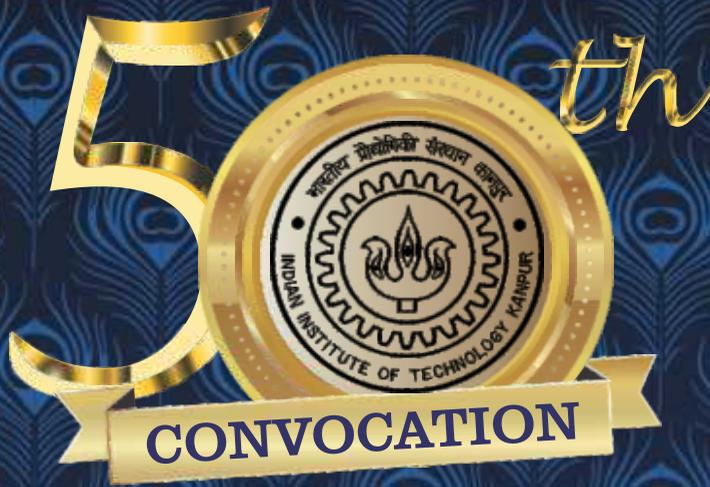


Session - 2

Chief Guest Address

सत्र - २

मुख्य अतिथि द्वारा दीक्षान्त अभिभाषण



५०<sup>वाँ</sup> दीक्षान्त समारोह

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Indian Institute of Technology, Kanpur

भारतीय प्रौद्योगिकी संस्थान, कानपुर

# Great Achievements at the Edges

## C. D. Mote, Jr.

President, National Academy of Engineering, USA

I am pleased to extend my warmest greetings to

- Professor G.C. Tripathi, Member, Board of Governors,
- Professor Indranil Manna, Director of IIT Kanpur,
- Distinguished guests,
- Today's graduating students, and
- Their families and friends.

Congratulations to all of you graduating students for this milestone! This is one that you will remember. It brings opportunity to you, pride to the IIT Kanpur, and more relief to your parents than you know.

Some of you know what you will do next, and others are still thinking about it. Rest assured, whichever group you are in, it will work out. You have many different lives ahead of you and most of them are not even predictable today. I am on my fifth life now, and I never imagined any of them after #2. I—possibly like many of you—was just not dreaming big enough, early enough. Big Dreams are necessary, so do not be afraid of them.

But first the very good news! You have just reason to be proud of yourselves. You are graduating from a truly fine university. Moreover, this places you among the top engineering graduates in India—in fact, among the top university graduates in the world. In addition, I know that you all came to IIT as excellent students.

But there is a possible unintended consequence of this success for you to think about. Because you have been a very fine student for a very long time, you were probably required, or at least felt required, to “do the right thing” essentially all the time. You had little time to play around, to fail or to risk a blemish on your record. Everyone around you urged you to “do the right thing.” “To do what is expected of you.” “It is necessary to get to the top,” they said. So, you did the right thing and here you are today, “at the top.”

But there are two questions for you to ponder:

Is “doing the right thing” all the time necessary for success?

And more importantly:

Does “doing the right thing” even lead to great achievements?

Some people simply refuse “to do the right thing,” to do “what others expect of them.”

Of course, many of them do not graduate from fine universities like IIT Kanpur. Many are adventurers or dropouts, or end up not where most of us want to end up. But some—like Steve Jobs, Bill Gates, Sergey Brin, and Marc Zuckerberg—create companies like Apple, Microsoft, Google, and Facebook.

Or others like Charles Darwin become possibly the most famous scientist in world history, even though Darwin's father said to him “you will be a disgrace to yourself and all your family” because he had dropped out of both Edinburgh University, where he had been studying in the divinity school, and the University of Cambridge, where he had been studying in the medical school. Darwin's father thought he was going nowhere and that all he cared about was clothes and parties. Then at age 20—possibly to get away from his father—Darwin sailed off to the Galapagos Islands where he conceived the theory of evolution.

Or there was John Harrison, described in English history as a carpenter, though classifying him as a great engineer would be a more accurate description. In the 18th century, Harrison designed a clock that was accurate to 5 seconds during an ocean voyage from England to the West Indies and back. That clock was the key to his ultimately winning the “Longitude Prize” for navigation after many years of controversy because Harrison was not a scientist. The prize was established by the English Parliament to reward a method to determine the longitude of a ship at sea, one of the great navigation problems of the period. Harrison beat the Royal Observatory to the prize even though the Observatory was founded by King Charles II specifically to solve the longitude problem using astronomy, not a clock. It turned out that the weather in the North Atlantic often renders the stars invisible, thereby preventing the use of astronomy for this purpose—a science mistake that an IIT Kanpur engineer would surely not make.

And there was a young Swiss fellow who dropped out of high school because he refused to accept the rote teaching methods used there at the time. He was described by his teachers as “lazy, slow, and dreamy” and was even denied admission to the Swiss Federal Polytechnic Institute in Zurich because he failed several subjects. Fortunately, his strong mathematics and physics were enough to carry Albert Einstein ahead despite his refusing to “do the right thing.”

These people all refused to do what others expected of them. They worked “at the edges” of their fields, and not in the mainstream of their time.

Great contributions in any field are made only at the edges—never in the middle. The frontiers, after all, never lie in the middle.

Where do you find these edges? First, just look around you. The edges are lonely places, high-risk places, and easily criticized places. The edges are where most people, especially top students, are afraid to go.

Einstein said, “If an idea is not at first considered absurd, there will never be any hope for it.” What he meant was, if people readily approve of where you are going, you are most likely not at the edge, but squarely in the middle. “Doing the right thing” reduces criticism and pushes you toward the middle, away from the “absurd”—away from the edges.

Essentially all forces of society relentlessly push high achievers, especially people just like all of you, toward the middle and away from the edges. Our reward systems push high achievers toward the middle with admission to top universities, with memberships in honor societies and academies, with scholarships and prizes, with high-paying jobs, with promotions and raises, and with praise from family and friends. To walk away from these accolades, all earned by doing the right thing, requires exceptional personal determination and/or wisdom. Accordingly, most high achievers just don't do it. And so over time high achievers move steadily and continuously toward the middle, unwittingly diminishing their opportunities for great contributions. While they may appear to achieve because of the accolades they receive for doing the right thing, they never get out of the middle, and consequently they do very little, if anything, of great significance.

This may explain why a disproportionately high number of people who have influenced society greatly were never seen as high achievers early on. High achievers feel that they have too much to lose—the risk is seen as too high. In contrast, Darwin, Einstein, Gates, Jobs, Brin, and Zuckerberg were all college dropouts.

So my one thought for you is this: Think about getting out at the edge at least some of the time. Society needs great contributions from its best and brightest people, people just like you. Give yourself a chance to become a great contributor. Think about how much risk you are willing to take. It's a personal decision. It may be 10 percent of your time or it may even be double-time for a few years.

Listen to your heart if your brain feels full. Be driven by your passions—passion drives great achievements. No passion yields no great achievements. And be wary of society's incessant push toward the middle, toward doing the right thing all the time. Break a rule every day.

The frontiers are waiting to be opened, and then reopened, repeatedly, by the next great ideas. We can't say when it will happen—except that it will happen at the edges.

Finally, if you feel cautious and decide against stepping out to the edges, think about how you will feel many, many years from now when you wonder what might have happened if you had just taken those earlier opportunities to step out to the edges once or twice or more often still.

As you set sail from IIT, I wish you fair winds and following seas on your life's great adventures and the myriad opportunities that lie ahead for you. And remember your alma mater now and then, for she has done more for you than you realize today, as you will realize later. And don't forget to call your mother too—if it were not for her you would not be here today.

Congratulations!!

CDM jr.