

UIC Commencement Speech, May 7, 2005

Thank you Dean Banerjee.

My thanks, as well, to the faculty.

My thanks to the many visitors that we have here today.

And, most of all, my thanks to the soon to be graduates. I am humbled, truly humbled, to have this honor to stand before you today. Especially, today. Not so much for what you have done, though that deserves its due credit, but for what you will do. We gather here today with mixed agendas, and mixed emotions. With a sense of hope, and with a sense of relief.

Many of you parents are here, I'm sure, just to see if the tuition bills that you've been paying or helping to pay were in fact paying for an education. Graduation, hearing your son or daughters name called out today, will be proof of that. Many of you have come to hear what I might have to say. Well, perhaps, not many of you. At least two of you. I'll take this moment to thank my wife and my brother in law for attending.

To be more serious, you are all here to celebrate both an ending and a beginning. This is a glorious moment that should never be forgotten.

I can still recall my own graduation so many years ago as if it was only yesterday. I sat waiting to hear my name read. My parents were in the audience expecting to hear my name read. My mind was filled with thoughts. It was racing. Would some computer glitch cause my name not to be read? Would that gym class that I skipped three years before, and lied about as to the reason cause me to be disqualified from graduation at this the very last moment? Would God simply choose this moment to get even with me for all my other misdeeds? Well, my name was read, and I did graduate. The same may very well be true for each of you today. On the other hand, it may not.

THE HAND YOU'VE BEEN DEALT

As potential graduates, after thanking your friends and relatives for the moral and financial support that they have provided you. Is it appropriate for you to ask them just what kind of a hand they have dealt you? Just what kind of world has your parents generation left for you to enter? We have the threat of pandemics brought on by global travel. We have global terrorism made easier by the internet. We have \$50 a barrel oil with talks of \$100 a barrel oil. We have a social security system that some people think is headed towards bankruptcy. We have a Medicaid system that is headed for bankruptcy. We have massive outsourcing of not just mundane jobs, but of all jobs.

Is this what your parents have done to you? Is this some sort of cruel joke? You've made into the professional world, but that world is collapsing around us and doesn't need you anyway!

Well I don't see the global glass of opportunity as half empty. Every generation looks into an uncertain future. Every generation meets that challenge and crafts a better future for it and the generation that follows it. Yours will be no exception. The glass of opportunity for you is half full. Better said, it is overflowing.

Wonderful things have been done. Wonderful things will be done. You will make those things happen. The markets you'll address will be global. The population of people that will benefit,

from the services that you will provide and the inventions that you will make, will be measured in the billions of people. You will be part of the most rapid technological advances that the world has ever imagined much less seen.

You have the education that it takes to take advantage of this. You enter a world where information is networked and abundant. You enter a world where teams can be assembled to tackle great problems without concern about geography. The best people working together regardless of location.

I am reminded of the words of that great philosopher and sometimes baseball player Yogi Berra. He said, "I never predict anything, especially the future"

In predicting the future, we can not be certain, but we'd be foolish not to be hopeful and expectant.

WHAT YOU NEED TO DO!

Yogi had another great line – sometimes I wonder when he had time to play baseball – "You've got to be very careful if you don't know where you are going because you might not get there."

How do you take advantage of what you've gained, of what you dream, and of what's available to you? For many of you, this will mean further study. But, whether the path is further study or beginning a career, none of you are done. There is no done.

You are entering a world of constant and relentless change. In the 50's we all knew that was good for General Motors was good for the nation. In this decade we know that GM will be fortunate to avoid bankruptcy. There are similar stories for Comdisco, Digital Equipment Corporation, Control Data, AT+T and many, many others. When companies stop innovating, they die. When people stop innovating, their careers end. Your education isn't over, it's continuing.

To borrow heavily from some recent thoughts of Rich Karlgaard, who write for Forbes, your task now is to fit your purpose and contribution into the capitalistic world. There are no guarantees, but there are rich rewards for the energetic, the creative, the tireless and those of you who are relentless. In the real world, the pie of resources and wealth is not fixed. It's growing all the time. It's all there for you to earn your share. With your engineering skills you will engage the world. You will drive change. You will cause the unimaginable to happen.

And, remember the words of that other great philosopher Yoda. Try not, Or do not, There is no Try.

GREAT MENTORS

It has been my fortune to walk with giants. Bob Galvin, the founder's son at Motorola. He bet the company on globalization and cellular and won. Irwin Jacobs, the man that sold the world on CDMA technology. Marty Cooper, the man that believed that cell phones should be portable and personal. Don Jacobs the man whose vision made the Kellogg school what it is today. And many, many more, including your own Dean Banerjee who has a great vision for this school. . You will meet many as well. Learn to listen to what they have to say.

Today, I'll pass on just one of their stories. This one was from Bob Galvin. We were discussing ideas. Which were worthy. Which were not. Bob said, that if you have a new idea and everyone

likes it, everyone gets it, it's not a very good idea. It's already main stream. But, if you have idea that no one likes, you know one of two things. It is either a very good idea, or it's a very bad one. Only your passion, energy and commitment will determine which.

The system that Nextel uses, is called iDEN, is just that sort of idea. A few of us, a very few of us, believed that there was room in the world for one more wireless system, one that incorporated push to talk as an integral part of its cellular service. Almost no one got it. I explained it over and over again as we sought investors and customers for it. They all rejected it. I also heard many times that it wasn't Motorola's place to advocate a wireless standard. Motorola was to be the arms merchant to the wireless world shipping solutions that were evolved by our customers.

I spent months making presentations, repeating the message as I saw it. One day I made that presentation to Craig McCaw. I was only a few charts into the presentation when he said that iDEN was a big idea. An idea he would back. An idea that he would commit \$1B to. To be honest, I was so used to people not liking the idea that I just assumed that he had misheard what I had said so I started the presentation over, talking more slowly and more deliberately. Craig saw what I was doing and said John I really do get it – its' a big idea and it has my full support. The results fueled profits and sales for Motorola for more than a decade.

OUTSOURCING – THE WORLD IS FLAT

Thomas Friedman has recently written a book entitled, The World is Flat – a Brief History of the Twenty First Century. It hits on a theme that troubles a lot of people today. Outsourcing. Not just the outsourcing of menial jobs, but the outsourcing of all jobs. Or, closer to home, the outsourcing of engineering jobs. Are you thinking that you may have picked the wrong career or the wrong century to graduate in? Well, welcome to the world of engineering. Engineers create change. Engineers, in their work and in their lives, are driven by change. There are no quiet times. There are no safe havens. To be an engineer is to accept the challenge that you will be cutting edge throughout your career. You've learned skills, but, most of all, you've learned to learn.

Don't take Friedman lightly. He writes for the New York Times. He has three Pulitzer prizes. What does Friedman mean when he says that the world is flat? He traveled to Bangalore where he met an entrepreneur that told him that with computers, global connectivity, and bandwidth, the playing field is being leveled. Bandwidth, computers and global connectivity have made it possible for smart people in India to do what smart people in the US are doing at one fifth the cost. It was a short leap in Friedman's mind from a level playing field to a world that is flat and it's a useful image. And it's all brought on by computers, the internet and global connectivity.

A lot of what he observes is correct, but he misses the point. Engineering productivity in all fields has been skyrocketing for decades. What saves us is that the demand for engineering is insatiable. As one example, software productivity was improving at a rate of 10 times every five years. It had been doing so for decades. It appeared that would for decades more. In other words, 200 engineers today can do what it took 1000 to do five years earlier. It's a sort of the Moore's law of software. Higher level languages, improved software process such as SEI, auto code, object methods, freeware and the like. The progress is relentless.

Should we worry? No. Did the semiconductor industry worry what it do with all the transistors that Moore's law predicted would be possible? Not in the least. The demand for computing power is limitless. Similarly, the demand for software is limitless. Will this ever change? I don't think so.

GRAVITY AND THE UNKNOWABLE

I said that I was humbled to stand before you. I am. Those words are not offered lightly. I am humbled because I can see, or I think I can see, the great things that you will create with the gifts that you have. It isn't hard to be amazed at what we've seen in the past 50 years. In what the last generation did. When you see that and see that the momentum is increasing going forward, it can only become more so. In an information intensive, bandwidth intensive, computation intensive age, we are each individually more productive than we ever could have dreamed we would be just a few short years ago. And as quality schools around the world, not just around the country, contribute more and more great people to develop more and more ideas using better and better tools the pace can only quicken.

It wasn't all that long ago when the only way to describe the world as people then understood it was by attributing what they saw to the gods. Gravity is a good example. And then people began to understand it. Now, what was once attributed to the gods is the force that keeps stationary satellites in place so my kids can watch Sponge Bob Square Pants on DirecTV. Another piece of the unknowable became known. Lasers, Magnetics, Semiconductors, DNA, the human genome, and many other things are like examples.

I live in San Diego. San Diego is a center for bio engineering and for wireless. It's the kind of place where the impossible seems possible. Let's consider two breakthroughs that should be coming. Today computer and computer networks are incredibly smart and incredibly dumb. You know that you don't want Spam. Why can't your computer know? As another example, you know what you want your computer to do, but it stupidly, nonsensically keeps doing the wrong thing. When your frustration maxes out you email or dial someone for help.

After a wait longer than a cruel God you think would allow, you are talking to a person in Bangalore. Why are people doing this (i.e., calling help lines) at all? They're doing it because we don't yet understand the process of communication. We're getting closer, but we don't yet understand it. It won't always be this way. If a computer could learn to beat Bobby Fisher at chess, a computer will learn to tell me what I need to do to set up my email on my Treo 650. And when computers learn to do that, things will be moving even faster, because the questions that need to be answered, the data bases that need to be searched, will all be more available.

Today we make things in the clumsiest of ways. How is it that cells, knowing seemingly next to nothing about the world around them, can create fingers, eyes, nerves and the brain? I'll bet that we'll get a whole lot better at understanding how this happens going forward. We'll learn how to deal with the cells that run amuck causing what we call cancer. We'll learn how to make nerves grow back so that people can walk again. But think beyond that, we'll learn how to make things build things.

There was a time when gravity was a mystery. Today our understanding of it, and many other things, makes it possible 500 TV channels beamed into my home on DirecTV. Today computers can't understand what we're asking of them. Tomorrow they will. Today cells build themselves as they choose to. Tomorrow, we'll manage the process. Today materials are constructed in bulk. Tomorrow, they'll be constructed atom by atom.

GO FORTH

There's a quote on a bridge that crosses the Charles River on the Harvard campus. It's from the Wisdom of Solomon. (Chapter 6, verse 24) "The multitude of the wise is the welfare of the world". What you have is not just the result of what you have done for your benefit. What you

have accomplished is not just what you have done, but it is the benefits from the collective efforts of many who have gone before you. It should bring with it both a sense of pride, but it should also bring with it a sense of responsibility. Not everyone was born with the talents that you were. Not everyone has had the opportunities that you have had. That talent and those opportunities bring with them responsibility.

In closing, “The multitude of the wise is the welfare of the world”. Seeing you before me, the welfare of the world is in very good hands indeed. Thank you. Go forward and do what you will do. Accomplish great things. Enjoy your lives and the knowledge that you received here at UIC. We will all be better for it.

Congratulations!