for them.

At the same time, our classrooms increasingly contain students from many different backgrounds—cultural, economic and geographical—and this new reality will only intensify in the future. Women, people of color, and immigrants now account for 90 percent of the growth in the labor force, and in the twenty-first century, the majority of young people born in the United States will not be of European descent. The University has made a major commitment, through the Michigan Mandate and the recent Women’s Agenda, to ensure that this diversity is reflected on our campus as we work towards a truly egalitarian community. “One-size-fits-all” approaches cannot hope to serve everyone effectively anymore (if they ever did), and we can no longer afford to ignore the individual and structural challenges that come along with the rich potential represented by our increasingly diverse community.

Our efforts to respond both to the challenges of the “media generation” and to our increasing diversity in the classroom have led us to surprisingly similar answers. More flexible and interactive modes of learning are helping to open many rewarding fields to a much broader range of students. Over time, we have been forced to acknowledge that there has always been more diversity on campus than we ever realized. Instead of telling students how to accomplish their work, we are learning to help them figure out approaches for themselves, at their own speed. At the same time, as noted above, our classes are increasingly shifting from isolated to collaborative learning, helping students work together, capitalizing on different ways of seeing and approaches to material, and helping students learn to communicate across difference. [See the Monograph “Diversity,” “Moving Forward: The Michigan Mandate, a Five Year Report,” and “The Women’s Agenda” for more extensive discussions of this issue.]

THE ELECTRONIC UNIVERSITY

I don't think the classroom will ever go away. But technology is bringing an enormous shift in the way we will interact there. The fact is, not everyone is a master lecturer. Having a variety of options will make a big difference to many of us. We can fill the fifty minute class period with a more effective and lively mix of media presentations, lecture bits, and discussion that helps students make the material their own.

—Diane M. Kirkpatrick, Professor of History of Art

In a study of 143 Michigan engineering sophomores, we found that:

- 67 percent learn actively, yet lectures are typically passive;
- 57 percent are sensors, yet we teach them intuitively;
- 69 percent are visual, yet lectures are primarily verbal;
- 28 percent are global, yet we seldom focus on the “big picture.”

—Susan M. Montgomery, Assistant Professor of Chemical Engineering

The reality of our new students, diverse and often technically savvy, requires new educational approaches. Encouragingly, our growing base of technology has begun to create the possibility for new, more flexible roles for both students and faculty, within and beyond the classroom. Richard Lanham calls the social, technological, and theoretical challenges that these changes create an “extraordinary convergence,” catalyzing fundamental shifts in higher education, allowing more interactive learning, and giving students the ability to interrogate or even create knowledge instead of simply absorbing it.

We learned long ago, however, that technology alone is no educational panacea. I remember hearing of the “learning machines” touted at the end of World War II, which never lived up to their promise. However, with thoughtful planning and support, even very basic advances can have a profound impact on learning. Professor Morton Brown, for example, has revolutionized the way we teach beginning calculus, using the relatively simple “graphing calculator.” He explains that “in science you usually have the graph first, and then you have to figure out what it means.” Using the calculators allows students to do just this—see the graph first—shifting classwork from mere calculation to actual analysis. Students can begin to act more like real mathematicians, opening up a universe of possibilities we have just begun to explore.

Without new ways of envisioning education, even the most expensive pieces of equipment can be more distracting than helpful. The graphing calculator did not, in itself, create a new curriculum—it simply made the new curriculum possible. Many other areas of the campus have begun to explore how our new abilities can change our visions of classrooms. How, for example, does one make large entry-level engineering classes more productive, personal, and engaging?

Part of the answer is to make the class more interactive. Professors Susan M. Montgomery has developed new learning modules that allow groups of students to explore open-ended problems. For example, they have created an interactive multi-media tour of a phosphate coating system in an auto plant, challenging students to design a more efficient system. Montgomery takes time to build a foundation for teamwork in the class, testing for each student's learning style and helping them appreciate the different approaches of others. In class, students often work in small groups on problems. Out of class, students work together on the modules at their own speed. The module promote collaboration and allow flexibility; the media capabilities allow students to view actual working equipment instead of simply learning theory from textbooks. The technology does not replace the classroom, rather it augments it, making the time spent in class more productive.

The humanities have as much or more to gain from new technology as the sciences. Over 75 percent of Michigan's English Composition Board (ECB) classes, for example, now take place in an interactive computer classroom. In class, students write to each other in a "virtual" text discussion over a local area network. Face to face interaction is supplemented with text-based computer-mediated communication, making the experience more like a lab or a workshop. Wayne M. Butler, ECB associate director, notes that "we don't just teach the academic literacy of the past, we're all involved in creating a new literacy for the twenty-first century." The technology also improves participation to near 100 percent, reducing issues of race and gender, and changing the rules of discussion in positive ways. In the normal classroom, interaction is impeded by the turn-taking rules of oral discussion. Women and minorities, especially, are often unable to participate equally in the conversation. In real-time electronic conferencing, everyone can participate simultaneously in a number of concurrent conferences, so everyone has a better opportunity to be heard.

Michigan has begun to provide a broad spectrum of resources to help integrate new technology into the classroom. Our Office of Instructional Technology helps faculty apply technology to their classes and has begun to develop a wide range of software resources, from “framework” programs that can be used for many different purposes, to applications geared to very specific goals. Their programs are already in use in many courses across campus, from “the Beat Generation” to foreign language workshops.

These advances may fundamentally change what it means to be a professor and a student at Michigan. Faculty may soon become more like coaches or consultants than didactic teachers, designing learning experiences and providing skills instead of imparting specific content. Even our introductory courses may take on a form now reserved for only the most advanced seminar classes. Many hope that these new possibilities will free up time for more personal interaction. Not only do these new technologies create educational opportunities, they also, as Doctor Butler notes, represent the “literacy” of our future. The “stuff” of intellectual communication is in the process of evolving from the “journal article” to more comprehensive multi-media and even interactive documents. These shifts portend vast changes in the ways information is manipulated and interaction is structured in our society. Universities cannot call themselves successful unless they provide students with the central competencies they will require as they enter the world of the twenty-first century.

THE VIRTUAL UNIVERSITY

There is an immense empowering potential in the new communication technologies. Students will be able to do more and experience more, with access to a much greater span of resources.

—Daniel E. Atkins III, Dean of the School of Information and Library Studies

Many people can't simply put their lives on “pause,” moving perhaps hundreds of miles from home to attend a degree program at Michigan. They have families, jobs, and other commitments—barriers that prevent many qualified students, often women and people from low-income areas, from pursuing their dreams. At the same time, as Dean Daniel E. Atkins notes, “The central talent of the university is facilitating new communities.” Success in the future will require even more agility in forming and dissolving new communities in response to unexpected opportunities. New “virtual” technology may provide a

partial answer to both of these problems, reducing the traditional constraints of time and distance, enhancing collaboration over thousands of miles and across disciplinary lines, and enabling new and different kinds of communities.

Some fear, however, that the move toward a “virtual” collaborative University of Michigan will lead to a decline in quality and personal connection. They envision, perhaps, lectures on videotape as a simple, often exploitative way to generate more income. While for its time, “professor in a box” video education was a great advance, the reality of multi-media, interactive learning today is vastly different. Michigan cannot afford to lower its standards as we reach beyond the campus. Our pilot projects in distance learning have taught us some basic lessons: successful efforts are *more expensive* than face-to-face instruction, take professors *more time* to prepare for each class, and, surprisingly, these classes often promote *more personal interaction* than more familiar lecture-intensive in-person approaches. Any increased cost, however, is usually more than offset by the gains for the student by allowing them to continue their employment and eliminating the need to move themselves and often their families to Michigan.

Truly effective “virtual” learning makes use of a number of different approaches. The business school's global MBA program, for example, uses video classrooms where the professor can interact directly with students in Hong Kong and Korea. These are much like normal classes, though the limitations of the video format require more preparation and different techniques to promote discussion. Students in this program also come to Ann Arbor for a short time, taking elective courses and interacting with students in the regular MBA program, and professors visit their home countries to facilitate brief, intensive workshops. This is augmented by other “asynchronous” resources like computer conferencing, where students can ask professors questions and continue discussions among themselves whenever it is convenient for them outside of class. Usually current employees of sponsoring companies, students work on company projects as they refine their skills. Beyond the MBA, more technical, engineering-intensive degrees on the horizon for the College of Engineering, for example, will include interactive and collaborative multi-media learning modules as a part of their distance education package, allowing students to work on open-ended projects out of class.

Students who participate in effective outreach education, then, find themselves connected with their professor and with each other by a robust

interactive environment. Maurita Holland, lecturer in the School of Information and Library Sciences, envisions a future where it may be possible to “join” a class by visiting an interactive site at a local library, or even through increasingly inexpensive equipment installed at home.

Not only does the concept of a “virtual” University give students from around the world potential access to the riches of Michigan, it provides incalculable resources for students still on campus. We can offer courses that would be impossible otherwise, like a recent class on the United States government taught jointly by Michigan and George Washington University, which allowed us to bring public figures, with little time to travel, in from Washington, D.C., to talk with the class. Professors from other campuses who are experts in relatively rarefied fields, may soon find an audience, perhaps teaching on multiple campuses, giving Michigan students access to expertise they simply could not have found otherwise. In our increasingly international world, this new interactive technology will give our students still in residence direct contact with other students from around the world, allowing them to work with multi-disciplinary teams on truly cross-national projects.

Even within the geographical limits of our campus, a closely linked community of scholars and students will provide exciting possibilities. Lynn Conway, professor of electrical engineering and computer science, has been a driving force for this more local change at Michigan, creating and directing the UMTV project, which has enhanced the multi-media capacity of many classrooms across campus, and begun to link them into the campus cable system in the residence halls and elsewhere. Joined with our long-standing commitment to electronic mail and other forms of interactive communication, these advances are slowly shifting the Michigan community from a hierarchical, static organization to more dynamic and egalitarian interconnections.

The idea of a “virtual” University is not the answer to all of our problems. For many purposes a strong residential component is critical, especially, as I have already noted, for our undergraduates. Yet the new possibilities opened up by distance-learning and distance-collaboration promise to enhance the intellectual environment of all, while opening our community up to the vast potential of a world-spanning dialogue.

Perhaps most importantly, these new interactive resources represent the wave of the future for our society. As our knowledge base expands, isolated

individuals will increasingly lose their ability to “know” everything they need to grapple with complex challenges. We must equip our faculty and students with the ability to exploit these new technologies in the service of what Michael Schrage calls “collaborative communities.” We must learn the difficult art of communicating across disciplinary and cultural differences in the pursuit of common goals, discovering which collaborative tools serve us best for our different purposes.

THE LIFETIME UNIVERSITY

The notion that you are done with your education when you complete whatever degrees you get in your twenties is outdated . . . Many people, especially women and people of color, need new routes to education, allowing them to advance in their careers throughout their lives.

—Carol S. Hollenshead, Director of the Center for the Education of Women

The concept of a virtual university may also allow us to develop a different vision of what kinds of education we provide. In fact, many feel that traditional self-contained, time-delimited “degree” programs may have increasingly limited use in a world where information and skills become quickly obsolete. Education has already become a lifetime process, and with the advent of a “virtual” University comes the possibility of providing the learning people need, when they need it, wherever they happen to be.

A top executive may need to learn about corporate strategy in order to advance in her career. A structural engineer may need to learn the properties of a new construction material to branch out into a wider range of projects. A single mother with two children may need to learn accounting so that she can qualify for a pay increase. None of these people can afford to quit their jobs in order to enhance their knowledge, and none of them need a broad-based general degree. Instead, they need access to specific skills and information. A focus on lifetime education, a reconceptualization of the University as a knowledge-server in a general sense for the wider society, would allow us to serve all of these people.

With this new vision of ourselves and our mission, “alumni” will soon cease to refer to those who have graduated and moved on. Instead, joining the

University of Michigan as an undergraduate may begin a potentially life-long *educational* relationship. Ultimately, this will be very empowering, freeing people to follow the unique life-paths that make the most sense for them, unrestricted by limitations in knowledge or skills.

Ironically, though Michigan was a leader in continuing education for much of our early history, we cannot claim today to be deeply involved in lifetime education; and we have a long way to go in providing support to non-traditional students. We have retained some jewels of continuing education, however, platforms on which to build, including the engineering summer school, our general summer school, Inter-university Consortium for Political and Social Research, and our top-rated Executive Education program through the School of Business Administration. The Center for the Education of Women has worked for decades to enhance the educational opportunities, especially for non-traditional women. Our newly created position of Dean of Academic Outreach was created expressly to strengthen our resources in this area.

To truly respond to the needs of these different populations, we will need to re-think the way we are organized as an institution, working to eliminate institutional barriers that prevent people from continuing their education. There are many possible options; to succeed we must move beyond the idea that any particular model of education is sacrosanct and concentrate on the content and results of that education. Success as a "lifetime" university will mean the creation of a much more flexible and adaptive educational organization. "Just-in-time" courses will need to respond to the diverse and shifting needs of emerging careers, developing social problems, and opening areas of knowledge. Some classes may need to be available in modules, so that students can choose the parts they need to know. Because the job of a university is to lead and not follow, Michigan will need to stay one step into the future, teaching the skills and anticipating the issues of tomorrow, not simply respond to the needs of today.

Michigan must choose carefully, concentrating on the fields we can serve most effectively. We cannot be all things to all people, and there are other institutions that can provide training in some areas more effectively. As always, as we look to the future, we must keep a close eye on our mission and on our broader goals. We must select activities and areas that have the potential to enhance the entire university: our research and the experience of our undergraduates and graduate students, as well as the options available to our “lifetime” students.

THE DIVISIONLESS UNIVERSITY

[The danger of excessive departmentalization is that] students have imagined that the universe, in some mysterious way, is actually departmentalized.

—Marion LeRoy Burton, President, 1921

At the end of the day, I am paid by my department, assigned to committees by my department, do my undergraduate teaching in my department, and fund my graduate students through my department. Those of us involved in interdisciplinary work face frequent frustration and heavy overloads of work. It would be much simpler to stay in our departments. But we are truly interested in breaking down the traditional constraints that bind us.

—Nicholas B. Dirks, Professor of Anthropology and of History and Director of the Center for South and Southeast Asian Studies

Academic disciplines dominate the modern university, developing curriculum, marshaling resources, administering programs, and doling out rewards. Faculty increasingly focus their loyalty on their disciplines instead of their home institutions. As a result, I fear, we are losing the cohesiveness of a broad community of scholars. As we have built stronger and stronger disciplinary programs, we have also created powerful centrifugal forces that threaten to tear our community apart.

Yet, in the outside world, disciplinary configurations are changing so rapidly that departments have difficulty coping with new ways of seeing. Never before has the speed of change itself become a central issue of intellectual life. Today, those who are at the cutting edge of their fields are often those who travel across them. New ideas are often birthed in the collision *between*

disciplines. Responding to these fundamental changes in the nature of knowledge is critical to the continued relevance of institutions like research universities.

Former President Shapiro argues that our disciplinary narrowness is one of the reasons for the perceived deterioration of undergraduate education. He feels we have failed “to distinguish between the transmission of [specialized] knowledge and the development of a [general] capacity for inquiry [in undergraduates]. Our predicament is that the faculty are transmitting what they know—and love—with little awareness of what the student needs to learn.”

At a recent conference on undergraduate education, attendees agreed that much of our curriculum is not only disconnected from contemporary reality, but so fragmented that little useful understanding is possible. The conference concluded that “the rigid institutionalization of the disciplines is a barrier to both creative thinking and curricular change. The disciplines need to be integrated, and in some cases, seriously reformed. This will require considerable restructuring of our educational institutions.”

Disciplinary rigidity is also reducing the effectiveness of our Ph.D. programs, which have traditionally seen their role as training the next generation of academicians—in other words, self-replication. The current system produces scholars who are trained for increasingly narrow—and increasingly limited—research and development positions, largely ignoring the broader interests of our best students, their increasing diversity, and the complex and rapidly widening societal role played by those with such advanced training. Ultimately, this narrow definition of the Ph.D. does not serve either the nation or the student well. In the future, a large proportion of Ph.D.s will work outside the academy, and our training needs to reflect these broader roles in industry, business, and education. Universities have barely begun the difficult work involved in re-designing the Ph.D. degree so that it prepares students for a more diverse future. Clearly, our goal is not to force scholars to conform to the new “mantra” of interdisciplinarity. Not all interdisciplinary endeavors are good; neither are all disciplinary efforts bad. High-quality interdisciplinary work will look different in different disciplines, and even for different individuals in the same discipline. There should be places for eclecticism, places for extremely specialized research, and places for colleagues to learn from each other. We will need to learn to work both in isolation and in communities.

[See the Monograph “Intellectual Transformation” for a more extensive discussion of this issue.]

THE CREATIVE UNIVERSITY

We are creating an environment where students and faculty can dream and then act on their dreams.

—Paul Boylan of the Dean, School of Music

While the “analytic” professions such as law and business dominated the twentieth century, there is a great deal of evidence that the “creative” professions, such as art, architecture, music, literature, and engineering will dominate the twenty-first. Instead of simply manipulating and rearranging knowledge, it is becoming increasingly clear that the driving intellectual activity of the future will be the act of creation itself.

The University of Michigan is well poised to take advantage of this intellectual shift, with several schools that focus on the art of creation. And our tools grow more powerful every day. Today we have the ability to literally create objects atom-by-atom. We are developing the capacity to create new life-forms through molecular biology and genetic engineering. And we are now creating new artistic and musical experiences using artificial intelligence and virtual reality.

Even libraries will increasingly become places where the difference between “researching” and “doing” blurs. As Dean Atkins points out, the new information technology not only supports information retrieval, but also helps scholars actually manipulate that information. He notes that “a student could not only read about architecture, but use a computer tool at the same time to try out a design.”

Our new “Media Union” on North Campus is the centerpiece of our efforts to respond to this new creative environment—drawing together aspects of the “virtual” and the “electronic” University. Perhaps the best way to envision the Union is as a tremendous interactive playground for imaginative scholars and students, a place for *creativity*—using knowledge to serve our society. The tools in the Media Union should be so easy to use that they become natural extensions to everyday activity. For example, an artist and an engineer should

be able to think up a new sculpture together; sketch it out in three dimensions on a computer; then show it off and discuss it in real time with colleagues both here and across the world, all without noticing the complex technology that allows them to collaborate.

Like the “University College,” the Media Union is intended as a component of our “New University” concept, an effort to provide spaces for innovation and creativity, the results of which can then be propagated, helping to revitalize the rest of the institution. [See the Monograph “The Media Union” for a more extensive discussion]

THE WORLD UNIVERSITY

Americans often lack the sense that people in other countries have different ways of seeing their lives. If we want to actually be effective in a foreign environment, we need to understand these differences. We will lose in the international arena unless we develop an educated cadre of experts.

—Jane R. Burbank, Director of the Center for Russian and East European Studies and Associate Professor of History

From our earliest beginnings, Michigan has reached out beyond our national borders. By 1860, the Regents already referred “with partiality,” to our “list of foreign students.” Today, more than a hundred nations are represented at Michigan. As connections between nations increase, “a new world culture will be formed” predicts English Professor Ralph Williams. Professor Williams and others believe strongly that “a basic step in forwarding whatever we mean by [world culture] will be the establishment of three or four world universities . . . to be the focal point for certain sorts of study of the international order: political, cultural, technological, etc.” Clearly, as one of the premier educational institutions in America, with perhaps the greatest breadth of international expertise, Michigan is well positioned to take up this role. And the importance of international trade to the entire State of Michigan makes advancement in this area of special importance.

Professor Burbank cautions, however, that the idea of “globalism” and increased connections between cultures and nations does not mean that we will necessarily understand each other. Each of us communicates from our own

complex and often contentious context. And, making the idea of global research and dialogue even more challenging, the very idea of static “cultures” or “others” that exist *out there* as objects to be studied has come under increasing attack. Educating our students to grapple with these complexities will not be easy.

In response to the need for a renewed emphasis on world issues, we have brought all of our different area studies centers and a number of our interdisciplinary projects under the umbrella of the International Institute. LS&A Dean Edie N. Goldenberg feels that the new Institute has enabled “LS&A and the University to respond more quickly to new opportunities in the international area.” The Institute’s director, Anthropology and History Professor William David Cohen, notes that “at Michigan we recognize that the world and local areas are changing dramatically. Institutions in the United States and elsewhere cannot corner the market on expertise. We are here, in part, to develop better access to knowledge across the world.” In addition to its coordination role, the Institute brings many international scholars to Michigan, funds conferences, and dispenses funds for student and faculty travel and collaboration.

Yet much remains to be done. While many of our graduate students come from distant nations, this is much less true of our undergraduates. We send many students abroad on different programs, but this is an effort that we must work diligently to strengthen, giving as many students as possible the opportunity to experience the insights that come from seeing the world through different eyes. In addition, we are working to strengthen our language programs, especially in the early years.

TRANSFORMING OURSELVES AND OUR SOCIETY

The farther we get from the teaching mission of the University, the less true we are to our purposes. If we don't have the anchor [of teaching], the balloon will float away American rail companies went down the drain in the 1950s because they forgot their job was to run railroads.

—Don Cameron, Professor of Greek and Latin

Who will our students be in the future? Who will teach them and how? As areas to explore, these possible futures are exciting. As questions to be answered they are daunting. We will never arrive at a final answer—the world is always changing faster than our efforts to respond to it.

To succeed, we must develop a more flexible culture, one more accepting of occasional failure as the unavoidable corollary to any ambitious effort. We must learn to adapt quickly while retaining the values and goals that give us a sense of mission and community. Many view the current rigid and hierarchical structure of the university as obsolete. To advance, we must discover ways to draw upon the unique and vibrant creativity of every member of our community.

As financial resources become increasingly constrained, and as competition for students globally increases, especially with the advent of “virtual” technology, we cannot afford to hide our heads in the sand. Increasingly, many fear an age of attrition in higher education similar to that of the post-Civil War period, when those institutions that cannot reestablish their sense of purpose for a new society will begin to disappear. As we ask our students to critique the received authority of their society, to examine and decide rather than accept the status quo, so must we also re-open debates about the structure and goals of our common institution.

Many in the University have not yet accepted the challenges of our new era. This is especially true for our faculty. As Richard Lanham has pointed out, “The structure of the university . . . insulates the university from the competition building up around it. . . . There is no mechanism to introduce the faculty to the future because the whole system is designed to [prevent this].” This is a tremendous problem, because if we are to respond successfully, we must respond together, as a community.

We must ask ourselves: what will our *students* need in the twenty-first century? What will *citizens* of our new world require? How can we forge a new *mission* for a changing society as we hold firmly to the deep and common values that have guided us over two centuries of evolution?

I am confident that Michigan is up to the challenge. It is often scary and difficult to let go of old and comfortable roles, to open ourselves to new possibilities and ways of being. Yet change brings with it the possibility of deeper connections to our students and the potential for serving a much broader range of our society. Growth, both for an institution and for the individuals that comprise it, can come only with a step into the unknown. We move forward together, not recklessly, but thoughtfully—with care and a deep sense of commitment to the lives and dreams of our students.

It is of vital consequence that this University, or any one which deserves the public favor, should be constantly improving in some respect. If it is resting on its laurels, if it is sitting down satisfied with its past achievements, if it is not incessantly asking "how can I do more or better work," it does not deserve to be favored or helped. It is in danger of dying of dry-rot.

—James Burris Angell, President, 1871

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