

## **UM-Flint Commencement**

### **Introduction**

How does one prepare a commencement address...

Actually, it is rather easy...

There is only one commencement address...

Although it has been given millions of times...  
in millions of different ways...

The basic message is still the same...

Your education has equipped you to go  
forth into a world in which you and  
you alone will have control of your  
destiny...

One usually also throws in some advice  
on how to do this...although it is also clear  
the graduates will probably exercise their  
right to ignore this advice...

The only challenge is to figure out how to  
say this once again...in yet another way...  
and to keep it under 15 minutes!!!

### **Some memories...**

Actually, the task brings back memories, since  
it was almost precisely 25 years ago that I  
was in your position as a graduate...

It was a time of optimism in America...

Our heroes were JFK, RFK, and MLK

Indeed, Martin Luther King, Jr. himself  
was the commencement speaker at  
my graduation...

But Camelot came to an end...

Our heroes were gunned down...

Vietnam, Watergate...

America lost its innocence...

Growth of counter-culture...flower children...

Environmental movement...

In the 1980s we now realize that while America is  
still a leader, we are not alone...

Hence, it is important to first look at the future  
you will face...

### **Personal Background**

Actually, this process of futuring comes rather  
naturally...

As some of you may know, I am a scientist and engineer  
by training and background...

I must also confess I tend to be one of those  
people who lives more in the future than in  
the present or the past...

I can remember that...

in the 1960s I was working out at Los Alamos  
on nuclear rocket engines designed to  
power the first manned mission to Mars...

Hence, I've always tended to be at least 30 to 40  
years ahead of my time...

### **A Vision of the Future**

My first observation involves a very interesting feature  
of your class...

It is important to realize that while you and your classmates  
were born in the 20th Century, you will in fact be spending the  
majority of your lives in the next century...

You will be citizens of the 21st Century!

(You probably should also be aware that those of us on  
the faculty are very much products of the 20th Century,

while much of this institution is, in reality, a product of the 19th Century!)  
While it is always dangerous to speculate about the future--  
particularly another century--three themes seem crystal clear...

- i) It will be a future in which our nation becomes a truly multicultural society, with a cultural, racial, and ethnic diversity that will be truly extraordinary in the history of our civilization...
- ii) It will also be a future in which America will become "internationalized"... in which every aspect of American life must be viewed from the broader context of our place in the global community... as America becomes a "world nation", with ethnic ties to every part of the globe...
- iii) Finally, it will be a future in which we rapidly evolve from a resource- and labor-intensive society to a knowledge-intensive society...in which intellectual capital...educated people and their ideas...become the keys to our prosperity, security, and well-being.

Let's explore these themes for a moment to see how they might impact on your college education...

#### 1. Demographic Change: Diversity and pluralism

America is changing rapidly today...

Our population is aging as the baby boomers enter middle age, and the number of young adults declines.

Indeed, today there are already more people over the age of 65 than teenagers in this nation...and this situation will continue for decades to come.

The United States will simply not be a nation of youth again in our lifetimes

This fact poses a most serious challenge to institutions such as universities which have traditionally served the young.

But there is a far more profound change occurring in the population of our nation.

The United States is rapidly becoming the most pluralistic, multicultural nation on earth.

Those groups we refer to today as "minorities" will become the majority population of our nation in the century ahead...just as they are today throughout the world.

In this future, the full participation of currently underrepresented minorities will be of increasing concern as we strive to realize our commitment to equity and social justice.

But, in addition, this objective will be the key to the future strength and prosperity of America, since our nation cannot afford to waste the human talent represented by its minority populations, this human potential, cultural richness, and social leadership.

If we do not create a nation that mobilizes the talents of all our citizens, we are destined for a diminished role in the global community, increased social turbulence, and most tragically, we will have failed to fulfill the promise of democracy upon which this nation was founded.

This is probably the most serious challenge facing American society today. While it is true that universities cannot solve this problem alone, we must not use this fact as an excuse for doing nothing.

Rather we must intensify our efforts to seek full participation of underrepresented minorities among our students, faculty, staff, and leadership.

As both a reflection and leader of society at large, we have a special challenge and

responsibility to develop effective models of multicultural, pluralistic communities for our nation.

We must strive to achieve new levels of understanding, tolerance, and mutual fulfillment for peoples of diverse racial and cultural backgrounds.

## 2. The Internationalization of America

It will be a future in which America will become "internationalized"... in which every aspect of American life must be viewed from the broader context of participation in the global community...

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

Here in Michigan, in the heart of the Rust Belt, we have learned the painful lessons of the new global economic order... ...as key industries have fallen victim to intense competition from abroad...

our plants have closed...our cities have filled with the unemployed...and our social burdens have assumed staggering proportions...

The fact is that a truly domestic US economy has ceased to exist.

The fact is that a truly domestic US economy has ceased to exist.

Further, as the destination of roughly half the world's immigrants, the United States is rapidly becoming a "world nation" with strong ethnic ties to every part of the globe.

Understanding cultures other than our own will become necessary not only for personal enrichment and good citizenship, but indeed, necessary for our very survival as a nation.

## 3. The Age of Knowledge

Looking back over history, one can identify certain abrupt changes, discontinuities, in the nature, the very fabric of our civilization...

There are many who contend that our society is once again undergoing such a dramatic shift in fundamental perspective and structure as we enter a new age, an age of knowledge.

The signs are all about us.

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

New ideas and concepts are exploding forth at ever increasing rates...

In many fields, the knowledge base is doubling every few years...indeed, in some fields the knowledge taught undergraduates becomes obsolete even before they graduate!

The typical college graduate of today will likely change careers several times during a lifetime...

Hence a college education will only serve as the stepping stone to a process of lifelong education... and the ability to adapt to...indeed, to manage change...will become the most valuable skill of all.

And it is this final theme, the theme of change itself, that I wish to focus on for a moment.

## 4. Change and Renewal

The Challenge

For while it is always hazardous to speculate about the future, there is yet another theme I can predict with some certainty...

and that is the challenge of change itself...  
We face a future in which permanence and stability  
become less important than flexibility and creativity...  
in which the only certainty will be the presence of  
continual change...  
New ideas and concepts are exploding forth  
at ever increasing rates...  
In such fields we have ceased to accept that there is any  
coherent or unique core of wisdom that serves  
as the basis for new knowledge...  
We've seen simply too many instances in which  
a new concept has blown apart our traditional  
views of a field...  
the theory of relativity  
quantum mechanics  
the molecular foundations of life...  
We are increasingly surrounded by radical  
critiques of fundamental premises and  
scholarship...  
Profound, new ways to  
approach knowledge...  
As the pace of the creation of new knowledge accelerates,  
it seems apparent that we are entering a period in  
which permanence and stability become less  
valued than flexibility and creativity...  
in which the only certainty will be the presence of  
continual change...  
and the capacity to relish, stimulate, and manage  
change will be one of the most important abilities of all.

#### Traditional Approaches

Part of the problem is that most of us have been trained to  
think in terms of change as a linear, causal, and rational process.  
We have been taught that by looking at the past, we can  
extrapolate into the future.  
Yet, perhaps because of my background as a physicist,  
I have become increasingly convinced that change in most  
complex systems, organizations, or fields of knowledge is:  
i) highly nonlinear  
ii) frequently discontinuous  
iii) and usually stochastic...random in nature...

Let me expand on this theme for a moment...

#### A Modern View of Change

We now know that most complex systems that may  
first appear to be stable and unchanging are,  
in reality, comprised of components that are  
continually fluctuating or changing...  
In these systems, a situation sometimes occurs in  
which a single fluctuation becomes so large, as a result  
of feedback and nonlinearities, that it shatters the  
stability of the system. At this singular point, called  
in the language of physics, a bifurcation point,  
it becomes quite impossible to predict in advance which  
direction change will take...  
...whether the system will disintegrate into a  
highly disordered or chaotic state...  
...or leap to a new higher level of order or organization...  
Of course, such bifurcation instabilities cannot be triggered  
by just any old fluctuation, but only by  
those that are particularly "dangerous"--that is, those that  
can exploit to their advantage the nonlinear relations  
that can trigger the instability of the existing state.

The more complex a system is, the more numerous are the types of fluctuations that threaten its stability.

#### Revolutionary Change (a la Kuhn)

If we take the viewpoint that most organizations...or even most fields of knowledge...are examples of such complex systems, then this view of change is remarkably similar to that of Thomas Kuhn's thesis concerning the way that knowledge changes in a field.

In essence, it says that a single individual...or idea...can create dramatic change...a revolution, if you will, in the traditional way that we look at a field.

Kuhn's uses the term "paradigm" to refer to the body of knowledge...in essence, the way that one is accustomed to look at a field...accepted practices or perspectives.

In a sense, a paradigm is what the members of a community of scholars share, and conversely, a scholarly community consists of people who share a paradigm.

However, in contrast with the standard usage, a knowledge paradigm is not really a model designed for replication; rather it is an subject for further study and articulation.

Most research consists not of seeking major novelties, but rather polishing up existing paradigms...essentially mopping up -- or in the language of the familiar GM add, "sweating the details"...

In Kuhn's view, major progress does not occur through the gradual evolution of an existing paradigm, but rather through a revolutionary process in which an existing paradigm is replaced by a new paradigm.

The transformations of paradigms are revolutionary in nature, and the successive transition from one paradigm to another via revolution is the usual developmental pattern of mature field of knowledge.

Kuhn also observes that those who achieve the fundamental inventions of a new paradigm are usually either very young or very new to the field whose paradigm they change. These are the individuals who, being little committed by prior practice to the traditional rules of the field, are particularly likely to see that those rules no longer define a playable game and to conceive another set that can replace them.

They can make contributions of unusual importance since they haven't had the time yet to fall in the same old ruts that have trapped more experienced scholars.

An aside here: This may be one of the reasons why the perspectives of feminists, minorities, and third world scholars are of such importance to us...why they can lend a rich new vitality to our traditional forms of scholarship -- why they can launch new paradigms of learning...

Note that just as in my earlier discussion of the nonlinear evolution of complex systems, we again see a theme in which single fluctuations...individuals or ideas...can trigger dramatic...and possibly unpredictable...change.

If our future is indeed one in which the capacity to stimulate and manage intellectual change becomes important...

And in which change is also viewed as a highly nonlinear, occasionally dramatic, and usually unpredictable process triggered by extraordinary people and their ideas...

In this future, renewal and change will become essential for both the achievement and sustaining of excellence.

A comment here about the movement away from a deterministic

view of nature to a more complex, stochastic or chaotic view...  
and the implications for the importance of the individual...

#### A Return to Fundamental Values

Furthermore, while change and renewal will be important themes of our future, they can only occur upon a foundation of fundamental institutional values.

Of course, academic institutions usually focus first on intellectual values...values of the mind....

- The seeking of wisdom
- Freedom of inquiry
- Intellectual integrity
- Discipline of the mind
- Respect for reasoned conclusions

While these are of course essential in any university, there are also other sets of values which we must not ignore:

Values of moral character:

- Honesty
- Integrity
- Courage
- Tolerance and mutual respect

So too, we must bear in mind those all-important values which characterize civilized societies:

- Caring and concern and compassion
- Cooperation and communication and civility

These are the values that pull us together as a community.

In a future characterized by rapid and unpredictable change, a future dominated by the themes of pluralism, internationalization, and knowledge, it seems clear that our institutions will increasingly become the crucibles in which the new ideas and social structures capable of responding to this future are created.

Here we must take care that the ferment and controversy that always surround the birth of new ideas does not tear apart our communities.

We must recognize that in this future of change, these values of comity will provide the bonds that allow us to function as a community of scholars, dedicated to serving the society that supports us.

#### **The Need for a Liberal Education**

These challenges suggest that the principal focus of an undergraduate education appropriate for the 21st Century will be the goal of liberal learning... that is, a liberal education as the preparation for a lifetime of learning.

Alfred North Whitehead, in

his "Aims of Education", puts it best:

"Though knowledge is one chief aim of intellectual education, there is another ingredient, vaguer but greater and more dominating in its importance. It is wisdom. You cannot be wise without some basis of knowledge, but you may easily acquire knowledge and remain bare of wisdom.

Wisdom is the way in which knowledge is held. It concerns the handling of knowledge, its selection for the determination of relevant issues, its employment to add value to our own immediate experience. This mastery of knowledge which is wisdom is the most intimate freedom obtainable.



we look forward with great anticipation  
to your achievements in the years ahead.  
We welcome you to the Michigan family.  
You health, happiness, and the satisfaction of  
a rewarding and meaningful life...  
Head 2 + Congratulations...  
Godspeed...  
...Go-Blue...  
...and Go Get 'Em!!!