

दीक्षान्त अभिभाषण

प्रो. सतीश के. त्रिपाठी अध्यक्ष, बफैलो विश्वविद्यालय, राज्य विश्वविद्यालय न्यूयार्क

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Convocation Address



27 (10, 2010

49th CONVOCATION

27th JUNE, 2016

भारतीय प्रौद्योगिकी संस्थान, कानपुर Indian Institute of Technology, Kanpur





I would like to begin by extending my warmest greetings to:

- Shri R.C. Bhargava, Chairman of the Board of Governors,
- Professor Indranil Manna, Director of IIT Kanpur,
- Distinguished guests,
- Graduating students,
- Family and friends.

Congratulations to the Class of 2016!

Today, you join a large and prominent group of global alumni of one of India's most distinguished universities—an institution that is known around the world as a leader in science and technology.

It is my great honor to take part in the annual Convocation celebration of this distinguished institution. I feel especially honored as I grew up within 150 miles of this campus.

Many of my friends have studied here, and I have had the pleasure of interacting with faculty and students on many previous visits here. I also had the good fortune of working with many students from IIT Kanpur in my research group at the University at Maryland.

One of those students, a 1990 Batch Computer Scientist graduate named Pravin Bhagwat, finished his Ph.D. in my lab and is today an entrepreneur in India. Among many accomplishments, he has produced a full-length documentary, called "Through Our Eyes," which captures the life-changing transformations that students undergo here at IIT Kanpur. If you have not yet seen this movie, I highly recommend it—it is available on YouTube.

In short, this institution is special to me for many reasons,

and as a proud product of Indian higher education myself, I feel a special kinship with the IIT Kanpur graduates we honor today.

It was not so very long ago that I was sitting where you are now—eager to take my newly acquired degree, knowledge, and skills and put them to the test in the "real world."

And at the same time, I know that today, you face many challenges and opportunities that I never could have imagined as a college graduate in the 1970s.

The world you are entering as a graduate today has changed, and continues to change, at an incredibly rapid pace. The 21st century landscape is very much a global world, driven by a data economy.

Over the last several decades, the industrial age has given way to the information age. And that change has connected the world across borders of all kinds. Knowledge and information are the common languages that connect us across disciplines and industries, and across national borders and cultural boundaries.

At the same time, this globally networked world has led to an explosion of information—one that is expanding exponentially all the time. This comes with great challenges as well as tremendous opportunities for you as the future leaders of business, industry, and the academy.

On the one hand, there is an unprecedented amount of knowledge, information, and data at our fingertips and ready to be shared any time, any place. And with the rise of mobile networks and social media, this explosion of big data is not slowing down—it's really just getting started.

The problem is that our intellectual resources have not kept pace with this information explosion. We do not currently have sufficient intellectual capacity to make informed decisions about this flood of data—or to harness it effectively.

As the sheer amount of information grows, the problem of how to manage and use it wisely grows as well. By the year 2020, annual data production is expected to grow by 43 times its current amount.

Today, 3 billion people are connected to the internet. By the year 2020, it is estimated that 75 billion devices will be connected to the internet. 8 zettabytes of new data was created last year alone—more than in the previous 5,000 years combined.

Sorting through this data and putting it to effective use—rather than being overwhelmed by it—is an even greater challenge.

We need knowledgeable leaders like you—educated experts who can help business and industry understand how to translate this information into usable intelligence, and how to move from simply collecting to strategically connecting data to make valuable insights and discoveries.

Data science is increasingly playing a critical role as a research tool. For example, in astronomy, it is helping to identify new stars and galaxies. In materials science, the field of Big Data analytics is helping to design new materials that are transforming how people live and work around the world.

And data science is having a profound impact on the health

sciences. Just as one example, a recent article in the New York Times reports that Microsoft scientists have demonstrated early diagnosis of pancreatic cancer by analyzing search engine queries.

You will be a critical part of the talent pool needed to navigate the Big Data landscape effectively and to provide the analytical skills to harness it fully across many fields.

The amount of new technical information is doubling every two years, which means that keeping the curriculum relevant and timely is a great challenge in every field, especially the STEM fields. That is not to say what you learned in your first years here at IIT Kanpur is already obsolete. But it does mean that even more than what you have learned, how you learn and approach problems is incredibly important. And the expertise you have gained here at IIT Kanpur has prepared you well to be nimble in the face of rapid changes.

First, in an increasingly global world—your ability to make connections, to engage with and learn from diverse perspectives, will be key to your success. And your education at IIT Kanpur, a global leader in higher education, has prepared you well for this.

Secondly, in an increasingly information-driven world analytical talents like yours will be in great demand. Many of the fields in greatest demand today did not exist even a few years ago—cloud computing, social media, big data analytics. So to compete and contribute meaningfully as an educated citizen in this global world, you need to be prepared not just to lead in your field of expertise—you need to be ready to lead in fields that don't yet exist. And as a globally recognized center for innovation and excellence, IIT Kanpur has been preparing you to do just that.

These are lessons for a rapidly changing world, and an unpredictable future that will be unrecognizable, in so many ways, from our past. Yet at the same time, these lessons—about the value of staying flexible and nimble, the importance of learning from multiple perspectives, and the willingness to take risks—have held true across many generations of change and evolution.

Over the course of your education, I suspect you have heard enough advice to last a lifetime! But if you have the patience for one more piece of advice, I would like to share a few principles I have learned and lived by over many decades—principles I think of as timeless. I hope they will serve you well, as they have served me.

The first is this: Set long-term ambitions, but always be ready to change course. I know that each of you has set a very ambitious course, and many of you are well on your way down this path already. I applaud your bold ambitions and initiative.

At the same time, I would caution each of you not to be so fixed in your intentions that you close new doors before they open. It is critical to cultivate a degree of intellectual nimbleness—so you are ready to seize a new opportunity when it comes along, and ready to create your own opportunities.

I was a college student myself when I first understood the truth of this. I come from a long line of educators, and I have

been focused on education most of my life. But I never would have envisioned that one day I would have the opportunity to lead a major North American research university.

As a young person, I hoped, through hard work and perseverance, that I might one day become a high school principal, following in my father's footsteps. And I would have taken great pride in that achievement. But other opportunities presented themselves along the way, and I am grateful to the mentors and peers who encouraged me to pursue them.

That brings me to my second principle: Be self-reliant—but always seek out the opportunity to learn from and with others.

As a college student in India, and later as a graduate student overseas, I found that the opportunity to exchange new ideas and discoveries with other intellectually curious, energized students helped to shape my path in profound and lasting ways.

India's great institutions—including your own—have produced many top leaders in the academy, in the professions, and in business and industry today. The opportunity you've had to engage with some of these great thinkers will surely open up new horizons for you, as it did for me.

I am a firm believer that the truly big ideas and important discoveries take place at the intersection of fields. They involve many minds working together, approaching the same problem from different angles.

Here at IIT Kanpur, you have learned the great value of

sharing ideas and information across disciplines. This is the basis for nearly all the important discoveries emerging from the world's labs, studios, and clinics today.

No matter how brilliant your idea, be sure to test it against other theories, and look at it from other vantage points. It will almost certainly be even stronger for that.

Of course, being willing to step outside of your own perspective, and open your work up to the criticism of others requires a certain amount of risk. And that is the final principle I'd like to share with you today: Plan strategically and carefully—but always be willing to take risks.

I took a risk in the 1970s when I ventured outside the established field of statistics to explore computer science—at a time when only a handful of scholars were working in this field. I took another risk when I left India to continue my graduate studies in Canada.

And over the course of my academic career, I have ventured into the unknown again and again, from my first faculty position at the University of Maryland, to launching a new engineering school in California, to the University at Buffalo, where I had the opportunity to help lead a major research university on an international border.

I served as Provost of the University at Buffalo for seven years, and I've served as President for more than five years now. And I am very pleased to tell you that every day, new opportunities present themselves.

Of course, there is no magic formula for success. There comes a point when each of us must choose our own way. You are at that point right now.

You are ready to chart your own course forward, building on the knowledge and first principles you have learned as students here.

Today's world is very much a globalized one. And as graduates of a global university with an international reputation, you are very well positioned to lead and contribute in this world.

As graduates, you are ready to make a profound difference as the next generation of global leaders in your fields—here in India and around the world.

Congratulations! And all best wishes for much success!



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