

CONVOCATION ADDRESS

**On Embracing a Religion called
'Positivism'**

by

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at

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1. Mr. Vice Chancellor, distinguished members of the faculty, distinguished invitees, proud graduates, their equally proud parents and friends, ladies and gentlemen.
2. It is a very special honour and privilege to have been invited to deliver this convocation address. I received D.Sc. (Hon. Causa) from this university in 1998. I am, therefore, particularly proud to speak as its alumnus. Delhi University is not only my university, it is a great university. Its graduates and faculty have been thought leaders, not only in India, but around the world. They have influenced so many spheres of our lives. As you go out from the portals of this university, my young friends, you will have the responsibility of carrying the legacy of sustained excellence and unparalleled achievement of this great university.
3. My young friends, today is a momentous day in your life. You are now stepping into a world, which is full of challenges and astounding possibilities. You must aim to reach your potential and even exceed it. But this is possible, provided you aim high. Provided you promise to give your best, and not the second best, in everything that you do. Provided you dare to learn and learn to dare. I am generally referred to as a 'dangerous optimist'. My young friends, I will live up to this reputation in this convocation address. I want you to be dangerously optimist about yourself and this great nation. I am going to speak to you about the importance of the only 'ism' that I have believed in my life, and that is 'positivism'.
4. As I stand before you, my mind goes back to a morning in this very campus a few years ago. I was invited to be the chief guest in a function that was held in this university. I recollect that there was some turbulence in the university on account of some issues. Such things, of course, do happen in universities from time to time. However, the mood that morning appeared to be unusually gloomy. One distinguished individual introduced me to the audience. He ended his introduction by saying ' - and as we know, we are all in a coma, and Dr. Mashelkar is going to tell us what to do'. I was quite stunned by these remarks. As I walked to the microphone, I wondered as to how could one address an assembly of people, who feel that they are all in a state of 'coma'.

5. I began my speech by thanking the speaker. I then said 'perhaps I heard it wrong'. Perhaps what the Professor meant was not that 'we are in coma' but that 'we are at a coma'. Then I said 'being at a coma is not a bad news. We introduce a coma, when we have written a part of the sentence, but not completed the sentence. We can take a pause at the coma, look back on what we have written and write the rest of the sentence'.
6. I went on to say 'having come midway, it is up to us to decide the direction in which we want to go. It is up to us to design the future in the way we want. Indeed, it is up to us to write the remaining part of the sentence in the way we want. And who knows, the way we complete the sentence will set the mood and tone for the next sentence, and yet another. Several such inspiring sentences will form a para. Putting several such paras, a chapter will be completed. And who knows, it could be a golden chapter after all'. I still remember the applause that followed when I finished. I could see the change of mood from despair to one of hope. Many people told me that the whole conference went on with an unusual upbeat mood.
7. Why do I narrate this story? It has nothing to do with this university. It has to do with a nationwide phenomenon of self-doubt. Indeed, one sees a great deal of cynicism, negativism and pessimism around us. A feeling of diffidence and gloom, a feeling of desperation is engulfing us. When we see a glass that is half full, we are beginning to endlessly discuss the half empty part of it. When there is darkness, we are endlessly discussing the curse of the darkness. We are not going out in search of a candle to light the room and remove the darkness. I strongly believe, my young friends, that we must bring a new hope, a new sunshine to our great nation embracing a new religion of 'positivism'.
8. I want to emphasize today, perhaps by being overly anecdotal, that amidst bad news, which is inevitable in any nation of our size and history, there is a plenty of good news around. Why do I say this?
9. I, for one, believe that Indian gains in the post-independent India are sizeable. We have functioned as a nation in spite of the cultural, social, political, economic and religious diversities and integration of states. We have a vibrant democracy, an independent judiciary, and a diversified and widespread industry. We manufacture everything, from pins to missiles. IT has shown the

way as India's Tomorrow. But the future of India is not in IT as in 'Information Technology'. It is in IT as in 'Indian Talent'. This talent is in demand all over the world. Products of our higher education systems, be they IITs or IIMs, lead the world. We have lacked economic or military clout, yet we have contributed significantly to the establishment of an equitable world order. There is much that we can be proud of.

10. Sometimes, we do not even realize the value of what we have achieved. Let us first see India's unity in diversity. We have 18 major languages, 1600 minor languages and dialects, 6400 castes and sub-castes, 52 major tribes, 6 main ethnic groups and 28 states and yet we have remained one country! We are the largest functioning democracy in the world. We had 619 million voters in 1999 national elections, making India's election the largest in the world. And they were fair elections too. How many countries can boast of such a feat?
11. Look at our constitution; it enshrines the fundamental rights of citizens in sovereign India irrespective of caste, creed and religion of its people. Look at our free press. We have over 5000 dailies, 16,000 weeklies, and more than 6,000 fortnightlies in all Indian languages. How many countries can boast of a freedom of thought, freedom of expression and freedom of action in the way we have in India?
12. We tend to give up on India very easily. For example, we say India is too large and therefore unmanageable and chaotic. But we can create a beautiful order in this chaos, whenever we want. Look at the Kumbh Mela held last year in Allahabad. At a point in time, here were 2 crore people, who congregated in that city on a single day. The way it was managed was an example for the rest of the world. We are not afraid of managing large systems. Look at our Indian railways. It has trains which cover 1,00,000 km. with 7000 stations, and with 11,000 freight and passenger trains plying around this vast country every day. They carry over a million passengers a day. We have the largest railway in the world – an unparalleled engine that facilitates unity in diversity by moving India around the clock, day after day, and throughout the year. We take these systems for granted, but just see how difficult it is to run these systems in a nation, which is one sixth of the humanity. You think of the value of such an achievement and then your heart will swell with pride.

13. India has the reputation of being a thinking nation for a millennia. Indian minds are great minds. But what about our mindsets? That is a matter of concern. Our mindsets are not positive. We are perennially in a state of self-doubt. We continuously ask ourselves, have we performed? Are we good enough? Let me take only one example of our Indian Science and Technology (S&T). We keep on asking as to whether Indian S&T has delivered. We do not realize that India has achieved so much for so little. Our overall S&T budget last year was less than 3 billion US dollars. Do you know that Pfizer's R&D budget was over 5 billion dollars last year? For a national budget that was smaller than the budget of a single company, India has achieved so much.
14. Take our space programme. The R&D budget of this programme was US \$ 450 million last year. The R&D budget for General Motors was around 7 billion dollars. What is it that our space programme has achieved? Today, we design, develop, test and fabricate our own launches. We have moved from one sophisticated launching vehicle to another. We have moved from ASLV to PSLV to GSLV. We have done it without any help from anyone, since for love or for money, no one will give us the technology in these strategic sectors. We have launched 35 satellites so far, of which 17 are Indian launches, 23 are in orbit, 14 are geo-stationary. Not only do we launch our own satellites today but that of our foreign customers too and that includes Germany and Korea. And all this is done for a budget that is just 7% of a single company in USA! Should we not be proud of this feat?
15. But it is not only the ability to launch our satellites that I am proud of. It is in our ability to be counted as the best that I take particular pride in. I remember being a part of a Committee that reviewed CSIR of South Africa in 1997. I remember going to their satellite tracking center outside Pretoria. I asked them 'tell me, which is the best satellite image that you get?' They took me to a corner and showed to me the imagery, which they claimed had the finest resolution. Then I discovered that those pictures were taken from the satellite IRS – 1C. My friends, I am proud to say that I in IRS – 1C stood for India. Should we not be proud that a developing nation such as India was producing the finest satellite imagery in the world? Should we not be proud when Tina Cory, the Director of Application and Training of Eosat, which is a US based satellite imagery marketing firm recently said 'IRS series of remote sensing satellites is a 'jewel in the crown'. Should we not be proud, when those who

know the market, say that our IRS may actually achieve 30 percent of the global market?

16. Let me move beyond science and technology and again come back to the theme that India does so much for so little. Only 50% of our children go to school, only 30% of them go up to 10th standard, and only 40% of them pass. That makes it 6% - as against, say Korea for which the corresponding figure is about 70%. So, with 6%, we are talking about a tip of the iceberg. But what does that tip of the iceberg deliver? Last year, we exported 9.7 billion dollars worth of software. Do you know how many contributed to this export? Only 50,000 software engineers. That is 0.05% of our population, and it contributed to almost 10% of our exports. The positive way of looking at it is that if the tip of the iceberg can deliver so much, can you imagine, what would happen, if the entire iceberg was lifted?
17. But once again those self-doubts and defeatism hold us back. Sheer statistics stares us in the face. Various estimates indicate that in the primary school age group almost 80 million children are either not enrolled in schools or are in schools but are not learning. This constitutes 50% of our potentially school going children. Should we give up? Or can we solve this problem? Pratham, a very innovative India education initiative launched by the corporate world, believes that this problem can be solved in a minimum time frame and that too by spending Rs 100 to educate one child per year. Since its beginning in the slums of Mumbai, Pratham movement has responded to this challenge by serving over a million primary school children across the country. They have launched the 'Read India' movement that is striving to get all our children to read and comprehend in a couple of months. If this movement, which has already covered 26 centres across 9 states in India, can spread to the entire nation, what a miracle can happen? Can we not transform India by using such innovative initiatives, which will cost so little? Yes, we can, but only if we feel positive about the prospects of achieving this gigantic task.
18. We can now go through a further bout of self-doubt. One can say, we can deal with 80 million young children. But what about 200 million adults that cannot read and write. We reinforce our doubts by saying that illiteracy today is reducing only at the rate of 1.5% per annum. We can then point to the constraints of trained teachers, and the use of conventional methods of

learning from alphabets to words, which requires 200 hours of instruction. We then come to the conclusion that we will need 20 years to attain a literacy level of 95%. By this time, other nations would have moved ahead. We, therefore, convince ourselves that nothing can be done.

19. But then there are some, who are born optimists. That includes, the great doyen of Indian IT industry, F.C Kohli. He has developed a Computer-based Functional Literacy (CBFL) method. It focuses on the reading ability. It is based on the theories of cognition, language and communication. In this method, the scripted graphic patterns, icons and images are recognized through a combination of auditory and visual experiences by using computers. The method emphasizes on learning words rather than alphabets. While the method focuses on reading, it acts as a trigger for people to learn to write on their own.
20. Based on this method, Kohli's team has developed innovative methodologies using IT and computers to build reading capability. This experiment was first conducted in Medak village near Hyderabad. Without a trained teacher, the women started reading the newspaper in Telugu in 8 to 10 weeks. Thereafter, Kohli's team carried out more experiments at 80 centres, and with over 1000 adult participants. The results were spectacular.
21. Kohli is an engineer. He is pragmatic. He believes in action, in deliverables. His team developed these lessons to run on Intel 486s and earlier versions of Pentium PCs modified to display multimedia. There are around 200 million of such PCs in the world that are obsolete. They have been discarded. By using these PCs, the cost of making one person literate would be less than Rs.100. With CBFL, Kohli says he can increase literacy to 90 to 95% within 3 to 5 years, instead of 20 years. Should we not believe Kohli? Should we not give a chance to his team? Should we not remove the darkness of our illiteracy by lighting such innovative candles? Yes, we can. Provided we think positively. Provided, we believe it can be done.
22. Again, those with persistent self-doubts will say that all this a dream. It is going to take time. What do we do with the submerged part of the iceberg that is not visible today. It is amazing to discover as to how that part of the human capital

that resides in this submerged part is also so resilient, so valuable and so innovative.

23. Let me give you a startling example. What do global giants like General Electric and Motorola have in common with a humble tiffin delivery network comprising 3500 dabbawallas, who deliver 1.5 lakh lunch boxes to citizens in Mumbai each day? The dabbawallas have the six sigma rating or an efficiency rating of 99.999999, which means one error in one million transactions. This rating has been given to them by Forbes Global, the famous American business weekly. Now, these are largely illiterate dabbawallas. Their secret lies in a coding system devised over the years. Each dabba is marked in an indelible ink with an alphanumeric code of about 10 characters. In terms of price and the reliability of delivery, say compared to a Federal Express System, dabbawallas remain unbeatable. Their business models have become a class room study in some management institutes. By giving this one example, all that I am trying to convey is that the innovative potential of the people does not plummet to zero, when the people are illiterate or semi-literate. They necessarily have to innovate to survive and to succeed. There is a plenty of cheer there too. We must be prepared to discover it and salute it.
24. Let me drive this point further. National Innovation Foundation (NIF) was set up three years ago under my Chairmanship to acknowledge the genius of that submerged part of the iceberg. Essentially, we were looking at the innovations done by grass root innovators, be they farmers, slum dwellers, artisans, school dropouts and so on. We set up a national innovation competition two years ago. To begin with, in the first year, there were less than one thousand entries, which increased to sixteen thousand in the second year! Our President Dr. A.P.J. Abdul Kalam gave away the prizes for the winners. Many of them were illiterate or semi-literates. The winners during the last year included an eighth standard dropout, who developed a complex robot. The winners included a farmer, who developed a cardamom variety, which today has over 80% share of the market in Kerala. The winners included again an illiterate individual, who had developed a disease resistant pigeon pea variety, which became a big winner. My friends, these disadvantaged individuals had shown to us as to what they can do by working in laboratories of life by using their powers of observation, analysis and synthesis. It is time that we sing a song for these heroes and salute this part of India, which is as vast as it is innovative.

25. What we really require is a self-confidence. It is rather ironical that when we are losing faith in ourselves, the rest of the world is looking to us for inspiration. As a member of Indo-German Consultative Committee, I remember a presentation by a senior German member on demography in Bonn. He expressed a concern that one third of Germany in the next 10 to 15 years will be more than 60 years old. There was a question from the audience. Germany and Japan became economic powerhouses because they excelled in technological innovations. But then innovation is the domain of the young. How could a predominantly old Germany survive when it becomes old? The reply came quickly. It was asserted that in the twenty first century Germany will start looking at a young nation, which will continue to remain young, and therefore, innovative. That nation, the speaker asserted, was none other than India. And this is already happening.
26. One hundred major companies from USA, Europe and Japan have set up their research, design and development laboratories in India in the last five years. Intel's design of superchip to GE's design of aircraft engines gets done in India today. As legendary Jack Welch, the CEO of General Electric (GE) said during the inauguration of GE's 1000 Ph.D. R&D Centre in Bangalore 'India is a developing country but it is a developed country as far as its intellectual capital is concerned. We get the best intellectual capital here – thanks to the amazing quality of Indian mind'. It is amusing, at least to me, that the confidence in the supremacy of Indian minds that the others have, we do not seem to have ourselves.
27. We are a peculiar nation. There is nothing that we cannot do if we want to. Let me give you some examples. We all get concerned about the dirt and the filth that we see all around us. But we also demonstrate that, if we want, we can be as clean and as beautiful as the rest of the world. When S.R. Rao entered Surat, it was a city that had acquired the dubious distinction of being one of the dirtiest city in the world, thanks to the episode of plague. With self-determination, the city became one of the most beautiful cities in India within no time. In 19 months, the morbidity rate in Surat came down by 75% and the doctors had a fall in business by 66%!

28. We are, again, a peculiar country. When we are challenged, we are denied a technology, we perform. Let us remind ourselves about how India reacted to the denial of the supercomputers in the late eighties. Cray XMP-1205 was something that we needed for weather forecasting. It was not available for a variety of reasons – one need not go into the details. But Indian scientists were challenged. They met the challenge by using massively parallel processing computing technology to create a supercomputer. In less than three years that C-DAC was given, and within less than \$ 10 million that C-DAC was given, the PARAM supercomputer was delivered. I remember reading the Washington Post, which said: “Angry India does it”. Our problem seems to be that we are not permanently angry!
29. Our mindsets have become such that before we begin something, we are convinced that it cannot be done. But there are those innovators, who do not know that things cannot be done. They make the seemingly impossible possible, even in India. Indeed, there are several ideas that have worked in India. Mr. Arun Shorie, when he was the Minister handling the Ministry of Personnel, Public Grievances and Pensions, had organized an inspirational series of talks on “ideas that have worked”.
30. In this series, several people spoke. N.R. Narayana Murthy spoke of how by putting together Rs.10,000 and starting in his small 700 square feet apartment, he built Infosys. Its market capitalization, at one point of time, was more than Rs. 60,000 crores. Infosys has become a pride of the nation today. Mukesh Ambani of Reliance spoke about building the largest green field refinery complex at Jamnagar with an investment of five billion US dollars in a record time of 36 months at a capital cost that was 50% lower than similar refineries and commissioning it in 3 months as against the international norms of 6 to 18 months. There were others like Dr. Kurien talking about our white revolution and making India a global leader in milk production in the world. E. Sreedharan spoke about building the 760 km Konkan Railway project in one of the most difficult terrains ever encountered in the history of railway construction by using the most sophisticated technology. Chandrababu Naidu spoke about his assuming the role of CEO of Andhra Pradesh. He has converted Hyderabad into Cyberabad within no time. It is a world class city today. Ratan Tata spoke about building the car ‘Indica’ by using 700 engineers, who had no experience of designing an automobile, and at a development cost, which was one tenth of

the international cost. I myself spoke about transforming some of our national laboratories from the 'reverse engineering mode' or 'copying mode' to 'forward engineering mode'. CSIR today exports our knowledge even to leading multinationals in USA and Europe, whose budgets are bigger than India's R&D budgets. And there were others who spoke from different fields, whose ideas had worked right here in India. My friends, no matter where we all came from, it was repeatedly shown that if we had a vision and an ambition, if we could raise the aspirations of the people and if we provided them with the right ambience, things could be made to happen in India.

31. What would we really require for transforming India? Let me give you a lesson I drew from a recent incident. I was involved in the process of interview for the Chief Innovation Officer of National Innovation Foundation. I found that the individual that I was interviewing had experience in branding a product. I said 'I want to brand my India. How would you do that?' He was puzzled. He had branded a soap, a refrigerator, but he wondered as to how he could brand a nation? I said 'I will make it easy for you. Let me tell you as to how other nations brand themselves. For instance, US brands itself as a land of opportunity!' He immediately replied, 'I will brand India as a land of ideas'. Now here is the issue. India is a land of ideas but it is USA that is a land of opportunities. That is why our young people with aspirations go to USA, which provides them an opportunity to reach their own potential. I read some statistics on the other day that 2% of Indians, which are non-resident Indians, who work in those 'lands of opportunity' outside, generate an economic output which is almost the same as India's economic output, which 98% of us generate from within India. Our challenge, my young friends, is to make India a land of opportunity. That again requires a positivism and a faith in ourselves.
32. As I said, Indian talent will reign supreme in the twenty first century. But it is not Indian talent alone that the world would be seeking, it will also be seeking the Indian way of life. With sharp demographic imbalances, the aged population in the western world would increase phenomenally. This will mean that the social security demands will increase. It is estimated that in some nations, this may be as much as 20 to 30% of their GDP. Someone said recently to me that the only way to deal with these problems is by emulating India, namely by adopting its joint family system. As you know, our joint families give a value of belonging and sharing that is almost epic in scope. That model is what the rest of world is

seeking. The world wants to go back to nature, back to yoga, back to Ayurveda, back to spiritualism. It is all “an Indian way of life”.

33. But cynics will still have their doubts. The rest of the world will go the Indian way. But what about India? Will globalization not destroy India? Will we not lose our identity? Let me reemphasize that Indian civilization has accommodated new elements from outside over the entire course of its history. Indian society has shown a great capacity to accommodate diverse and contradictory elements without losing its identity. Therefore, the fears about the impact of globalization in terms of losing our identity are unwarranted. Our challenge today is to maintain this traditional record for diversity while finding more room for quality and individual freedom. My young friends, you will have to meet this challenge with determination.

34. Let me end this address by going back to my opening statement about ‘being in coma’ and ‘being at coma’. For India, which is an ancient civilization, one century can only be a chapter in its history. I do believe that the chapter on the 21st century India is going to be our crucial chapter. It will set the mood and tone for our future in the coming millennium. My young friends, it is up to you to write this chapter. You can make it a golden chapter if you believe in yourself. All that you need is an attitudinal change towards life and work. A shift from a culture of drift to a culture of dynamism, from a culture of idle prattle to a culture of thought and work, from diffidence to confidence and from despair to hope. Our very best wishes are with you for a spectacular climb on that limitless ladder of excellence in any field that you choose to get in. Please do go beyond that coma, complete the sentence, then a para, then a chapter. We give you the charge to write this golden chapter of the twenty first century India.

Thank you.