

Dartmouth Engineering Investiture Address  
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Introduction

Provost Scherr, Dean Helble, members of the faculty, parents, guests, and most of all, graduates of the Class of 2009.

Let me first express my gratitude for this honor and for being invited to address and congratulations today's graduates. I frequently hold out Dartmouth as a powerful role model for all of engineering education in the 21<sup>st</sup> century. The Thayer School occupies a very special place in engineering education, both as one of the oldest engineering schools but perhaps more significantly as firmly establishing engineering education within the context of a broad, liberal education—a paradigm of particular importance today in a rapidly changing world.

Beyond the fact that Dartmouth's and Michigan's engineering programs were launched at almost precisely moment in the 19<sup>th</sup> century, there are several other interesting reasons that speaking to Dartmouth engineering class of 2009 has particular meaning this morning:

My predecessor as Dean of Engineering at Michigan was Dave Ragone, a former dean of the Thayer School at Dartmouth.

One of my Michigan deans, Lee Bollinger, was your provost, before he returned to succeed me as Michigan's president (and then went on to Columbia).

But most because of the wonderful memories I have of Hanover, as my Yale football team was thrashed by the Big Green!

Let me hasten to add, however, that today I am NOT wearing the Yale Blue. Rather this is the Michigan Maize and Blue!!!

### Giving a Commencement Address

My immediate task this morning is to provide some remarks to today's graduating class.

If the truth be known, it is much easier to draft a commencement address than to listen to it.

For, you see, there is really only one commencement address, although it is given thousands of times every year, in thousands of different ways.

The basic message is always the same.

First you tell the graduates that their education has prepared them to go forth into a world in which they will have the power to shape their future, to control their destiny.

Then you throw in some advice on how to go about doing this.

And, of course, it is traditional for graduates to totally ignore this advice.

The only real challenge is to figure out how to say this once again, in yet a different way, and to keep it all under 10 minutes, since it is the only remaining barrier between you and your degree!

Actually, next week I have to endure the trauma of my own 45<sup>th</sup> class reunion, and hence some of the memories of my own graduation have come flooding back.

Back in the last century when I graduated it was still a time of optimism in America.

- The glow of Camelot of the Kennedy administration still lingered with us.
- There were great causes to take up such as world peace, the conquest of space, the civil rights movement.
- Indeed, Martin Luther King, Jr. was the commencement speaker at my graduation.

My Class of 1964 graduated with a feeling of boundless confidence in ourselves and in our country.

We each had mighty visions of changing the world.

- My first job after college was at Los Alamos, developing nuclear rocket engines that we expected would soon power the first manned mission to Mars by 1980 after we landed on the moon.

Like many generations of Americans before us, the Class of 1964 took for granted our nation's leadership, our motives for good, the virtues of science and technology.

- We believed that we would live better than our parents,
- And that our children would have a life even better than ours,

But there were already clouds gathering on the horizon. Even during my senior year it was suggested that things

would not be quite so simple, that dramatic changes were coming.

- John F. Kennedy was assassinated during that fall.
- The Cold War had begun to heat up with the Cuban Missile Crisis.
- A few people were talking about a distant war in a place called Viet Nam, and some of my friends were receiving draft notices.
- The free speech movement at Berkeley was revealing a new spirit of student anger and activism on the campuses, while the drug culture turned on and tuned out.

But even with these warning signs, we were not prepared for the dramatic crises and confrontations, the great changes we would face in the years following our graduation.

But perhaps it is useful this morning to engage in some futuring, to speculate a bit about the world you will be entering.

### A Future of Change

The French poet, Paul Valery, once said, "The trouble with our times is that the future is not what it used to be."

My cloudy crystal ball suggests a future characterized by rapid, unpredictable, and frequently dramatic change, a future of great challenge and responsibility.

But it will also be a future of great opportunity and excitement.

Let me dwell on this point for a moment, because all too often we tend to press the panic button when we face the future.

Certainly, events of the past several years have been both tragic and traumatic—9/11, Iraq, the energy crisis, the collapse of financial markets, ...and job markets as well, although perhaps not for engineers.

As you graduate in the early years of a new century—indeed, a new millennium—it is also true that you will face challenges of a magnitude that would have been incomprehensible when I graduated—energy sustainability, global climate change, global poverty and health, conflict and terrorism.

But you are also graduating during one of the most intellectually productive times in human history. Knowledge continues to grow exponentially. The more we learn, the more we are capable of learning.

Yet it is also this same explosion of knowledge that has made this a time 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 critical abilities of all.

True, in the immediate future there will be less security than before, less stability, more unpredictability; but to quote the philosophy Alfred North Whitehead, "The great ages have been unstable ages!"

### Has Dartmouth Prepared You for This Future?

Has your college education helped you to welcome, adapt to, and control change?

As Dartmouth engineering graduates you will have the powerful tools of modern science and technology, but through the intellectual breadth of your Dartmouth education you have also gained an appreciation for the rich heritage of culture and art and experience from past generations that will provide the wisdom and the knowledge to enable you to shape your own future. In fact, imbedding engineering in the context of a liberal arts education has been a primary theme of your school.

This latter characteristic of your education is important, since perhaps Whitehead was correct when he suggested the purpose of a college education is "to learn the art of life."

Perhaps the real objective of these past few years at Dartmouth has been to stimulate in each of you a spirit of liberal learning, a spirit that would enrich your lives and, through you, the lives of your families, friends, and colleagues.

Ah, but this might not have been at the top of your list... After all, universities provide many other distractions...parties, sports, concerts, and politics...

But not to worry! Your college education was intended only as a stepping stone to a process of lifelong education.

Indeed, most college graduates of your generation will find themselves changing not only jobs but entire careers time and time again during their lives.

And hence they will find it necessary to continue to learn, and relearn, and relearn yet again to adapt to a world of change.

In this regard, Emerson once suggested that the wisest counsel of all to the young was to encourage them to "always do what you are afraid to do."

To approach life as a true adventure of opportunity and risk.

After all, we are made for risk. We thrive on it.

The truth is that adapting to change and challenge is what keeps our human species evolving.

And in so doing, to regain perspective, our sense of excitement about the future, the optimism and confidence in ourselves and in each other.

Your chosen field of study, engineering, has given you the powerful tools of science and technology to transform dreams into reality!

There is an old saying in engineering that "the best way to predict the future is to invent it!"

Moreover this capacity to create the future is one of the most significant skills provided by the unique character of a "liberal arts" engineering education you have received at a great institution such as Dartmouth.

You have the ability to go out into that exciting world full of change, challenge, and opportunity and not only shape the future but to actually invent it!

Indeed, it is your challenge to make certain that the future is never again what it used to be!

Congratulations...and God-speed!